
CORDELL BANK, GULF OF THE FARALLONES,
AND MONTEREY BAY
NATIONAL MARINE SANCTUARIES



FINAL
ENVIRONMENTAL IMPACT STATEMENT

PREPARED AS PART OF THE
JOINT MANAGEMENT PLAN REVIEW

VOLUME IV OF IV

SEPTEMBER 2008

US DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
NATIONAL MARINE SANCTUARY PROGRAM





SEP 15 2008

Dear Reviewer:

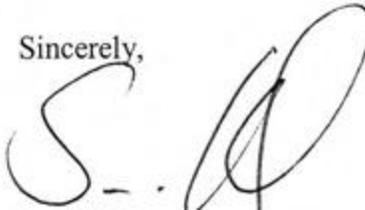
In accordance with provisions of the National Environmental Policy Act of 1969 (NEPA), the National Oceanic and Atmospheric Administration (NOAA) has enclosed for your review the Final Environmental Impact Statement (FEIS) for the Cordell Bank National Marine Sanctuary (CBNMS), Gulf of the Farallones National Marine Sanctuary (GFNMS), and Monterey Bay National Marine Sanctuary (MBNMS). All three sanctuaries are located off the coast of California and were designated in 1989, 1982, and 1992 respectively. The three sanctuaries protect the rich offshore northern and central California marine ecosystems and cultural resources within a 7,100 square mile area. The area is particularly noted for its coastal estuaries, offshore islands, seamounts, kelp forests, diverse marine mammals, and bird species.

This FEIS is prepared pursuant to NEPA to assess the environmental impacts associated with NOAA revising the management plans and associated regulations for the CBNMS, GFNMS, and MBNMS. The revisions are being done pursuant to section 304(e) of the National Marine Sanctuaries Act, which requires periodic review of substantive progress toward implementation of the management plan and goals for the sanctuary.

Public hearings were held, and public comments were addressed in the document you are receiving. NOAA is not required to respond to comments received as a result of issuance of the FEIS. However, comments will be reviewed and considered for their impact on issuance of a record of decision (ROD). Please send comments to the responsible official identified below. The ROD will be made available publicly following final agency action on or after October 27, 2008.

Responsible Official: William J. Douros
Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration
Monterey Bay National Marine Sanctuary
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Monterey, CA 93940
831-647-1920

Sincerely,


for Paul N. Doremus
NOAA NEPA Coordinator

Enclosure



Final Environmental Impact Statement Joint Management Plan Review

Lead Agency:

National Oceanic and Atmospheric Administration
National Marine Sanctuaries Program
1305 East-West Highway, N/ORM-6
Silver Spring, MD 20910

Proposed Action:

Regulatory changes for Cordell Bank, Gulf of the Farallones and Monterey Bay National Marine Sanctuaries resulting from the Joint Management Plan Review

Abstract:

This project proposes a series of regulatory changes intended to resolve inconsistencies in regulatory language and enhance resource protection within the three central and northern California National Marine Sanctuaries (NMS) -- Cordell Bank NMS, Gulf of the Farallones NMS, and Monterey Bay NMS. Most of the regulatory changes result in beneficial impacts on resources. No significant impacts were identified. Less than significant impacts were identified on Commercial Fisheries, Marine Transportation, and Socioeconomics. Beneficial impacts were identified on Air Quality, Biological Resources, Ocean/Geological Resources, Water Quality, Commercial Fisheries, Cultural Resources, Hazardous Materials, Land Use and Development, Public Access and Recreation, Research and Education, Socioeconomics, and Visual Resources. Cumulatively adverse impacts were identified on Commercial Fisheries and Marine Transportation; cumulative beneficial impacts were identified in Air Quality, Biological Resources, Ocean/Geology, Water Quality, Commercial Fisheries, Cultural Resources, Hazardous Materials, Public Access and Recreation, Socioeconomics, and Visual Resources.

<p>NOAA held public meetings on the Draft EIS and Management Plans on the following dates:</p> <ol style="list-style-type: none">1) November 29, 2006, 6:30 p.m. at the Cambria Pines Lodge, 2905 Burton Drive, Cambria, CA 93428.2) November 29, 2006, 6:30 p.m. at the Bodega Marine Laboratory, 2099 Westside Road, Bodega Bay, CA 94923.3) November 30, 2006, 6:30 p.m. at the Monterey Conference Center, One Portola Plaza, Monterey, CA 93940.4) November 30, 2006, 6:30 p.m. at the Dance Palace Community Center, 503 B Street, Point Reyes Station, CA 94956.5) December 5, 2006, 6:30 p.m. at the University of California Santa Cruz Inn and Conference Center, 611 Ocean Street, Santa Cruz, CA 95060.6) December 5, 2006, 6:30 p.m. at the Fort Mason Center, Firehouse (NE corner of Center), San Francisco, CA 94123	<p>7) December 6, 2006, 6:30 p.m. at the Community United Methodist Church, 777 Miramontes Street, Half Moon Bay, CA 94019.</p> <p>Further information on the JMPR can be found at the project website: http://sanctuaries.noaa.gov/jointplan/</p> <p>If you would like further information regarding this statement, please contact:</p> <p>Sean Morton JMPR Coordinator National Oceanic and Atmospheric Administration National Marine Sanctuaries Program 1305 East-West Highway, N/NMS Silver Spring, MD 20910 Phone: 301-713-3125 x264 E-mail: Sean.Morton@noaa.gov</p> <p>Comments on the Draft EIS were received during a 90-day public comment period ending January 6, 2007.</p>
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LIST OF ACRONYMS

Acronym	Full Phrase
AB	Assembly Bill
APPS	Act to Prevent Pollution from Ships
AS	Alaska Statute
ASBS	Area of Special Biological Significance
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BEA	Bureau of Economic Analysis
BP	Before Present
CARB	California Air Resources Board
CBFNA	California Boating Facilities Needs Assessment
CBNMS	Cordell Bank National Marine Sanctuary
CCA	California Coastal Act
CCAA	California Clean Air Act
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CINMS	Channel Islands National Marine Sanctuary
CNPS	California Native Plant Society
CO	Carbon Monoxide
CRWQCB	California Regional Water Quality Control Board
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
DMP	Draft Management Plan
DTSC	Department of Toxic Substances Control
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
ENSO	El Niño Southern Oscillation
EO	Executive Order
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FAA	Federal Aviation Administration
FCAA	Federal Clean Air Act
FEIS	Final Environmental Impact Statement
FMP	Fishery Management Plan(s)
FWPCA	Federal Water Pollution Control Act
GFMP	Groundfish Fishery Management Plan
GFNMS	Gulf of the Farallones National Marine Sanctuary
GGNRA	Golden Gate National Recreational Area
GIS	Geographic Information System
HAPC	Habitat Area Of Particular Concern
HC	Hydrocarbons
HMS	Highly Migratory Species

LIST OF ACRONYMS

Acronym	Full Phrase
IMO	United Nations International Maritime Organization
JMPR	Joint Management Plan Review
LCP	Local Coastal Program
LNG	Liquefied Natural Gas
MARPOL	International Convention for the Prevention of Pollution from Ships
MBARI	Monterey Bay Aquarium Research Institute
MBNMS	Monterey Bay National Marine Sanctuary
MBTA	Migratory Bird Treaty Act
MBUAPCD	Monterey Bay Unified Air Pollution Control District
MERITO	Multicultural Education of Resource Issues Threatening Oceans
MLMA	Marine Life Management Act
MLML	Moss Landing Marine Lab
MMPA	Marine Mammal Protection Act
MPA	Marine Protected Area
MPRSA	Marine Protection, Research, and Sanctuaries Act also known as the Ocean Dumping Act
MPWC	Motorized Personal Watercraft
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSD	Marine Sanitation Device
MTBE	Methyl Tertiary Butyl Ether
NAAQS	National Ambient Air Quality Standards
NAD 83	North American Datum of 1983
NAO	NOAA Administrative Order
NCCAB	North Central Coast Air Basin
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMA	Northern Management Area
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuaries Act
NMSP	National Marine Sanctuaries Program
NCCOS	National Centers for Coastal Ocean Science
NOI	Notice Of Intent
NOx	Nitrogen Oxides
NO ₂	Nitrogen Dioxide
NOAA	National Oceanographic and Atmospheric Administration
NOS	National Ocean Service
NPCA	National Park and Conservation Association
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRHP	National Register of Historic Places
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OMB	Office of Management and Budget
OTEC	Ocean Thermal Energy Conversion
OWS	Oil-Water Separator
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls

LIST OF ACRONYMS

Acronym	Full Phrase
PFMC	Pacific Fishery Management Council
PISCO	Partnership for Interdisciplinary Studies of Coastal Oceans
P.L.	Public Law
PM ₁₀	10-micron particulate matter
PM _{2.5}	2.5-micron particulate matter
PPM	Parts per Million
PRNS	Point Reyes National Seashore
RCRA	Resource Conservation and Recovery Act
RFA	Regulatory Flexibility Act
RHA	Federal Rivers and Harbors Appropriations Act of 1899
ROD	Record of Decision
ROI	Region of Influence
ROG	Reactive Organic Gases
ROV	Remotely Operated Vehicle
RWQCB	Regional Water Quality Control Boards
SAC	Sanctuary Advisory Council
SARA	Superfund Amendments and Reauthorization Act
SCCAB	South Central Coast Air Basin
SF-DODS	San Francisco Deep Ocean Disposal Site
SFA	Sustainable Fisheries Act
SFAB	San Francisco Air Basin
SIMoN	Sanctuary Integrated Monitoring Network
SLA	Submerged Lands Act
SLOAPCD	San Luis Obispo County Air Pollution Control District
SMPA	Special Marine Protected Area
SO ₂	Sulfur dioxide
SWQRCB	State Water Quality Resources Control Board
SWRCB	State Water Resources Control Board
TAC	Total Allowable Catch
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USCG	United States Coast Guard
USDOJ	United States Department of Interior
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOCs	Volatile Organic Compounds
VTSS	Coast Guard Vessel Traffic Service
VTSS	Vessel Traffic Service/Separation

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

ES.1 Introduction and Purpose and Need

This Final Environmental Impact Statement (FEIS) is the fourth of four volumes that are the result of an extensive Joint Management Plan Review (JMPR) process at Cordell Bank National Marine Sanctuary (CBNMS), Gulf of the Farallones National Marine Sanctuary (GFNMS), and Monterey Bay National Marine Sanctuary (MBNMS), all of which are offshore of northern/central California. Volumes I, II, and III contain the Draft Management Plans (DMP) for each of the three sanctuaries. These DMPs include information about the sanctuaries' environment and resources, regulations and boundaries, staffing and administration, priority management issues, and actions proposed to address them over the next five years. Volume IV, this FEIS, is an evaluation of the potential environmental impacts of each Sanctuary's proposed regulatory actions (changes to Sanctuary regulations and designation documents) associated with the JMPR. The Proposed Actions and alternative actions are described in Chapter 2 of this FEIS. The National Oceanic and Atmospheric Administration (NOAA) is the lead agency for this project.

This FEIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code (U.S.C.) § 4321 et seq.) and its implementing regulations (40 Code of Federal Regulations (CFR) Parts 1500-1508). This FEIS presents, to the decision makers and the public, information required to understand the potential environmental consequences of the Proposed Action and alternatives. The notice of intent (NOI) to prepare the DEIS is provided in Appendix A.

The FEIS incorporates changes made as a result of public and agency comments on the Draft EIS and information from the related Draft Supplemental EIS issued in March 2008. Appendix A includes the NOI for the Supplemental DEIS.

ES.1.1 Background

National Marine Sanctuaries Act and National Marine Sanctuary Program

The National Marine Sanctuaries Act, as amended (NMSA) (16 U.S.C. § 1431 et seq.), is the legislative mandate that governs the National Marine Sanctuary Program (NMSP)¹. Under the NMSA, the Secretary of Commerce (Secretary) is authorized to designate and manage areas of the marine environment as national marine sanctuaries. Such designation is based on attributes of special national significance, including conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, and aesthetic qualities. The primary objective of the NMSA is resource protection.

Resource protection for national marine sanctuaries is carried out by regulations under the NMSA, which are codified as 15 CFR Part 922, and through the issuance of permits, coordination with other local, state, and federal agencies, outreach, education, research, monitoring, and enforcement. The NMSP regulations include prohibitions on specific kinds of activities, descriptions of Sanctuary boundaries, and a permitting system to allow certain types of activities to be conducted within sanctuaries that would otherwise be prohibited. Each of the thirteen national marine sanctuaries has its own set of site-specific regulations within subparts F through R of 15 CFR Part 922. The regulations for CBNMS, GFNMS, and MBNMS are found at Subpart K, H, and M. Proposed changes to these regulations constitute the Proposed Action for this EIS.

Joint Management Plan Review Process

A Sanctuary management plan is a site-specific planning and management document. Each Sanctuary has an individual management plan that describes regulations and boundaries, outlines staffing and budget needs, presents management actions and performance measures, and guides development of future budgets and management activities. The 1992 congressional legislation that reauthorized the NMSA required that each National Marine Sanctuary engage in periodic management plan reviews to reevaluate site-specific goals and objectives, management techniques, and strategies (16 U.S.C. § 1434[e]). The purpose of this review process is to ensure that each site properly conserves and protects its natural and cultural resources.

The NMSP reviewed the management plans of CBNMS, GFNMS, and MBNMS at the same time through a joint process, termed the Joint Management Plan Review (JMPR). These sanctuaries are adjacent to one another, managed by the same program, and share many of the same resources and issues. In addition, all three sites share overlapping interest and user groups. It also has been more cost effective for the NMSP to review the three sites jointly rather than conducting three independent reviews.

The JMPR, initiated in 2001, involved four main phases: issue identification (through public scoping meetings), issue prioritization, development of action plans, and preparation of draft management plans, associated regulatory changes, and appropriate environmental impact documents. As a result of this process, numerous changes to management policies and regulations are proposed to reflect the updated goals, objectives, strategies, and actions. The revised management plans will guide the operation of the sanctuaries

¹ The National Marine Sanctuary Program was recently elevated to an “Office” level within NOAA’s National Ocean Service (NOS). Therefore, the official name of the operating unit within NOAA that implements the National Marine Sanctuaries Act is the National Ocean Service Office of National Marine Sanctuaries. However, to minimize confusion that might be created by using different operating unit names between the draft and final environmental impact statements, we have chosen to use National Marine Sanctuary Program and its associated acronym NMSP in this document.

for the next five years, helping each Sanctuary set budget and project priorities for resource protection in preparation of its annual operating plan.

ES.1.2 Project Location

All three sanctuaries are located offshore of northern/central California. Figure ES-1 shows the regional location of the three sanctuaries, including the Sanctuary boundaries and surrounding area. The three sanctuaries cover the coastal area from Bodega Bay in Sonoma County southward to Cambria in San Luis Obispo County, excluding San Francisco Bay and the seaward areas adjacent to San Francisco and northern San Mateo Counties.

CBNMS is entirely offshore and shares its southern and eastern boundary with GFNMS. The eastern boundary of CBNMS is six miles from shore and the western boundary is the 1,000-fathom isobath on the edge of the continental slope. This area contains unique geological and oceanic features that create conditions that support extraordinarily diverse and abundant marine life.

GFNMS extends seaward from the mean high water mark or the seaward boundary of the Point Reyes National Seashore. Between Bodega Head and Point Reyes Headlands, the Sanctuary extends seaward to three nautical miles beyond territorial waters. The Sanctuary also includes the waters within 12 nautical miles of Noonday Rock and the mean high water mark on the Farallon Islands, and the waters between the islands and the mainland from Point Reyes Headlands to Rocky Point.

MBNMS is adjacent to and south of GFNMS. It stretches along the shoreline between the Marin Headlands and Cambria. MBNMS's western boundaries average a distance of 30 miles from shore.

ES.1.3 Purpose and Need for Proposed Action

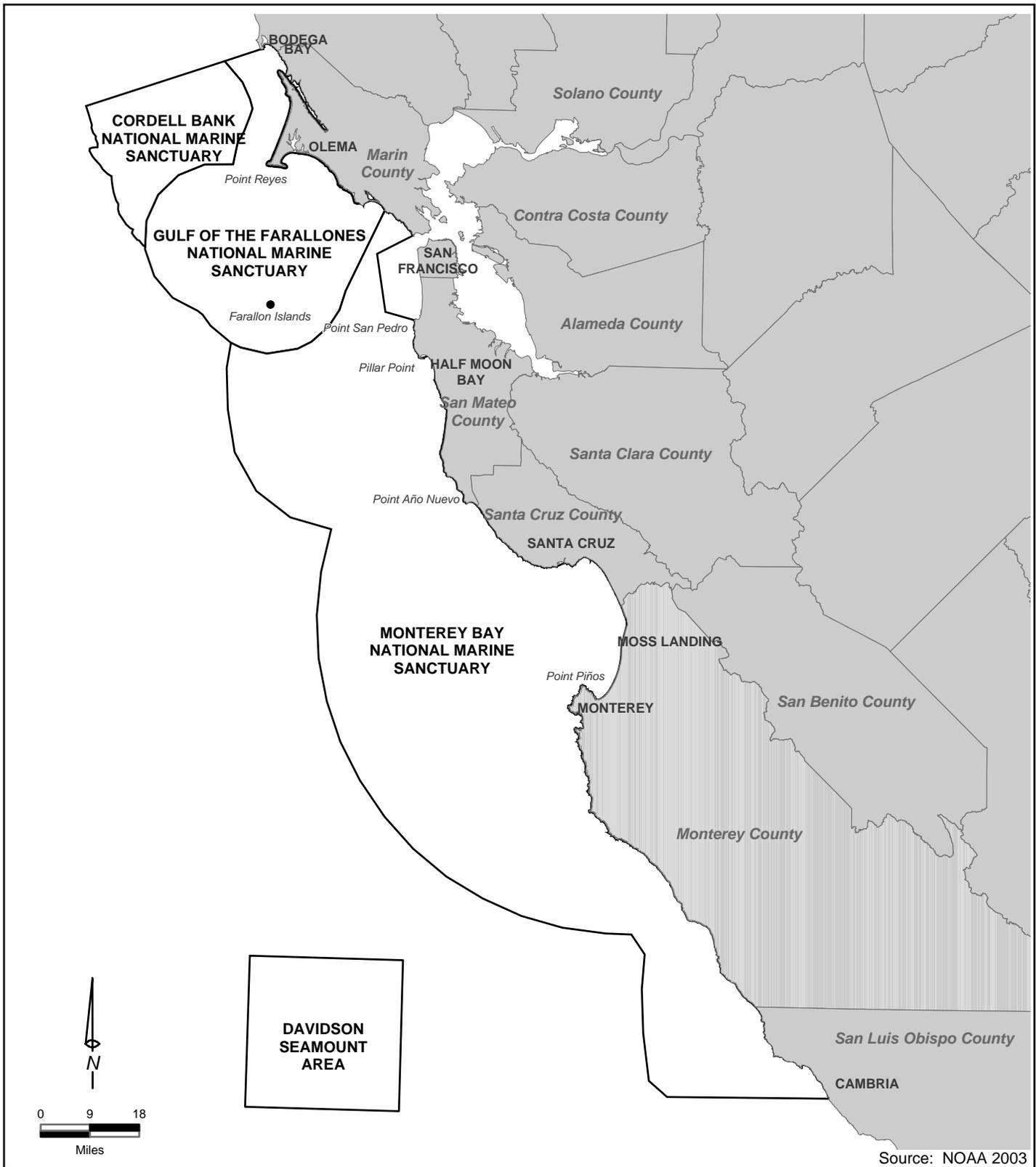
The purpose and need for the Proposed Action are based on both regulatory requirements for management plan review and the need to address current management issues and concerns within each Sanctuary.

Management Plan Update

No formal reviews or revisions of the three Sanctuary management plans or regulations have occurred since the time of original designation. CBNMS was designated in 1989, GFNMS was designated in 1981, and MBNMS was designated in 1992. Congress has amended the NMSA numerous times since it was established in 1972, strengthening and clarifying the conservation principles for the program. The amended NMSA calls on each national marine sanctuary to review its management plan at five-year intervals and to revise the management plan and regulations as necessary to fulfill the purposes and policies of the NMSA (16 U.S.C. § 1434[e]). Therefore, the primary purpose and need of the Proposed Action are to review and update the three Sanctuary management plans and regulations to comply with the NMSA.

Stemming from issues raised in the public scoping process, Sanctuary staff, Sanctuary advisory councils, public forum groups, and NMSP leadership contributed to the identification of priority resource management issue categories to be considered in the new management plans. The DMPs (volumes I, II, and III of this document) address the resource management issues through numerous action plans. The CBNMS DMP includes six action plans, the GFNMS DMP includes nine action plans, and the MBNMS DMP includes 22 action plans. In addition, there are five cross-cutting action plans that outline joint implementation strategies for the three sanctuaries. The action plans contain specific strategies and activities that identify how the

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The JMPR study area covers over 5,000 square nautical miles of open ocean.

Joint Management Plan Review Study Area

Northern/Central California

sanctuaries will address the various marine management issues, including the necessary research, monitoring, education, outreach, policy, or enforcement actions to be implemented. Each action plan outlines how different strategies will be conducted, presents the costs that might be incurred for each strategy, provides a coordinated timeline for carrying out all strategies, and provides performance indicators as a measure of management effectiveness.

Proposed Changes to Sanctuary Regulations

For some resource management issues, it is necessary to modify existing sanctuary regulations to better manage and protect the resource and implement the action plans. In some circumstances, the sanctuaries need to regulate new activities occurring or that may occur within Sanctuary boundaries in order to protect and conserve resources. Therefore, specific regulatory changes proposed and analyzed in this FEIS address several of the priority resource management issues (see Chapter 2 for full description of proposed regulatory changes). Note that only a small portion of the action plans require regulatory changes, thus the regulatory changes are essentially a small subset of the overall strategies to address priority issues established in the DMPs. There is a broad suite of education, outreach, research, monitoring, and resource protection activities that have been identified during the management plan review and that do not involve regulatory changes.

The proposed regulatory changes presented in this FEIS, and the action plans in the DMPs are all needed to meet the goals and mission of the NMSP (15 CFR Part 922.2[b]).

Changes to Sanctuary Designation Documents

When contemplating changes to Sanctuary regulations, a proposed regulation change may necessitate corresponding changes to the designation document to establish authority for the new or modified regulation. In the case of the three sanctuaries' JMPR process, in addition to the nonregulatory strategies and activities developed to address priority issues, there are some specific boundary and regulatory changes under consideration that would require changes to the Sanctuary designation documents. These revisions are narrow in scope, corresponding directly to several proposed regulation changes.

ES.1.4 Scope of EIS

This FEIS is an evaluation of the environmental impacts associated with the proposed revised regulatory actions and alternatives to the proposed regulatory actions. The Proposed Action in this FEIS consists of revising existing CBNMS, GFNMS, and MBNMS regulations, adopting several new regulations, and revising the Sanctuary designation documents. Alternatives to the Proposed Action consist of variations in the proposed regulations. Specific regulatory changes contained within the Proposed Action and Alternative Regulatory Actions are described in detail in Chapter 2 and are analyzed in terms of impacts in Chapter 3.

Numerous proposed regulatory changes are minor technical or administrative modifications that do not result in changes to the environment. These types of changes are noted in the project description (Chapter 2) and in the introduction to the environmental analysis in Chapter 3. This FEIS focuses on the regulatory changes that could affect the environment.

Additionally, because Section 304(a)(4) of the NMSA requires that "terms of designation may be modified only by the same procedures by which the original designation is made," the proposed changes to a sanctuary's designation documents require a NEPA process and analysis within an EIS.

This FEIS is not an analysis of all of the activities in the proposed DMPs. The bulk of the three updated management plans is nonregulatory management strategies and actions that Sanctuary staff and their partners will use to address various issues identified during the management plan review process. Section 6.03c3(d) of NOAA Administrative Order 216-6 (48 Federal Register 14734) specifies that these and other administrative or routine program functions that have no potential for causing significant environmental impacts are eligible for a categorical exclusion from NEPA. The proposed actions within the DMPs individually and cumulatively will have no significant impact on the environment and, therefore, are categorically excluded from NEPA's requirement for conducting an environmental assessment or preparing an EIS. The non-regulatory actions identified in the DMPs can be implemented independently from the proposed regulatory actions and are not dependent on approval of the proposed regulatory changes. The proposed action plans of each Sanctuary are summarized in Appendix B and are described in detail in each Sanctuary's draft management plan (volumes I through III).

ES.1.5 Revisions to DEIS and Incorporation of Supplemental DEIS

This FEIS is composed of the original DEIS, with revisions made in response to comments on the proposed regulatory actions, on the DEIS analysis, and on the Supplemental DEIS. Some public and agency comments warranted corrections, revisions, or clarifications of the DEIS text. These revisions were made, where they were relevant to the impact analysis. The proposed actions (proposed changes to sanctuary regulations) were also slightly revised as a result of public and agency comments on the DEIS. These changes are reflected in Chapter 2 (Project Description), and the impact analysis was adjusted accordingly. Most of the changes to the proposed actions were technical, not requiring substantive revisions to the overall impact analysis. Changes in the Proposed Action are listed in Section 1.6 of the FEIS.

On May 11, 2007, NOAA received a request from the California State Water Resources Control Board to prohibit discharges from certain vessels in national marine sanctuaries off the shore of California. After reviewing public comments on the proposed regulations and further analyzing vessel discharge issues, NOAA decided to revise the CBNMS, GFNMS, and MBNMS proposed discharge regulations to prohibit discharges of all sewage from vessels 300 gross registered tons (GRT) or more with sufficient holding tank capacity to hold sewage while within the sanctuary. In the MBNMS, NOAA decided to limit the exception for graywater discharges to vessels less than 300 GRT and vessels 300 GRT or more without the capacity to hold graywater while within the MBNMS. The revised proposed regulations include prohibitions consistent with the request from the State of California for the CBNMS, GFNMS, and MBNMS.

NOAA issued a Supplemental DEIS in March 2008 to address these revised discharge prohibitions. Information from the Supplemental DEIS is incorporated into the impact analysis in Chapter 3 of this FEIS.

In addition to the above revisions, clarifications were provided to several issue discussions in Chapter 3.

ES.1.6 Decisions to be Made

Decisions related to the Proposed Action in this FEIS include the following:

- Approval of the updated Management Plans for each of the three sanctuaries;
- Approval of proposed changes to regulations for each of the three sanctuaries; and
- Approval of proposed changes to the designation documents for each of the three sanctuaries.

ES.1.7 Agency Coordination

No federal agencies were formally requested to be cooperating agencies, nor have any federal or state agencies requested this status. Nonetheless, NOAA is working closely with a variety of pertinent resource agencies on the DMPs, the proposed regulations, and the FEIS. NOAA has also sought the input of numerous federal, state, and local officials and agencies in preparing this FEIS. These officials and agencies are listed in Chapter 6.

ES.1.8 Public Involvement

Section 1.9 of this FEIS outlines public involvement in the management plan review process and the steps that have taken place in developing the Action Plans and proposed regulatory changes that will define how these sanctuaries will operate in the future.

Twenty scoping meetings were held between November 2001 and January 2002. A summary scoping report (February 25, 2002) was prepared, based on over 12,500 comments received on the JMPR and is provided in Appendix A.

The NMSP held a series of workshops with its Sanctuary Advisory Councils to help them identify priority issues. The results from the workshops were published in a report and posted on the project Web site for additional public comment and further deliberation at advisory council meetings. Based on input from the public and the advisory councils, the NMSP selected a final list of priority issues to be addressed in the JMPR. These were also posted on the Web site.

NMSP staff also developed a work plan that characterized the issues to be addressed, identified potential working group members, outlined the timelines for completion, and described the potential products to be created as part of either the working group or an internal team effort. Each advisory council reviewed site-specific and cross-cutting Action Plans developed by issue-specific working groups and provided their recommendations to NOAA. These Action Plans form the core foundation of the Management Plans.

The DEIS was widely circulated in order to solicit public comments on the document. A 90-day public review period was provided following publication of the DEIS. Numerous public hearings were held no sooner than 30 days after the Notice of Availability was published in the Federal Register and at least 15 days before the end of the comment period. In addition, a Supplemental DEIS was issued in March 2008 to address revisions to the proposed discharge prohibitions. A 30-day public review period was provided for the Supplemental DEIS. During the public comment period, oral and written comments were received from federal, state, and local agencies and officials, organizations, and interested individuals. A summary of these comments and the corresponding responses is included in this FEIS in Chapter 7, along with responses to comments on the Supplemental DEIS.

After this FEIS is issued, there will follow a 30-day mandatory waiting period, after which NOAA may issue its Record of Decision.

ES.2 Project Description

ES.2.1 Proposed Action Definition

This FEIS is focused on proposed regulatory changes that are being put forward as part of the JMPR. The Proposed Actions include changes to the regulations for CBNMS, GFNMS, and MBNMS, and

corresponding changes to each Sanctuary designation document. The Proposed Actions represent NOAA's preferred alternative, described in Section 2.2. Certain proposed changes are related to site-specific issues and regulations and are addressed by the individual Sanctuary. Other issues were determined to apply to all three sanctuaries and are addressed as cross-cutting measures. In evaluating alternatives for analysis in the FEIS, NOAA considered proposed regulatory changes appropriate for and consistent with achieving increased protection of the Sanctuary's natural and cultural resources. The proposed regulatory changes are intended to further protect and conserve natural resources, thereby minimizing impacts on the environment.

ES2.2 Proposed and Alternative Regulatory Changes

As part of the JMPR, regulations were reviewed to determine if modifications or clarifications were necessary to meet the original intent of a given regulation, to address new resource threats and changes in resource management issues and priorities, to eliminate inconsistencies between sites (if appropriate), and to make technical corrections. New regulations (or prohibitions) also are proposed by each of the three sanctuaries to provide added protection to Sanctuary resources and to address specific resource management issues. In several issues, the proposed change or new prohibition is the same for all three sanctuaries (cross-cutting regulations), but in some cases the proposed regulation may differ among the sanctuaries due to different conditions, circumstances, and needs. The reader should note that alternative regulatory actions have been developed for some, but not all, of the Proposed Actions. The proposed cross-cutting and sanctuary-specific regulations are described in detail in Section 2.2 and listed in Table 2-1.

ES.2.2.1 Proposed Cross-Cutting Regulations in the Sanctuaries

The proposed cross-cutting actions present relatively minor regulatory changes for each of the three sanctuaries to address water quality and associated biological resources issues. The proposed regulations would do the following:

- Prohibit the release of introduced species to the sanctuaries, except striped bass released during catch and release fishing activity, and species cultivated by existing mariculture activities in Tomales Bay (located in GFNMS) pursuant to a valid lease, permit, license or other authorization issued by the State of California;
- Prohibit the discharge of wastewater or any other material (other than clean vessel engine cooling water, vessel generator cooling water, and anchor wash) from cruise ships in the sanctuaries;
- Prohibit sewage discharges/deposits from within or into the CBNMS, GFNMS, and MBNMS from vessels of 300 GRT or more with sufficient sewage holding tank capacity while within the sanctuary;
- Clarify and narrow the existing wastewater discharge exceptions for food wastes and sewage. This eliminates exceptions for discharging wastes resulting from meals on board vessels and chumming for non-fishing purposes, and clarifies that, for vessels less than 300 GRT, discharges allowed from marine sanitation devices apply only to Type I and Type II Marine Sanitation Devices (MSDs) (no raw sewage dumping).

There is one alternative proposal, which would allow cruise ships to discharge treated wastewater under an approved discharge plan.

ES.2.2.2 Cordell Bank National Marine Sanctuary Regulations

The proposed regulations would do the following:

- Prohibit the disturbance of the seabed on Cordell Bank or the submerged lands on or within the line representing the 50-fathom isobath surrounding the Bank;
- Prohibit the disturbance of the seabed on the submerged lands outside the line representing the 50-fathom isobath surrounding the Bank, with the exception of anchoring;
- Modify an existing regulation protecting benthic invertebrates and algae to define the area within 50-fathoms by specific coordinates; and;
- Prohibit “taking” or possessing wildlife within the Sanctuary.

Alternative versions of the seabed and benthic resources protection regulations would include more limitations on fishing in the Sanctuary, equivalent to the NOAA Fisheries restrictions on bottom-contact fishing gear on or within the 50-fathom isobath surrounding Cordell Bank.

ES.2.2.3 Gulf of the Farallones National Marine Sanctuary Regulations

The proposed regulations call for the following:

- Prohibit attracting white sharks anywhere in the Sanctuary or approaching them within a line approximating 2 nm around the Farallon Islands;
- Prohibit discharging from outside the Sanctuary anything that enters and injures a Sanctuary resource;
- Prohibit anchoring a vessel in a designated seagrass protection zone in Tomales Bay, except as necessary for mariculture operations conducted pursuant to a valid lease, permit or license.
- Prohibit deserting a vessel or leaving a deserted vessel with harmful matter aboard;
- Prohibit “taking” or possessing wildlife within the Sanctuary; and
- Permanently fix the shoreward boundary along the western side of Tomales Bay to the boundary along the Point Reyes National Seashore at the time of sanctuary designation in 1981.

An alternative would prohibit attracting or approaching white sharks anywhere within the Sanctuary.

ES.2.2.4 Monterey Bay National Marine Sanctuary Regulations

The proposed regulations would do the following:

- Add a square area of about 585 square nautical miles around Davidson Seamount to the Sanctuary in which most of the existing site regulations would apply;
- Correct the definition of motorized personal watercraft (MPWC) in order to prohibit their use outside the established MPWC zones in the Sanctuary;
- Expand the prohibition on attracting white sharks to federal waters of the Sanctuary;
- Prohibit deserting vessels or leaving harmful matter aboard a deserted vessel;
- Prohibit possessing, moving, or injuring historic resources in the Sanctuary, with exception of those resulting incidentally from kelp harvesting, aquaculture, or lawful fishing; and
- Define and codify three sites for the disposal of dredged material within the Sanctuary.

Alternative regulations would do the following:

- Create a circular shape for the Davidson Seamount addition to the Sanctuary;
- Prohibit fishing below 914 meters (3,000 feet) in the Davidson Seamount area under the authority of the NMSA; and
- Eliminate MPWC zones and prohibit all MPWC from MBNMS. The alternative would include revising the definition of MPWC to more adequately identify all MPWC of concern.

ES.2.3 No Action Alternative

Under the No Action alternative, no new regulations would be adopted, and no changes to the Sanctuary Designation Documents would be made. The No Action alternative could involve maintaining the current management plans and regulations for the three sanctuaries. All management practices currently occurring would continue, and the current regulations would remain in place. However, Action Plans and other policies and provisions of the proposed management plans not requiring regulatory or designation document changes could also be implemented.

ES.2.4 Proposed Changes to Sanctuary Designation Documents

In addition to and in conjunction with the revisions to the individual Sanctuary regulations mentioned above, there are some specific boundary and regulatory changes under consideration that would require changes to the Sanctuary designation documents. These revisions, discussed in detail in Section 2.5, are primarily focused on the descriptions of the areas each Sanctuary encompasses and the activities in each area that are subject to regulation. Such changes are necessary to establish the authority for certain regulatory activities that are being proposed in the above regulation changes.

ES.2.5 Technical Regulatory Changes

There are several proposed technical changes that would not result in adverse impacts and therefore are not subject to detailed environmental analysis in each issue area in Chapter 3. In all three sanctuaries technical corrections have been made to the textual boundary description and the list of defining coordinates in order to assure accuracy and consistency in the boundary delineation. Technical changes at CBNMS include clarifying that submerged lands are part of the Sanctuary, and making minor changes to the Sanctuary manager permitting requirements. At GFNMS, technical changes include clarifying that submerged lands are part of the Sanctuary, protecting cultural resources, administrative technical changes for vessel regulation, and modifying permit regulations. For MBNMS, technical changes include corrections to the Sanctuary boundaries, managing submerged lands, and protecting wildlife. All such changes are summarized in Section 2.6.

ES.3 Summary of Impacts

Tables ES-1, ES-2, and ES-3 provide a summary of the impacts identified for the Proposed Action, the Alternative Regulatory Actions, and the No Action alternative, respectively.

The Proposed Action would result in no significant adverse impacts; less than significant adverse impacts on commercial fisheries, land use and development, marine transportation, public access and recreation, and socioeconomics; and beneficial impacts on air quality, biological resources, ocean/geological resources, water quality, commercial fisheries, cultural resources, hazardous materials, land use and development, marine

transportation, public access and recreation, research and education, socioeconomics, and visual resources. No significant unavoidable impacts would occur as a result of the Proposed Action.

The Alternative Regulatory Actions would result in a significant, but mitigable impact on recreational resources from the prohibition of MPWCs throughout MBNMS; less than significant adverse impacts on commercial fisheries, marine transportation, public access and recreation, and socioeconomics; and beneficial impacts on air quality, biological resources, ocean/geology, water quality, commercial fisheries, cultural resources, hazardous materials, public access and recreation, research and education, socioeconomics, and visual resources.

The No Action alternative would result in less than significant impacts on biological resources and water quality. There would be no beneficial impacts from No Action.

NOAA issued a Supplemental DEIS in March 2008 to address revised discharge prohibitions for vessels 300 GRT or more. In summary, the impact analysis in the DEIS is not changed. These prohibitions would result in less than significant impacts on marine transportation. The proposed prohibition would result in slightly beneficial impacts on air quality and climate, biological resources, water quality, commercial fisheries, hazardous wastes and waste disposal, land use and development, marine transportation, public access and recreation, research and education, socioeconomic, demographic, and environmental justice.

**Table ES-1
Impacts of Proposed Action**

Location	Proposed Regulatory Change	Air Quality	Biological Resources	Ocean/ Geological	Water Quality	Fisheries	Cultural	Hazards	Land Use/ Development	Marine Transportation	Public Access/ Recreation	Research and Education	Socio-economics	Visual	Summary
CC	Cruise Ship Definition and Discharges	+	+	○	+	+	○	+	○	⊙	+	+	+	+	⊙+
CC	Discharge - MSDs and Graywater	+	+	○	+	⊙+	○	+	⊙+	⊙	+	+	⊙	+	⊙+
CC	Discharge Regulations Clarifications	+	+	○	+	⊙+	○	+	⊙+	⊙	+	+	⊙+	+	⊙+
CC	Introduced Species	○	+	○	+	⊙+	+	+	⊙+	⊙	+	+	⊙+	○	⊙+
CB	Benthic Habitat Protection	○	+	+	○	+	+	○	○	○	+	○	○	○	○+
CB	Seabed Protection	○	+	+	○	+	+	+	○	○	+	○	○	+	○+
CB	Wildlife Disturbance	○	+	○	○	○	○	○	○	○	+	○	+	○	○+
GF	Cultural Resources	○	○	○	○	○	+	○	○	○	+	○	+	○	○+
GF	Deserted Vessels	+	+	○	+	⊙+	+	+	○	○	+	+	⊙+	+	⊙+
GF	Manager Permit	○	○	○	○	○	○	○	○	○	○	○	○	○	○
GF	Oil and Gas Clarification	○	+	+	+	○	○	+	○	○	+	○	○	○	○+
GF	Discharge From Outside the Sanctuary	○	+	○	+	+	○	+	⊙+	⊙+	○	+	○	○	⊙+
GF	No-Anchoring Seagrass Protection Zones	○	+	○	+	+	○	○	○	⊙	⊙	○	○	○	⊙+
GF	White Shark Attraction/ Approaching	○	+	○	○	○	○	○	○	○	⊙	○	⊙	○	⊙+
GF	Wildlife Disturbance	○	+	○	○	○	○	○	○	○	+	○	○	○	○+
MB	Boundary Changes – Davidson Seamount	+	+	+	+	⊙+	+	+	○	○	○	+	⊙	+	⊙+

Table ES-1
Impacts of Proposed Action *(continued)*

Location	Proposed Regulatory Change	Air Quality	Biological Resources	Ocean/ Geological	Water Quality	Fisheries	Cultural	Hazards	Land Use/ Development	Marine Transportation	Public Access/ Recreation	Research and Education	Socio-economics	Visual	Summary
MB	Cultural Resources	○	○	○	○	○	○	○	○	○	○	○	○	○	○+
MB	Deserted Vessels	+	+	○	+	⊙+	+	+	○	○	+	+	⊙+	+	⊙+
MB	Dredge Disposal – Santa Cruz and Monterey Harbors	○	○	○	○	○	+	○	○	○	○	○	○	○	○+
MB	Dredge Disposal – SF-12	+	+	+	+	○	+	○	○	○	+	+	○	+	○+
MB	Motorized Personal Watercraft	+	+	○	+	○	○	+	○	○	⊙+	+	⊙+	+	⊙+
MB	White Shark Attraction and Approaching	○	+	○	○	○	○	○	○	○	○	○	○	○	○+
MB	Wildlife Disturbance	○	○	○	○	○	○	○	○	○	○	○	○	○	○
All	Cumulative Impacts	+	+	+	+	⊙+	+	+	○	⊙	+	+	+	+	⊙+
	Summary	+	+	+	+	⊙+	+	+	⊙+	⊙	⊙+	+	⊙+	+	

Notes:

○ – No impact

+ – Beneficial impact

⊙ – Less than significant adverse impact

⊗ – Significant mitigable impact

● – Significant unavoidable impact

CC – Cross-Cutting Regulation

CB – Cordell Bank NMS

GF – Gulf of the Farallones NMS

MB – Monterey Bay NMS

**Table ES-2
Impacts under Alternative Regulatory Actions**

Location	Proposed Regulatory Change	Air Quality	Biological Resources	Ocean/ Geological	Water Quality	Fisheries	Cultural	Hazards	Land Use/ Development	Marine Transportation	Public Access/ Recreation	Research and Education	Socio-economics	Visual	Summary
CC	Cruise Ship Prohibition Alternative	+	+	○	+	+	○	+	○	⊙	+	+	+	+	○+
CB	Benthic Habitat Protection Alternative	○	+	+	○	⊙+	+	○	○	○	+	○	○	○	⊙+
CB	Seabed Protection Alternative	○	+	+	○	⊙+	+	+	○	○	+	○	○	+	⊙+
GF	White Shark Approach Prohibition	○	+	○	○	○	○	○	○	○	⊙	○	⊙	○	⊙+
MB	Davidson Seamount Circular Boundary Alternative	+	+	+	○	⊙+	+	+	○	○	○	○	○	+	⊙+
MB	Davidson Seamount NMSA Alternative	○	+	+	○	⊙+	+	+	○	○	○	○	○	○	○+
MB	Motorized Personal Watercraft Alternative	+	+	○	+	○	○	+	○	○	⊙+	+	⊙	+	⊙+
All	Cumulative Impacts	+	+	+	+	⊙+	+	+	○	⊙	+	+	+	+	⊙+

Notes:

○ – No impact

+ – Beneficial impact

⊙ – Less than significant adverse impact

⊙+ – Significant mitigable impact

● – Significant unavoidable impact

CC – Cross-Cutting Regulation

CB – Cordell Bank NMS

GF – Gulf of the Farallones NMS

MB – Monterey Bay NMS

**Table ES-3
Impacts under the No Action Alternative**

Location	Air Quality	Biological Resources	Ocean/ Geological	Water Quality	Fisheries	Cultural	Hazards	Land Use/ Development	Marine Transportation	Public Access/ Recreation	Research and Education	Socio-economics	Visual	Summary
CC	○	⊖	○	⊖	○	○	○	○	○	○	○	○	○	⊖
CB	○	○	○	○	○	○	○	○	○	○	○	○	○	⊖
GF	○	⊖	○	○	○	○	○	○	○	○	○	○	○	⊖
MB	○	⊖	○	○	○	○	○	○	○	○	○	○	○	⊖
All (Cumulative)	○	○	○	○	○	○	○	○	○	○	○	○	○	

Notes:

- – No impact
- + – Beneficial impact
- ⊖ – Less than significant adverse impact
- ⊗ – Significant mitigable impact
- – Significant unavoidable impact

- CC – Cross-Cutting Regulation
- CB – Cordell Bank NMS
- GF – Gulf of the Farallones NMS
- MB – Monterey Bay NMS



CHAPTER 1
PURPOSE AND NEED

SECTION 1

PURPOSE AND NEED

1.1 INTRODUCTION

This Final Environmental Impact Statement (FEIS), the fourth of four volumes, is the result of an extensive Joint Management Plan Review (JMPR) process at Cordell Bank National Marine Sanctuary (CBNMS), Gulf of the Farallones National Marine Sanctuary (GFNMS), and Monterey Bay National Marine Sanctuary (MBNMS), which are off the shore of northern/central California. Volumes I, II, and III contain the Final management plans (FMP) for each of the three Sanctuaries. These FMPs include information about the Sanctuaries' environment and resources, regulations and boundaries, staffing and administration, priority management issues, and actions proposed to address them over the next five years. Volume IV, this FEIS, is an evaluation of the potential environmental impacts of each Sanctuary's proposed regulatory actions (changes to Sanctuary regulations and designation documents) associated with the JMPR. The Proposed Actions and several alternative actions are described in Chapter 2 of this FEIS. The National Oceanic and Atmospheric Administration's (NOAA) National Marine Sanctuaries Program (NMSP) is the lead agency for this proposed project.

This FEIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code (U.S.C.) § 4321 et seq.) and its implementing regulations (40 Code of Federal Regulations (CFR) Parts 1500-1508). This FEIS presents to the decision makers and the public information required to understand the potential environmental consequences of the Proposed Action and alternatives.

The FEIS incorporates changes made as a result of public and agency comments on the Draft EIS and information from the related Draft Supplemental EIS issued in March 2008 (see Section 1.6).

1.2 BACKGROUND

1.2.1 National Marine Sanctuaries Act and National Marine Sanctuary Program

The National Marine Sanctuaries Act (NMSA) of 1972, as amended (16 U.S.C. § 1431 et seq.), is the legislative mandate that governs the NMSP. Under the NMSA, the Secretary of Commerce (the Secretary) is authorized to designate and manage areas of the marine environment as National Marine Sanctuaries. Such designation is based on attributes of special national significance, including conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities. The primary objective of the NMSA is resource protection.

The NMSA states that “while the need to control the effects of particular activities has led to enactment of resource-specific legislation, these laws cannot in all cases provide a coordinated and comprehensive approach to the conservation and management of the marine environment” (16 U.S.C. § 1431[a][3]). Therefore, per the NMSA, the NMSP will strive to improve the conservation and management of marine and cultural resources in the Sanctuaries and “maintain for future generations the habitat, and ecological services, of the natural assemblage of living resources that inhabit these areas” (16 U.S.C. § 1431[a][4][C]). This statutory finding compels administrators of the NMSP to take a broad and comprehensive management approach consistent with the NMSA’s primary objective of resource protection. The focus of such an approach is ecosystem-level protection and management. As such, ecosystem-based management serves as the framework for the proposed FMPs.

To date, thirteen National Marine Sanctuaries have been designated, and one national marine monument in the northwestern Hawaiian Islands is managed by NMSP with the U.S. Fish and Wildlife Service and the State of Hawaii. These Sanctuaries include both nearshore and offshore areas. Their designation provides protection for sensitive marine ecosystems, such as coral reefs and kelp forests, habitat used by important marine species, and historically significant shipwrecks and artifacts. In addition, the Sanctuaries are valuable educational, recreational, scientific, and commercially valuable resources. The mission of the NMSP is to “identify, protect, conserve, and enhance the natural and cultural resources, values, and qualities of the National Marine Sanctuary System for this and future generations.”

Resource protection for National Marine Sanctuaries is carried out by regulations under the NMSA, which are codified at 15 CFR Part 922, and through the issuance of permits and coordination with other local, state, and federal agencies and by outreach, education, research, monitoring, and enforcement.

The NMSP regulations include prohibitions on specific kinds of activities, descriptions of Sanctuary boundaries, and a permitting system to allow certain types of activities to be conducted within Sanctuaries that would otherwise be prohibited. Each of the thirteen National Marine Sanctuaries has its own set of site-specific regulations within subparts F through R of 15 CFR Part 922. The regulations for CBNMS, GFNMS, and MBNMS are found at Subpart K, H, and M. Proposed changes to these regulations constitute the Proposed Action for this EIS.

1.2.2 Joint Management Plan Review Process

A Sanctuary management plan is a site-specific planning and management document. Each Sanctuary has an individual management plan with a description of the regulations and boundaries, an outline of the staffing and budget needs, a description of the management actions and performance measures, and serves as a guide for developing future budgets and management activities.

The 1992 Congressional legislation that reauthorized the NMSA required that the administrators of the thirteen National Marine Sanctuaries engage in periodic management plan reviews to reevaluate site-specific goals and objectives, management techniques, and strategies (16 U.S.C. § 1434[e]). The purpose of this review process is to ensure that the natural living and cultural resources at each site are properly conserved and protected.

The NMSP reviewed the management plans of CBNMS, GFNMS, and MBNMS at the same time through a joint process, termed the Joint Management Plan Review (JMPR). These Sanctuaries are adjacent to one another, are managed by the same program, and share many of the same resources and issues. In addition, all

three sites have overlapping interest and user groups. It also has been more cost effective for the NMSP to review the three sites jointly rather than conducting three independent reviews.

The JMPR, initiated in 2001, involved four main phases: 1) issue identification (through public scoping meetings); 2) issue prioritization; 3) action plan development; and 4) draft management plan preparation, along with associated proposed regulatory changes and appropriate environmental impact documents. Using a community-based process that provided numerous opportunities for public input, the NMSP administrators examined the current issues and threats to the resources and determined the adequacy of the current management plans in protecting Sanctuary resources.

Priority resource management issues to be addressed in the management plans were identified by the program with input from their advisory councils and the general public. Working groups or internal teams were formed to address each of these priority issues. Working groups consisted of Sanctuary staff, members of the Sanctuary Advisory Council (SAC), experts, agency representatives, and the public. Internal teams consisted mainly of NMSP staff. The working groups and internal teams through the SAC helped develop the goals, strategies, and activities for each priority issue. The recommendations from the groups were compiled into action plans and presented to each Sanctuary advisory council for review, comment, and an assessment of priorities. Each Sanctuary advisory council provided specific recommendations to the NMSP on their site-specific and cross-cutting actions plans.

As a result of the JMPR process, numerous changes to management policies and regulations are proposed to reflect the updated goals, objectives, strategies, and actions. The revised management plans will guide the operation of the Sanctuaries, helping each Sanctuary manager to set budget and project priorities for resource protection in preparing the annual operating plan. Timelines and annual estimates are presented in the final management plans to assist staff in developing the Sanctuaries' annual operating plans, to assist the SACs in advising management on priority issues, and to help the public to better understand the approximate timeframes and costs needed to carry out the strategies and activities presented throughout the plans.

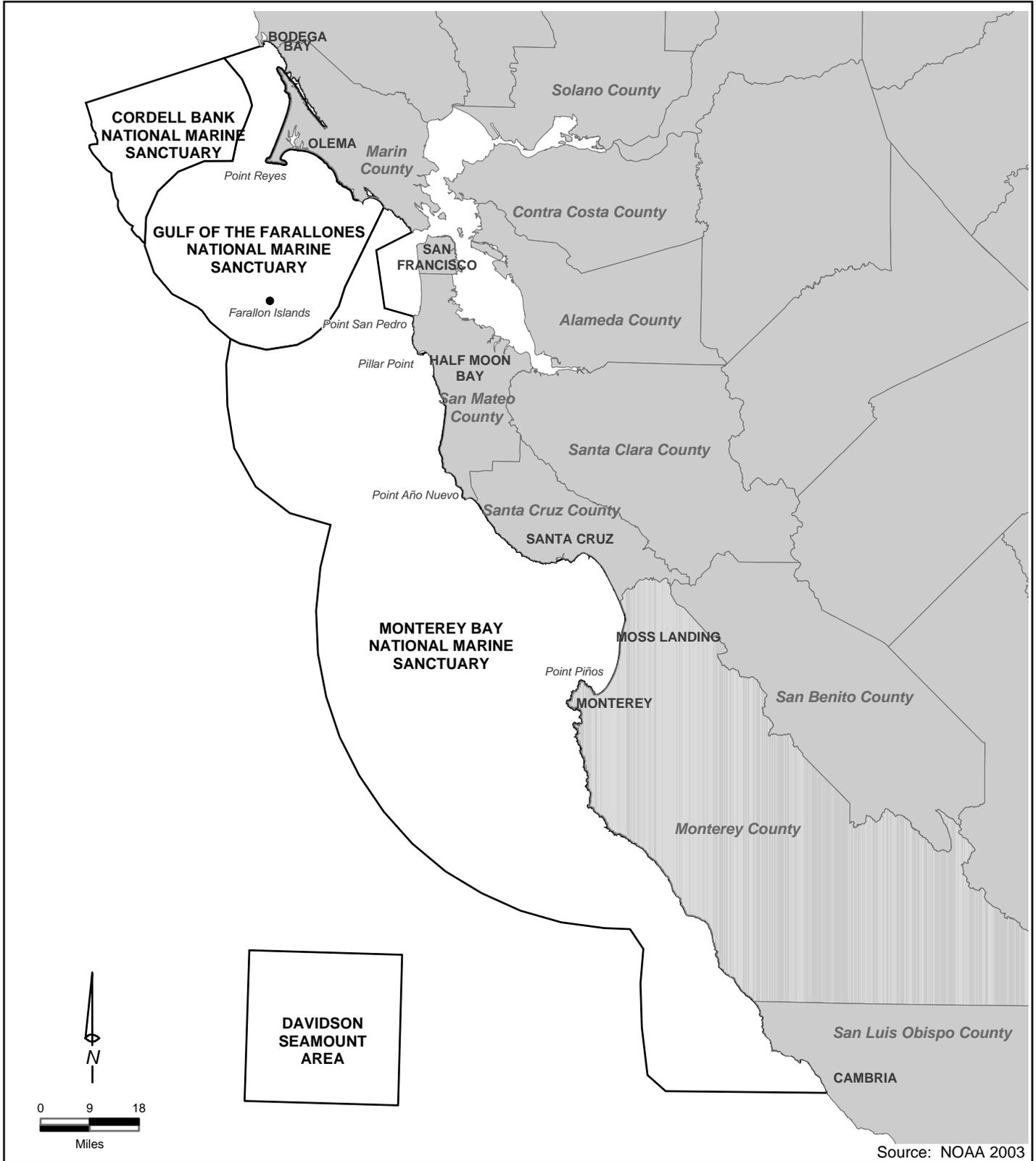
1.3 PROJECT LOCATION

All three Sanctuaries are located offshore of northern/central California. Figure 1-1 shows the regional location of the three Sanctuaries, including their boundaries and the surrounding area. The three Sanctuaries cover the coastal area from Bodega Bay in Sonoma County southward to Cambria in San Luis Obispo County, excluding San Francisco Bay and the seaward areas adjacent to San Francisco and northern San Mateo Counties.

Cordell Bank National Marine Sanctuary

CBNMS consists of an area of approximately 399 square nautical miles (526 square miles) of ocean waters, and the submerged lands thereunder, off the northern California coast. The main feature of the Sanctuary is Cordell Bank, an offshore granite bank 4.5 miles wide by 9.5 miles (7 kilometers [km] by 15 km) long, located on the edge of the continental shelf, about 43 nautical miles (49 miles; 80 km) northwest of the Golden Gate Bridge and 20 nautical miles (23 miles; 43 km) west of the Point Reyes lighthouse. CBNMS is entirely offshore and shares its southern and eastern boundary with GFNMS. The eastern boundary of CBNMS is six miles (9.6 km) from shore and the western boundary is the 1,000-fathom isobath on the edge of the continental slope. This area contains unique geological and oceanic features that create conditions that support extraordinarily diverse and abundant marine life.

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The JMPR study area covers over 5,000 square nautical miles of open ocean.

Joint Management Plan Review Study Area

Northern/Central California

Gulf of the Farallones National Marine Sanctuary

GFNMS consists of an area of 966 square nautical miles (1,281 square miles) of coastal and ocean waters and the submerged lands thereunder, along and off the coast of northern California. GFNMS is just north of San Francisco, extending seaward from the mean high water mark or the seaward boundary of the Point Reyes National Seashore. Between Bodega Head and Point Reyes Headlands, the Sanctuary extends seaward to three nautical miles beyond territorial waters. The Sanctuary also includes the waters within 12 nautical miles (13.8 miles; 21.6 km) of Noonday Rock and the mean high water mark on the Farallon Islands, and the waters between the islands and the mainland from Point Reyes Headlands to Rocky Point. The Sanctuary includes Bolinas Bay and Lagoon, most of Tomales Bay, Estero Americano, Estero de San Antonio, and Bodega Bay (excluding Bodega Harbor). This area was designated a Sanctuary because its waters provide important marine and nearshore habitats for a diverse array of marine mammals and marine birds, as well as fishery, plant, algae, and benthic resources. The marine mammals and seabirds present in abundant numbers on the Farallon Islands and the mainland coast depend as much on the integrity and productivity of these adjacent ocean and estuarine waters as on the preservation of the shore areas they use for breeding, feeding, and hauling out.

Monterey Bay National Marine Sanctuary

MBNMS is offshore of California's northern/central coast, adjacent to and south of GFNMS. It stretches along the shoreline a length of 276 miles (444 km) between the Marin Headlands and Cambria and encompasses 4,017 square nautical miles (5,322 square miles or 13,776 square km) of ocean, extending an average distance of 30 miles (48 km) from shore. Supporting one of the world's most diverse marine ecosystems, it is home to numerous mammals, seabirds, fishes, invertebrates, and plants in a remarkably productive coastal environment. The Sanctuary's natural resources include the nation's largest kelp forests, one of North America's largest underwater canyons, and the closest to shore deep ocean environment in the continental United States. MBNMS was established to protect and manage the conservation, ecological, recreational, research, educational, historical, and esthetic resources and qualities of the area.

1.4 PURPOSE AND NEED OF PROPOSED ACTION

The purpose and need for the Proposed Action are based on both statutory requirements for management plan review and the need to address current management issues and concerns within each Sanctuary.

Management Plan Update

No formal reviews or revisions of the three Sanctuary management plans or regulations have occurred since the time of original designation. CBNMS was designated in 1989, GFNMS was designated in 1981, and MBNMS was designated in 1992. The NMSP is required to review each Sanctuary management plan at five-year intervals and to revise the management plan and regulations as necessary to fulfill the purposes and policies of the NMSA (16 U.S.C. § 1434[e]). Therefore, the primary purpose of and need for the Proposed Action is to review and update the three Sanctuary management plans and regulations to comply with the NMSA.

Sanctuary administrators review management plans to accomplish the following:

- Evaluate substantive progress toward implementing the management plan and goals;
- Evaluate the effectiveness of site-specific management techniques and strategies;
- Determine necessary revisions to the management plan and regulations;

- Prioritize management objectives; and
- Inform and involve the general public and Sanctuary constituents in developing Sanctuary management priorities and strategies planned for future years.

For CBNMS, GFNMS, and MBNMS, there are additional reasons for revising the original management plans. For all three Sanctuaries, the review process provides an opportunity to take a closer look at how the environment has changed over the past 10 to 20 years since inception of the original management plans, to understand the cause and effect relationship of human activity and natural perturbations on the marine resources, and to determine how best to reshape and restructure management activities to address priority issues. Furthermore, new threats to Sanctuary resources have emerged that require new approaches in resource management. New management plans are needed to reflect these changes and to guide actions that can achieve effective conservation and management of Sanctuary resources. Also, for CBNMS and GFNMS, it was necessary to revise the original management plans and associated regulations to make them consistent with newer Sanctuary provisions. For MBNMS, the review of the management plan made it clear that recent scientific discoveries, advancements in managing marine resources, and new resource management issues were not adequately addressed in the 1992 plan.

Stemming from issues raised in the public scoping process, Sanctuary staff, Sanctuary advisory councils, public forum groups, and NMSP leadership contributed to the identification of priority resource management issue categories to be considered in the new management plans.

The FMPs (volumes I, II, and III of this document) address the above-listed resource management issues in issue-specific action plans (see Appendix B for a list of action plans). The CBNMS FMP includes five action plans, the GFNMS FMP includes nine action plans, and the MBNMS FMP includes 22 action plans. In addition, there are five cross-cutting action plans that outline joint implementation strategies for the three Sanctuaries. The action plans contain specific strategies and activities that identify how the Sanctuary administrators will address the various marine management issues, including the necessary research, monitoring, education, outreach, policy, or enforcement actions to be implemented. Each action plan is an outline of how different strategies will be conducted, the costs that might be incurred for each strategy, a coordinated timeline for carrying out all strategies, and performance indicators as a measure of management effectiveness.

Proposed Changes to Sanctuary Regulations

For some resource management issues, it is necessary to modify existing Sanctuary regulations (15 CFR Part 922, Subparts H, K, and M) to better manage and protect the resources. In some circumstances, Sanctuary administrators need to regulate new activities occurring or that may occur within Sanctuary boundaries in order to protect and conserve resources. Therefore, specific regulatory changes proposed and analyzed in this FEIS address several of the above-listed priority resource management issues (see Chapter 2 for full descriptions of the proposed regulatory changes). Note that only a small portion of the action plans would require regulatory changes, thus the regulatory changes are essentially a small subset of the overall strategies to address priority issues established in the FMPs. There is a broad suite of education, outreach, research, monitoring, and resource protection activities that have been identified during the management plan review that do not involve regulatory changes.

Meeting NMSP Goals

The proposed regulatory changes presented in this FEIS and the action plans in the FMPs are all needed to help each Sanctuary better meet the following purposes and policies of the NMSP (15 CFR Part 922.2[b]):

- To identify and designate as National Marine Sanctuaries areas of the marine environment that are of special national significance and to manage these areas as the National Marine Sanctuary System;
- To authorize comprehensive and coordinated conservation and management of these marine areas and activities affecting them, in a manner that complements existing regulatory authorities;
- To maintain the natural biological communities in the National Marine Sanctuaries and to protect and restore and enhance natural habitats, populations, and ecological processes;
- To enhance public awareness, understanding, appreciation, and wise and sustainable use of the marine environment and the natural, historical, cultural, and archeological resources of the National Marine Sanctuary System;
- To support, promote, and coordinate scientific research on and long-term monitoring of the resources of these marine areas;
- To facilitate, to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;
- To develop and implement coordinated plans to protect and manage these areas with appropriate federal agencies, state and local governments, Native American tribes and organizations, international organizations, and other public and private interests concerned with the continuing health and resilience of these marine areas;
- To create models of and incentives for ways to conserve and manage these areas, including the application of innovative management techniques; and
- To cooperate with global programs encouraging conservation of marine resources.

Changes to Sanctuary Designation Documents

As part of the Sanctuary designation process, the NMSA requires publication in the *Federal Register* of a Sanctuary designation document, which is separate from the management plan and regulations. The designation document outlines the terms of a Sanctuary's designation, including the geographic area, the characteristics of the area that give it conservation, recreational, ecological, historical, research, educational, or esthetic value, and the types of activities that could be subject to regulation to protect those characteristics.

When contemplating changes to Sanctuary regulations, such changes must be within the scope of authority established in the Sanctuary designation document. In some cases, a proposed regulatory change may necessitate corresponding changes to the designation document to establish authority for the new or modified regulation. In the case of the three Sanctuaries' JMPR process, in addition to the nonregulatory strategies and activities developed to address priority issues, there are some specific boundary and regulatory changes under consideration that would require changes to the Sanctuary designation documents. The revisions are narrow in scope, corresponding directly to several proposed regulation changes.

Since Section 304(a)(4) of the NMSA requires that “terms of designation may be modified only by the same procedures by which the original designation is made,” the proposed changes to a Sanctuary’s designation documents require preparation of an EIS, regardless of the significance of the effects of the changes.

Proposed revisions to the terms of designation for each Sanctuary are identified in Chapter 2.

1.5 SCOPE OF EIS

NEPA requires federal agencies to prepare an environmental document to thoroughly assess the environmental impacts of major federal actions that could significantly affect the human environment. The proposed regulatory changes in this management plan review have been specifically developed to facilitate improved Sanctuary management of identified priority resource management issues. Therefore, new regulations are intended to protect Sanctuary resources and generally reduce impacts of human activities on the environment. Even so, it is necessary to fully disclose and document the potential adverse and beneficial environmental effects of the proposed regulatory actions in a public process, consistent with NEPA and CEQ regulations implementing NEPA.

Additionally, because Section 304(a)(4) of the NMSA requires that “terms of designation may be modified only by the same procedures by which the original designation is made,” the proposed changes to a Sanctuary’s designation documents require a NEPA process and analysis within an EIS regardless of the significance of the impacts of the alteration. As such, the proposed regulatory changes are presented and assessed within this FEIS because some of them relate to associated proposed changes to the Sanctuaries’ designation documents.

This FEIS evaluates the environmental impacts associated with the proposed regulatory actions and alternatives to the proposed regulatory actions. The Proposed Action in this FEIS consists of revising CBNMS, GFNMS, and MBNMS regulations and revising the Sanctuary designation documents. Alternatives to the Proposed Action consist of slight variations in the proposed regulations. Specific regulatory changes contained within the Proposed Action and Alternative Regulatory Actions are described in detail in Chapter 2 of this FEIS and are analyzed in terms of impacts in Chapter 3 of this FEIS.

Numerous proposed regulatory changes are minor technical or administrative modifications that do not result in effects on the environment. These types of changes are noted in the project description (Chapter 2) and in the introduction to the environmental analysis in Chapter 3. This FEIS focuses on the regulatory changes that could affect the environment.

Finally, this FEIS presents proposed changes to each Sanctuary’s terms of designation (see Chapter 2). As described in Section 1.4, in order to implement many of the regulatory changes included in the Proposed Action, the NMSP would need to modify each of the three Sanctuary terms of designation describing particular types of activities subject to Sanctuary regulation.

This FEIS is not an analysis of all activities in the proposed FMPs. The bulk of the three updated management plans are nonregulatory management strategies and actions that Sanctuary staff and their partners will use to address priority issues identified during the management plan review process. The action plans include targeted research, monitoring, education, outreach, coordination, and resource protection activities. Implementation of the Proposed Actions within the FMPs, individually and cumulatively, will have

no significant impact on the environment. The non-regulatory actions identified in the FMPs can be implemented independently from the proposed regulatory actions and are not dependent on approval of the proposed regulatory changes. Any future agency “significant action” will be address at that time in a separate environmental assessment.

1.6 REVISIONS TO DEIS

This FEIS is composed of the original DEIS, with revisions made in response to comments on the proposed regulatory actions, the DEIS analysis, and on the Supplemental DEIS. Some public and agency comments warranted corrections, revisions, or clarifications of the DEIS text, which were made, where relevant to the impact analysis. The Proposed Actions (proposed changes to Sanctuary regulations) were also slightly revised, as a result of public and agency comments on the DEIS. These changes are reflected in Chapter 2 (Project Description) and the impact analysis was adjusted accordingly. Most of the changes to the Proposed Actions were technical, not requiring substantive revisions to the overall impact analysis. A summary of the key revisions is provided below.

Changes in Proposed Action

The following list reflects the nontechnical changes made to the proposed Sanctuary regulations after the release and review of the DEIS. These changes are incorporated into Chapter 2 and Chapter 3 of this FEIS.

- **Motorized Personal Watercraft (MPWC) Zones**—Establishment of a new zone at Mavericks and regulations in MBNMS regarding that zone. The zone regulation is explicit regarding the wave height and calendar month restrictions on the new zone. The proposed definition of MPWC remains the same as that analyzed in the DEIS. With the addition of the new zone, impacts on public recreation were determined to be less than significant.
- **Introduced Species Definition**—Minor modification, to replace the term ”material” with the term “matter.”
- **CBNMS Regulation – Seabed Protection (Anchoring)**—Additional language has been added to clarify NOAA’s intent in the proposed regulation. The intent of the proposed prohibition is consistent with the wording, as drafted. The regulation does not prohibit anchoring of any type on the mud bottom of the Sanctuary, so anchoring for both lawful fishing and other uses is allowed outside the 50-fathom line. Also, the regulatory language was modified for clarity regarding bottom contact fishing inside 50 fathoms surrounding Cordell Bank.
- **Cruise Ship Discharges – Cooling Water**—Modification to proposed CBNMS and GFNMS exceptions to be consistent with MBNMS exceptions for cooling water and anchor wash.
- **Discharge – All Vessels 300 gross tons (GRT)**—See discussion in following subsection regarding Supplemental DEIS.
- **Discharge Recreation and Small Vessels – Biodegradable vs. Clean**—Replaced the term “biodegradable” with “clean” and added definition of “clean.”
- **Replacement of the term “traditional fishing” with “lawful fishing”**—Modified this term in the regulations of all three Sanctuaries.
- **GFNMS Exception to Altering Submerged Lands**—Modified exception for “bottom trawling from a commercial fishing vessel” to “while conducting lawful fishing operations.”

Incorporation of Supplemental DEIS

On May 11, 2007, NOAA received a request from the California State Water Resources Control Board to prohibit discharges from certain vessels in National Marine Sanctuaries off the shore of California. After reviewing public comments on the proposed regulations and further analyzing vessel discharge issues, NOAA decided to revise the CBNMS, GFNMS, and MBNMS proposed discharge regulations to prohibit discharges of all sewage from vessels 300 GRT or more with sufficient holding tank capacity to hold sewage, while within the Sanctuary. NOAA also decided in the MBNMS to limit the exception for gray water discharges to vessels of less than 300 GRT, and vessels 300 GRT or more without the capacity to hold gray water while within the MBNMS. The revised proposed regulations include prohibitions consistent with the request from the State of California for the CBNMS, GFNMS, and MBNMS.

NOAA issued a Supplemental DEIS in March 2008 to address these revised discharge prohibitions. These revisions are included in the Proposed Actions listed in Chapter 2 of this FEIS. In summary, the revised prohibitions do not change the findings of the DEIS. These prohibitions would result in less than significant impacts on marine transportation. Information from the Supplemental DEIS is incorporated into the impact analysis in Chapter 3 of this FEIS.

Other Revisions to DEIS

In addition to the above revisions, clarifications were provided to several issue discussions, including the following:

- Additional details on seagrass were added to the biological resources sections;
- Information about fishing closures within the Sanctuaries was updated;
- Miscellaneous data in the commercial fishing affected environment was clarified; and
- The intent of the proposed introduced species prohibition was clarified, in regard to existing mariculture in Tomales Bay.

1.7 DECISIONS TO BE MADE

Decisions related to the Proposed Action in this FEIS include the following:

- Approval of the updated management plans for each of the three Sanctuaries;
- Approval of proposed changes to regulations for each of the three Sanctuaries; and
- Approval of proposed changes to the designation documents for each of the three Sanctuaries.

1.8 AGENCY COORDINATION

The CEQ defines the rights and responsibilities of cooperating agencies in Section 1501.6 of the CEQ regulations. At the request of the lead agency, any other federal agency that has jurisdiction or that has special expertise with respect to any environmental issue will be a cooperating agency. No federal agencies were formally requested to be cooperating agencies, nor have any federal or state agencies requested this status. Nonetheless, NOAA is working closely with a variety of pertinent resource agencies on the MPs, the proposed regulations, and the EIS.

NOAA has sought the input of numerous federal, state, and local officials and agencies in preparing this FEIS. These officials and agencies are listed in Chapter 6.

1.9 PUBLIC INVOLVEMENT

According to CEQ regulations, federal agencies are required to “make diligent efforts to involve the public in preparing and implementing their NEPA procedures” (40 CFR § 1506.6[a]). The following section outlines public involvement in the Joint Management Plan Review process.

Scoping

One aspect of public involvement is the comment process. Public involvement begins with notice of scoping meetings, followed by the release of the DEIS to persons and agencies that may be interested in or affected by the proposed project and to those who have requested a copy. Public involvement extends to any NEPA-related public hearings or meetings (40 CFR § 1506.6[b]). Soliciting public comment begins when the NOI is published in the Federal Register and continues through the preparation of the EIS.

On November 8, 2001, NOAA published an NOI in the *Federal Register*, which notified the public of the Proposed Action, announced the twenty public scoping meetings, and solicited public comments (a copy of this NOI is in Appendix A). In conjunction with the publication of the NOI, a JMPR web site (<http://sanctuaries.nos.noaa.gov/jointplan/>) was launched to serve as a clearinghouse of project information while the EIS is being developed. The web site provides up-to-date information on the Proposed Action. A link is also available for web site visitors to submit comments about the project.

Beginning on November 28, 2001, and lasting until January 17, 2002, the NMSP held 20 public scoping meetings in communities throughout the ROI, from Gualala to San Luis Obispo, and one meeting each in Sacramento and Washington, D.C. Approximately 1,000 people participated in these forums and provided input on specific issues they saw as management priorities. After the meetings, Sanctuary staff compiled all of the comments raised at the meetings and posted them on the JMPR web site. A summary report of the JMPR scoping activities is provided in Appendix A.

In addition to public scoping meetings, the program accepted written comments from early November 2001 to early February 2002. Comments were provided in the form of e-mails, letters, faxes, and a standard form (handed out at scoping meetings and provided on the website). As of February 14, 2002, the program received approximately 8,500 written comments via emails, letters, faxes, and a petition with 1700 signatures.

Prioritization of Issues

In addition to formal scoping, the NMSP staff held a series of workshops with their Sanctuary Advisory Councils to help them identify priority issues. The results from the workshops were published in a report and posted on the project Web site for additional public comment and further deliberation at Sanctuary advisory council meetings. Based on input from the public and the advisory councils, the NMSP selected a final list of priority issues to be addressed in the JMPR. These were also posted on the Web site.

Development of Action Plans

During meetings over a four to six month time period, issue-based working groups (composed of staff, experts, agency representatives, and the public) developed action plans, which were then presented to each Sanctuary Advisory Council at public meetings. Each advisory council reviewed their site-specific and cross-

cutting action plans and, after consultation with their respective constituents, provided their recommendations to NOAA. These action plans, which are listed in Appendix B, form the core foundation of the FMPs. The documents described above are available for viewing on the Internet at <http://www.sanctuaries.nos.noaa.gov/jointplan/>.

Public Review of the Draft, Supplemental Draft, and Final EIS

A 90-day public review period was provided following publication of the DEIS in October 2006. Availability of the DEIS was announced in the Federal Register, on various e-mail lists, on the project Web site, and in local newspapers. In addition, copies of the DEIS were available for review in numerous locations, such as libraries, throughout the study area. Seven public hearings were held during the comment period.

During the public comment period, oral and written comments were received from federal, state, and local agencies and officials, from organizations, and from interested individuals. At the end of the public comment period, the comments were reviewed, discussed, and summarized. Responses to substantive comments on the DEIS were prepared and revisions were made, as deemed necessary. A summary of these comments and the corresponding responses are included in this FEIS (see Chapter 7).

As described in Section 1.6, a Supplemental DEIS was issued in March 2008 to address revisions to the proposed discharge prohibitions (see Appendix A for the NOI for Supplemental DEIS). A 30-day public review period was provided for the Supplemental DEIS. Responses to comments on the Supplemental DEIS are included in Chapter 7 of this FEIS.

With the issuance of this FEIS, a 30-day mandatory waiting period will occur, and then NOAA may issue its record of decision (ROD). A notice of the availability of the ROD will be placed in the Federal Register.

1.10 RELATED STUDIES

Other studies and processes that are closely related to the JMPR have been completed or are being conducted by federal agencies. These documents include the following:

A Biogeographic Assessment off Northern/Central California: To Support the Joint Management Plan Review for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries: Phase I - Marine Fishes, Birds and Mammals. NOAA National Centers for Coastal Ocean Science (NCCOS) December 2003. Silver Spring, Maryland.

A Socioeconomic Overview of the Northern and Central Coastal California Counties as They Relate to Marine Related Industries and Activities: Preliminary Internal Draft, April 2003. R. Ehler, V. R. Leeworthy, and P. C. Wiley. NOAA's National Ocean Service.

Alternatives Analysis of Proposed Management Actions for Davidson Seamount and Cordell Bank. Prepared for the Pacific Fishery Management Council, November, 2004. NOAA's National Marine Sanctuary Program.

Trends in Fisheries and Fishery Resources Associated with the Monterey Bay National Marine Sanctuary from 1981 – 2000. R. M. Starr, J. M. Cope, and L. A. Kerr. 2002. Publication No. T-046. California Sea Grant College Program.

Socioeconomic Profile of Fishing Activities and Communities Associated with the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries. A. Scholz, C. Steinback, S. Klain, and A. Boone. 2005. 122pp.

1.11 ORGANIZATION OF FEIS

Chapter 1 (Purpose and Need) is a background discussion of the NMSP, the JMPR process, the NEPA process, and the purpose and need for the Proposed Action.

Chapter 2 (Description of the Proposed Action and Alternatives) consists of adopting revisions to existing CBNMS, GFNMS, and MBNMS regulations. This chapter also includes a description of several alternatives to the Proposed Action, the No Action alternative, and alternatives identified but removed from consideration.

Chapter 3 (Affected Environment and Environmental Consequences) is a description of the existing conditions in the study area to provide a baseline for assessing environmental impacts that may occur. The chapter includes an evaluation of potential impacts on the physical and biological environment, historical resources, and human uses, including socioeconomic impacts that may occur as a result of implementing the Proposed Action and alternatives. Direct, indirect, short-term, long-term, and cumulative impacts are evaluated. Potential mitigation measures for significant environmental impacts are discussed, if applicable.

Chapter 4 (Alternatives Summary) is a comparison of the alternatives and a summary of the impacts associated with each alternative.

Chapter 5 (Other Required NEPA Analyses) is a discussion of any irreversible and irretrievable commitment of resources, the relationship between short-term uses of resources and the maintenance and enhancement of long-term productivity, unavoidable impacts, and growth-inducing impacts.

Chapter 6 is proposed findings and determinations.

Chapter 7 provides the responses to comments on the DEIS and on the Supplemental DEIS.

Chapters 8 and 9 are the report preparers and references.

Chapter 10 is a glossary for the FEIS.

Appendices to support the analyses in the FEIS consist of the following:

Appendix A—Notices of Intent for the DEIS and Supplemental DEIS and Public Scoping Summary;

Appendix B—Summary of Proposed Action Plans; and

Appendix C— Biological Resources of the Study Area.

CHAPTER 2

**PROPOSED ACTION AND ALTERNATIVES
DESCRIPTION**

SECTION 2

PROPOSED ACTION AND ALTERNATIVES DESCRIPTION

This section is a description of the specific proposed regulatory actions for all three sanctuaries and identifies alternatives to the proposed actions. These include changes to the regulations for CBNMS, GFNMS, and MBNMS and corresponding changes to each sanctuary designation document. The Proposed Action represents NOAA's "preferred alternative" (Section 2.2). Also in this section is a description of the alternatives to the Proposed Action (Section 2.2), a definition of the No Action Alternative (Section 2.3), and a description of the alternatives that were initially considered but screened from full EIS analysis (Section 2.4). Included is a list of proposed changes to sanctuary designation documents (Section 2.5). The administrators of the NMSP have carefully considered state and federal authorities in proposing new regulatory authorities to ensure protection and management of sanctuary resources. Proposed new authorities are intended to complement existing authorities.

This project description incorporates regulation wording revisions, which resulted from comments on the Draft Proposed Rule and Draft EIS. It also incorporates the revised proposed discharge regulation addressed in the Draft Supplemental EIS, which was issued in March 2008.

Background

As described in Chapter 1, the proposed actions are a result of the JMPR conducted for the three sanctuaries over the past six years. During the JMPR, each sanctuary, through public working groups and internal teams, developed action plans to address priority resource management issues. Some of the action plans propose that the sanctuaries change their regulations to protect sanctuary resources. Certain proposed changes are related to site-specific issues and regulations, which are addressed by the individual sanctuary. Other issues were determined to apply to all three sanctuaries and are addressed in a coordinated fashion as "cross-cutting" measures.

In evaluating alternatives for analysis in the EIS, NOAA considered proposed regulatory changes appropriate for and consistent with achieving increased protection of the sanctuary's natural and cultural resources. With the proposed changes, the regulations would continue to prohibit a relatively narrow range of activities. The focus of this project description is on those components of the proposed regulations that have the potential to result in adverse environmental or socioeconomic effects. It is important to note that the proposed

regulatory changes are intended to further protect and conserve natural resources, thereby minimizing impacts on the environment. As described in Chapter 1, the administrators of the sanctuaries have the responsibility to manage natural resources and uses within their boundaries, with a focus on resource protection. Therefore, proposed regulatory changes as a whole would have little adverse impact on the environment and would generally provide beneficial effects. In addition, these regulatory changes would have minimal impacts on socioeconomics in the region. However, because the proposed regulation changes require modification of the sanctuary designation documents, the NMSA requires analysis of said changes via an EIS.

Proposed Action Definition

Section 1.5 of this FEIS clearly describes the scope of the analysis, which is focused on regulatory changes that are being proposed as part of the JMPR. The FEIS does not include detailed assessment of the individual priority issue-based action plans that are contained in the final management plans. None of the non-regulatory action plans would result in potentially significant adverse impacts on the environment or socioeconomic users. These action plans are summarized in Appendix B and are described in detail in each sanctuary's Final Management Plan (Volumes I through III).

2.1 DEVELOPMENT OF PROPOSED AND ALTERNATIVE REGULATORY ACTIONS

In developing the proposed action and alternatives for analysis in this EIS, NOAA considered possible regulatory changes that would be consistent with achieving increased resource protection and would be appropriate for inclusion in this management plan update. The following screening criteria were used for determining both the proposed actions and a range of reasonable alternatives:

- The alternative must be feasible;
- The alternative must be consistent with the purposes and policies of the NMSA;
- The alternative must be consistent with the purpose and goals of the management plan, which means that it must address resource management issues, generate beneficial environmental effects, and address uses or other activities that have an adverse effect on sanctuary resources;
- The alternatives should allow for the incorporation and consideration of recent or best available data and scientific knowledge;
- The alternative should maximize environmental benefits, while avoiding unnecessary adverse socioeconomic impacts;
- The alternative should remove obsolete requirements and improve the clarity of existing sanctuary regulations; and
- The alternative should, where appropriate, increase the consistency of regulations among the three sanctuaries.

Alternatives that were initially considered but that did not meet the screening criteria above are listed in Section 2.4, Alternatives Identified but Removed from Consideration.

2.2 PROPOSED AND ALTERNATIVE REGULATORY CHANGES

All sanctuaries are governed by NMSA regulations. Within the NMSA regulations, each sanctuary is managed by a set of individual site regulations that establish the sanctuary boundaries, administrative procedures,

definitions, and prohibited activities. Although each sanctuary has unique issues that are addressed by the regulations, there are many issues in common among the three sanctuaries. There also are inconsistencies between the regulations due in part to the fact that the sanctuaries were established at different times and have different resource issues, users, and communities. As part of the JMPR, regulations were reviewed to determine if modifications or clarifications were necessary to meet the original intent of a given regulation, to address new resource threats and changes in resource management issues and priorities, to eliminate inconsistencies between sites (if appropriate), and to make technical corrections. New regulations (or prohibitions) also are proposed by each of the three sanctuaries to provide added protection to sanctuary resources and to address specific resource management issues.

In several issues, the proposed change or new prohibition is the same for all three sanctuaries, but in some cases the proposed regulation may differ among the sanctuaries due to different conditions, circumstances, needs, and language used at the time of original designation. In the process of developing the updated management plans and reviewing the regulations, staff strived to make regulations consistent among the three sanctuaries, to the extent feasible. Many of the regulatory changes are technical and do not change the overall intent or application of a particular regulation.

The following text describes the suite of proposed and alternative substantive regulatory changes for each sanctuary. In some cases, the alternatives to the Proposed Action contain slightly more stringent regulatory language than the Proposed Action. The reader should note that alternative regulatory actions have been developed for some but not all of the proposed actions. In cases where the Proposed Action is very limited in scope and proposed changes are minor or technical clarifications, no suitable alternative exists other than the No Action alternative, which is described in Section 2.3.

Numerous minor or technical changes that do not change the intent of the regulations are not included in the following subsections. Table 2-1 (at the end of this chapter) provides a summary of the proposed and alternative substantive changes for each sanctuary. This table is not intended to compare regulations of the three sanctuaries but is provided as a reference to show proposed new prohibitions and existing regulations that are being modified. The full text of the regulations will be included in the Final Rule, if it is promulgated by NOAA.

2.2.1 Proposed Cross-Cutting Regulations in the Sanctuaries

Cross-cutting refers to regulatory issues that are common to all three sanctuaries. There are several regulatory changes that are proposed for all three sanctuaries. To avoid duplication, these changes are addressed in this section, and any minor differences between the sanctuaries are identified. The proposed cross-cutting actions present relatively minor regulatory changes for each of the three sanctuaries to address introduced species, cruise ship discharges, and other discharges. Table 2-1 is a summary of these cross-cutting regulatory changes. Each sanctuary must amend its own regulations to incorporate specific cross-cutting provisions.

Introduced Species Regulation

A priority issue identified during the management plan review was addressing the threat posed by releasing or otherwise allowing introduced species to enter marine ecosystems encompassed by the three sanctuaries. CBNMS, GFNMS, and MBNMS are located near San Francisco Bay, which is considered the most invaded aquatic ecosystem in the world, with over 255 introduced species. One of the recommended strategies from the working groups for addressing this issue was to consider a regulation prohibiting such releases or other introductions.

Introduced species (also known as nonnative or exotic species) in the marine and estuarine environment alter species composition, threaten the abundance and diversity of native marine species (especially threatened and endangered species), interfere with the ecosystem's function, and disrupt commercial and recreational activities. Introduced species may cause local extinction of native species either by preying on them directly or by out-competing them for prey or habitat space. For example, the European green crab, now found in Elkhorn Slough, Tomales Bay, Bodega Bay, Bolinas Lagoon, Estero de San Antonio, and Estero Americano, preys on the young of valuable species (such as oysters and Dungeness crab) and competes with them for prey and suitable habitats. Introduced species may cause changes in physical habitat structure. For example, burrows created by the isopod *Sphaeroma quoyanum*, originally from New Zealand and Australia, are found in banks throughout the Elkhorn Slough and may exacerbate the high rate of tidal erosion in the slough. Introduced species pose a significant threat to the natural biological communities and ecological processes in the sanctuaries and may have a particularly big impact on threatened and endangered species. Introduced species are a major economic and environmental threat to living resources and habitats in the sanctuaries, and once established, they can be extremely difficult to control or to eradicate.

Introduced species could pose significant economic threats by affecting industries, such as water and power utilities, commercial and recreational fishing, and agriculture. Examples from outside of the sanctuaries but around the US include the zebra mussel (\$3.1 billion in nationwide costs annually, primarily to water and power plants that are trying to keep it from clogging their intake pipes), the Asian clam (\$1 billion in costs annually to utilities, the fishing industry, and others), and the European green crab (\$44 million in costs annually to aquaculture, fishing, and other industries). These costs will be ongoing since aquatic introduced species are virtually impossible to eradicate once they become established.

Discharge of ballast water is a common source of introduced species. Many organisms carried in ballast water are in the larval or diapause (dormancy) stage of their life cycle. Once these species are discharged, estuaries and harbors provide optimal environments for their growth. Ballast water may contain adult copepods, as well, that are old enough to reproduce soon after entering the new environment. Viruses, bacteria, and other pathogens have also been identified in ballast water. With over 45,000 commercial cargo ships (6,000 of which enter or exit San Francisco Bay per year) transporting 10 billion tons of ballast water around the globe every year, the rate of introduced species is certain to grow if efforts to prevent introductions do not occur.

Introduced species also may be transported on commercial and recreational vessel hulls, rudders, propellers, intake screens, ballast pumps, fishing gear, and sea chests. Other vectors for spreading introduced species include recreational and research equipment, debris, dredging and drilling equipment, dry docks, and buoys. Organisms transported or used for research, restoration, education, aquariums, live bait, aquaculture, biological control, live seafood, and rehabilitated and released organisms also have the potential for accidental or intentional release into the marine/estuarine environment. Of additional concern are genetically modified species that either escape or are released into the ocean.

A new regulation is proposed to prohibit introducing or releasing introduced species from within or into the three sanctuaries. The sanctuaries intend to further prevent injury to sanctuary resources and to protect the integrity of the marine ecosystem by preventing the introduction of invasive species into the marine environment.

Although this regulation will not be completely effective in preventing the accidental release of introduced species, the regulation will provide a deterrent to deliberate releases and could help prevent unintentional introductions associated with specific planned programs or projects.

The only exceptions to this proposed regulation are: 1) striped bass (*Morone saxatilis*) released during catch and release fishing activity; and 2) (for GFNMS only) species cultivated by existing mariculture activities in Tomales Bay pursuant to a valid lease, permit, license or other authorization issued by the State of California and in effect on the effective date of the final regulation, provided that the renewal by the State of any authorization does not increase the type of introduced species being cultivated or the size of the area under cultivation with introduced species.¹ Striped bass were intentionally introduced in California in 1879, and in 1980 the CDFG initiated a striped bass hatchery program to support the striped bass sport fishery, which according to the CDFG is one of the most important fisheries on the Pacific Coast. The CDFG manages the striped bass fishery through a Striped Bass Management Conservation Plan. The proposed regulation would recognize that striped bass are the focus of an established state-managed sport fishery and may be caught and released within the Sanctuary. Commercial aquaculture has existed in the State of California since the 1850s and in Tomales Bay since the 1890s. There are currently 12 individual leases (6 companies) encompassing 513 acres of state bottomlands in Tomales Bay (Moore 2006). Most of the cultured oyster species are nonnative and have been introduced because they can be more efficiently cultured to produce a marketable product than native species. The nonnative oyster species are normally found in much warmer water than in California and are unable to spawn or reproduce in Tomales Bay. As such they have not “spread” outside of these mariculture areas.

In conjunction with this regulation, the following definition of introduced species is proposed for incorporation into the regulations for each sanctuary.

Introduced species means: (1) A species (including but not limited to, any of its biological matter capable of propagation) that is nonnative to the ecosystem(s) protected by the Sanctuary; or (2) any organism into which altered genetic matter or genetic matter from another species has been transferred in order that the host organism acquires the genetic traits of the transferred genes.

Discharge Regulation Clarifications

There are several new or modified discharge prohibitions and accompanying definitions that are proposed for the three sanctuaries. However, some wording of the proposed regulations differs among the sanctuaries to reflect their unique circumstances and needs (see Table 2-1). The discharge prohibitions are necessary to protect sanctuary resources and qualities from the effects of pollutants associated with discharges. Discharge prohibitions are already in place for the three sanctuaries, but amendments are necessary to make the prohibitions consistent among the sanctuaries, to the extent possible, and to increase protection from pollutants, particularly waste resulting from food on board vessels and sewage discharge. The general prohibition provides several exceptions, allowing specific types of materials to be discharged. The proposed revised regulations contain language improvements and clarifications in several areas. The modified regulations are not intended to prevent any current uses in the sanctuaries.

¹This second provision is intended to limit mariculture to existing leases, not necessarily existing footprints of active areas. If an existing mariculture activity takes place within a footprint smaller than the area allowed by the existing lease, the footprint could be expanded up to the limits of the lease area.

Vessel Discharges

The following slight wording changes are proposed regarding the discharge prohibition and exceptions, which narrow the range of acceptable discharges:

- All three sanctuaries propose modifying the prohibition to clarify that it applies to discharges from “within or into” the sanctuary (current regulations prohibit discharges only “within” the sanctuary) (“into” is intended to make clear that not only discharges and deposits originating in the Sanctuary [including from vessels in the Sanctuary], but also discharges and deposits from pipes landward of, or aircraft above, the Sanctuary, for example, are included in the prohibition);
- Exceptions for fish parts, chumming materials, or bait are clarified to apply to “lawful fishing activity”;
- Exceptions are no longer provided for meals onboard vessels, thus food and other wastes associated with meals could not be deposited overboard in CBNMS or GFNMS; and
- Engine cooling water and deck wash (applies to both the agent used to wash the deck as well as any material on the deck) exceptions are limited to clean materials; to clarify the meaning of “clean” a new definition is added as follows: “*not containing detectable levels of harmful matter.*”

Making these changes would improve consistency among each of the three sanctuaries and with the State Water Resources Control Board. Having common regulations will help improve understanding and compliance with regulations.

Vessel Discharge—Sewage, Graywater, and Use of Marine Sanitation Devices

A marine sanitation device (MSD) is equipment designed to receive, retain, treat, control, or discharge sewage and any process to treat such sewage. Pursuant to Section 312 of the Clean Water Act (CWA), all recreational boats with installed toilet facilities must have an operable MSD on board (33 USC § 1322). Vessels 20 meters (65 feet) and under may use a Type I, II, or III MSD. Vessels over 20 meters (65 feet) must have a Type II or III MSD. All installed MSDs must be Coast Guard-certified and must be so labeled, except for some holding tanks, which are certified by definition under Section 312 of the CWA.

The California Clean Coast Act, which became effective on January 1, 2006, prohibits large cruise ships and other oceangoing ships of 300 gross tons or more from releasing hazardous waste, oily bilge water, other waste, and sewage sludge into the marine waters of the state and marine sanctuaries. The Clean Coast Act also prohibits the release of graywater (also known as sullage; graywater under the Coastal Act is non-industrial wastewater generated from either domestic or shipboard processes such as washing dishes, laundry, cooking, bathing, etc.) from cruise ships and oceangoing ships with sufficient holding capacity into the marine waters of the state. Furthermore, the Clean Coast Act requires the State Water Resources Control Board to request the appropriate federal agencies to prohibit the release of wastes from cruise ships and oceangoing ships into state marine waters and the four National Marine Sanctuaries in California.

Based on this new state regulation, the proposed action for vessel discharges in the three sanctuaries was modified following the release of the JMPR Draft EIS. The proposed action is now consistent with the provisions of the California Clean Coast Act.

The proposed action would revise regulations to prohibit sewage discharges/deposits from within or into the CBNMS, GFNMS, and MBNMS from vessels of 300 gross registered tons (GRT) or more. The prohibitions would apply only to vessels with sufficient holding tank capacity to hold sewage while within the Sanctuary.

The proposed discharge exception reads as follows:

(B) For a vessel less than 300 gross registered tons (GRT) or a vessel 300 GRT or greater without sufficient holding tank capacity to hold sewage while within the Sanctuary, clean effluent generated incidental to vessel use by an operable Type I or II marine sanitation device (US Coast Guard classification) approved in accordance with section 312 of the Federal Water Pollution Control Act, as amended (FWPCA), 33 USC 1322 et seq. Vessel operators must lock all marine sanitation devices in a manner that prevents discharge of untreated sewage.

The proposed action would also amend the exception to the prohibition on discharging or depositing graywater from within or into the MBNMS. The revised regulation would provide an exception for vessels less than 300 GRT and vessels 300 GRT or greater that do not have enough tank capacity to hold graywater while within the MBNMS. Discharging graywater is already prohibited in the CBNMS and GFNMS, so this proposed regulation would apply only to MBNMS (see Table 2-1).

Current regulations require use of MSDs on vessels within the three sanctuaries. (Vessels without MSDs may enter the sanctuaries, but they are not allowed to discharge within sanctuary boundaries.) Although the existing exception for vessel wastes “generated by marine sanitation devices” was intended to prohibit the discharge of untreated sewage into the Sanctuary, the proposed change to this exception requires vessels 300 GRT or greater to hold treated sewage until they are outside of the sanctuary. For vessels less than 300 GRT (or larger vessels without sufficient holding capacity), the exception clarifies that such discharges are allowed only if generated by Type I or II MSDs throughout the waters of all three sanctuaries. The clarification would make it understood that discharge from a Type III MSD (a holding tank of untreated sewage) is prohibited. Additionally, the proposed regulation of requiring locks on valves preventing bypass and direct discharge of untreated sewage is meant to facilitate Coast Guard enforcement of this regulation to prevent accidental discharge and ensure proper function while vessels are in use. By securing the device, compliance with the regulation is easily detectable and unambiguous.

Cruise Ship Discharges and Definitions

Proposed Action

The proposed discharge regulations distinguish cruise ship discharges from all other vessel discharges. Although there are exceptions to the vessel discharge regulations for miscellaneous matter (see Table 2-1), the only discharges permitted from a cruise ship are clean vessel engine cooling water, vessel generator cooling water, and anchor wash.

Cruise ships will no longer be permitted to release materials listed in the general exceptions for other vessels. The implications of this regulation are that cruise ships will no longer be allowed to discharge biodegradable effluents, deck washdown materials, or fish, fish parts, or chumming materials into the sanctuary waters. Cruise ships will be required to contain their treated wastewater until outside sanctuary waters. In the future, if a pump-out facility is developed in San Francisco Bay, cruise ships could use that facility to discharge treated wastewater. Related to these regulations, a new definition of cruise ship is proposed (see Table 2-1), consistent among all three sanctuaries.

The purpose of regulating cruise ship discharges is to minimize adverse effects on the marine environment as a result of pollutant discharges. The main reason to distinguish cruise ship discharges from those of other vessels is because of the volume and types of discharges. . Despite the fact that cruise ships discharge waste from a single source, they are exempted from regulation under the CWA point source permitting system. The CWA allows the discharge of untreated black water (sewage) anywhere beyond three miles from shore and does not require any treatment of graywater or ballast water. In national marine sanctuaries, additional prohibitions against discharging graywater and sewage are applicable. Cruise ships are regulated by state and federal laws and regulations aimed at reducing air pollution, graywater, sewage, sewage sludge, and hazardous waste. However, despite these laws and regulations, cruise ships are currently still able to discharge large volumes of treated sewage and untreated graywater into the Sanctuaries.

Alternative Prohibition

The alternative to the prohibition on cruise ship discharges is to prohibit discharges or deposits into sanctuary waters that do not meet the minimum effluent water quality standards established by the Coast Guard in Alaska at 33 CFR 159, Subpart E (Discharge of Effluents in Certain Alaska Waters by Cruise Vessel Operations) provided that the owner/operator has satisfactorily demonstrated compliance with these standards to the sanctuary director prior to discharge or deposit. The intent is to ensure that these standards and requirements are adhered to in the three-sanctuary region, providing further protection for waters within and adjacent to the sanctuary. This alternative establishes specific water quality standards and lets the cruise ship industry determine the best and most economical method to achieve those standards and monitoring requirements.²

2.2.2 Cordell Bank National Marine Sanctuary Regulations

There are two related proposed regulations regarding protection of the seabed and benthic habitat on Cordell Bank. One regulation addresses protection from seabed disturbance, and the second regulation addresses taking or injuring benthic resources on and near the Bank. There is also a new prohibition regarding wildlife disturbance.

Seabed Protection Regulation

Proposed Action

The Bank is the centerpiece of the sanctuary and the primary reason for sanctuary designation. The Bank is roughly elliptical and lies within the 50-fathom (300 feet; 91 meters) depth contour. The Bank is 9.5 miles (15 km) long and 4.5 miles (7 km) wide. The management plan review process identified a need to better protect the fragile benthic invertebrate community living on the upper ridges and pinnacles of Cordell Bank. CBNMS sought to extend maximum protection to the core area of the Bank, within the 50-fathom isobath, to protect both the high relief of the Bank and the exceptional invertebrate assemblage on the Bank. The primary threats to the benthic resources on the Bank come from those activities such as fishing, drilling, dredging, and the placement of structures and materials that can physically alter the benthic structures and habitats.

²Since preparation of the DEIS, conditions have changed in Alaska regarding cruise ship discharge regulations. Rather than relying solely on the provisions of 33 CFR 159, the state of Alaska passed a ballot initiative in 2006, which established additional more restrictive discharge conditions under a new Commercial Passenger Vessel Environmental Compliance Program. The Alaska program is composed of a broad range of compliance measures that are not included in the alternative prohibition analyzed in this FEIS. The costs to the state of Alaska for administering the new program are covered by a berth tax that was part of the ballot initiative.

In order to protect Cordell Bank from activities that could alter the seabed, the NMSP proposes a new regulation that would prohibit any disturbance of the seabed, including construction, drilling, and dredging on or within the line representing the 50-fathom isobath depth contour around the Bank (see Figure 2-1). Lawful fishing would be allowed within this area and an additional exception for any type of vessel anchoring would be provided for the remaining areas of the Sanctuary (outside of the line representing the 50-fathom isobath contour). This regulation would be consistent with the provisions for other sanctuaries and would complement the existing regulation prohibiting the taking of invertebrates and marine algae on the Bank (see below). The proposed prohibition is as follows:

(i) On or within the line representing the 50-fathom isobath surrounding Cordell Bank, drilling into, dredging, or otherwise altering the submerged lands; or constructing, placing, or abandoning any structure, material or other matter on or in the submerged lands. This prohibition does not apply to bottom contact gear used during fishing activities, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific).

(ii) In the Sanctuary beyond the line representing the 50- fathom isobath surrounding Cordell Bank, drilling into, dredging, or otherwise altering the submerged lands; or constructing, placing, or abandoning any structure, material or matter on or in the submerged lands except as incidental and necessary for anchoring any vessel or use of any lawful fishing gear during normal fishing operations. This prohibition does not apply to bottom contact gear used during fishing activities, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific).

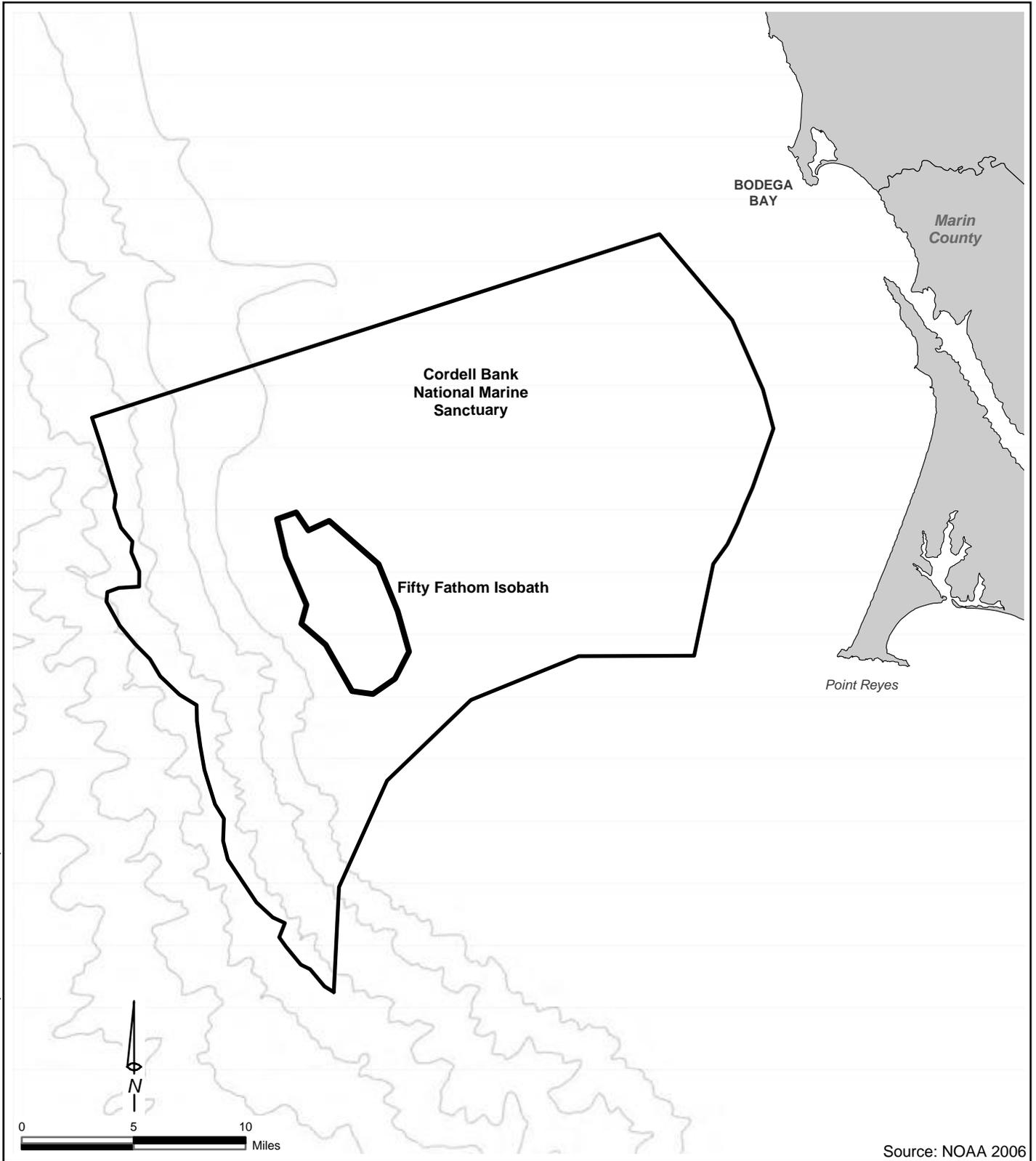
In conjunction with this proposed regulation, impacts on Cordell Bank from fishing activities would continue to be regulated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), 16 USC §§ 1801 et seq.. On May 11, 2006, NOAA published a final rule to implement regulatory provisions of Amendment 19 to the Pacific Coast Groundfish Fishery Management Plan (FMP) (71 FR 27408). This rule designated the area within the 50-fathom isobath of Cordell Bank as EFH, and implemented the following prohibitions as applicable within this area:

- Fishing with dredge gear anywhere in EFH;
- Fishing with beam trawl gear anywhere in EFH;
- Fishing with bottom trawl gear anywhere in EFH; and
- Fishing with bottom contact gear within the 50–fathom isobath surrounding Cordell Bank.

Thus, rather than amend Sanctuary regulations and the Cordell Bank Designation Document to restrict fishing activities that may harm the seabed, the Sanctuary will rely upon the amended MSA regulations for the Groundfish FMP to address fishing related impacts on Cordell Bank and limit its regulations to other non-fishing activities. Therefore, the NMSP is proceeding with a new prohibition against seabed disturbance (as defined above), but the prohibition would not restrict specific types of fishing gear.

As background to this dual proposal, the PFMC prepared a written letter response (April 22, 2005), to the NMSP's request for recommendations on the sanctuary's proposed amendments to its designation document (NMSA Section 303[b][2] consultation) and on recommendations on draft fishing regulations (NMSA Section 304[a][5] consultation). The PFMC indicated it could achieve the sanctuary's resource protection goals for Cordell Bank through the promulgation of regulations to support the Essential Fish Habitat (EFH) designation and associated management measures under Amendment 19 to the Groundfish Fishery

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Cordell Bank National Marine Sanctuary

Northern California

Management Plan. Implementation of these fishing regulations to protect benthic habitat on Cordell Bank is addressed in the NOAA Fisheries Draft EIS for groundfish EFH, published in February 2005. In summary, the FEIS identifies a range of alternatives that would regulate fishing on Cordell Bank. The alternatives are packaged within a comprehensive suite of measures to identify and conserve EFH for Pacific Coast groundfish. NOAA has determined that there is a credible basis for NOAA Fisheries to pursue prohibiting the use of all bottom-contact fishing gear within the 50-fathom isobath surrounding the Bank, and NOAA Fisheries has proposed this regulation as an amendment to the Groundfish Fishery Management Plan. The proposed regulatory language was determined by the NMSP to meet the intent of protecting the seabed on Cordell Bank from disturbance. A final EIS on the proposed NOAA Fisheries regulations was published in December 2005. The proposed regulations were published on January 12, 2006 (71 FR 1998) and the final regulations were published on May 11, 2006 (71 FR 27408). The effective date of the rule was June 12, 2006.

This proposed sanctuary prohibition, in combination with the NOAA Fisheries proposed prohibition, would maximize protection of the core area on the Bank and within a line representing the 50-fathom isobath around the Bank from activities that could affect the fragile relief of the Bank. This proposed regulation would ensure that the prominent geological features of the Bank, such as the pinnacles and ridges, are protected from permanent destruction from activities such as anchoring or exploration. Damage to the areas of the Bank with high relief would be permanent, as this granitic structure is not a renewable resource. Unlike habitats such as kelp forests and coral reefs, once the granite pinnacles have been compromised, there is no opportunity for recovery, and they will remain rubble. The pinnacles and ridges of the Bank provide a hard substrate for sponges, anemones, hydrocorals, hydroids, and tunicates to attach, as well as for scattered crabs, holothurians, and gastropods. This benthic coverage in turn provides important habitat and food for fishes and other living marine resources. This area is one of biological complexity, sensitivity and ecological importance.

This proposed regulation would specify the types of submerged lands alteration that would not be allowed, such as abandoning unwanted debris, wrecked vessels or seabed research equipment and fishing traps or cages.

For the balance of the Sanctuary outside the 50-fathom isobath surrounding the Bank, exceptions would be made for anchoring and lawful fishing activity so that activities already taking place on the soft bottom (that is, areas that could more easily recover from impact) would be allowed.

The following human use activities, which would be prohibited throughout the Sanctuary by the proposed regulation, may be found incompatible with the Sanctuary's primary purpose of resource protection and would be considered a threat to the sensitive habitat within the 50 fathom isobath surrounding Cordell Bank. Note that none of these activities are known to have occurred to date or are proposed in this area.

- **Salvage of Cultural Resources:** The abundance of shipwrecks along the California coast suggests that future underwater exploration of these resources is likely. Prehistoric use of the island, when the Bank was exposed during the last ice age, may also attract attention. Until recently, Cordell Bank and the surrounding seabed have been inaccessible due to location, depth, and currents. Improving technology, such as sonar, remotely operated vehicles, and manned submersibles, has reduced some constraints to exploration.

- Commercial submerged cables: Rapid expansion of communication technology has created a sudden demand for installing cables on the seafloor. Cable deployment in CBNMS is inappropriate because impacts on the submerged lands, the Bank, the benthic coverage of the Bank and soft bottom fauna are unpredictable.

Alternative Seabed Protection Regulation

As an alternative to the above proposal, the NMSP has identified regulatory language that could be adopted in the event that regulations protecting the seabed from bottom-contact fishing gear were not implemented through the MSA or were adopted in such a way as they did not meet the Sanctuaries' goals and objectives for protection of the Bank. Therefore, this alternative would meet CBNMS' goals and objectives, but through using the regulatory authority of the NMSA rather than the MSA. This alternative would allow lawful fishing but would exclude bottom contact gear, and thereby protect the Bank from fishing gear that could destroy, damage or injure benthic resources on the Bank.

(4)(i) Except incidental and necessary to lawful use of any fishing gear (other than bottom contact gear), during normal fishing operations: drilling into, or dredging; or otherwise altering Cordell Bank or the submerged lands within the line representing the 50-fathom isobath; or constructing, placing or abandoning any structure, material or other matter on the Bank or on the submerged lands within the line representing the 50-fathom isobath surrounding the Bank.

(ii) Except as is incidental and necessary for anchoring a vessel or use of any lawful fishing gear (other than bottom contact gear), during normal fishing operations: drilling into, dredging, or otherwise altering the submerged lands in the Sanctuary beyond the line representing the 50- fathom isobath surrounding Cordell Bank; or constructing, placing, or abandoning any structure, material or matter on the submerged lands in the Sanctuary beyond the line representing the 50-fathom isobath surrounding Cordell Bank.

The prohibition provides no exceptions within the 50-fathom isobath surrounding the Bank, except as incidental to gear types that do not directly target bottom habitat and disturb or damage the submerged lands. Thus, fishing activities that involved using bottom contact gear or any other activities that involved disturbance of the seabed within the 50-fathom isobath would be prohibited.

A new definition of "bottom contact gear" would be added in conjunction with this alternative prohibition, consistent with the definition for bottom contact gear developed by the Pacific Fisheries Management Council (PFMC) in Amendment 19 (Essential Fish Habitat) of the Pacific Coast Groundfish Fishery Management Plan:

Bottom contact gear means any fishing gear designed or modified to make contact with the bottom. This includes, but is not limited to, beam trawl, dredge, fixed gear, set net, demersal seine, dinglebar gear, pots, traps and other gear (including experimental gear) designed or modified to make contact with the bottom. Gear used to harvest bottom dwelling organisms (e.g. by hand, rakes, and knives) are also considered bottom contact gear for purposes of this subpart. Other gear, midwater trawl gear for example, although it may occasionally make contact with the sea floor during deployment, is not considered a bottom contact gear because the gear is not designed for bottom contact, is not normally deployed so that it makes such contact, nor is such contact normally more than intermittent. Similarly, vertical hook-and-line gear that during normal deployment is not permanently in contact with the bottom, would not be considered bottom-contact gear.

In order for this regulation to be promulgated by the CBNMS, the NMSP would need to modify Article 5 of the CBNMS Sanctuary Designation Document, which states that "The regulation of fishing is not authorized

under Article IV.” Since modifying the designation document is not part of the preferred action and is not contemplated under the scope of this EIS, the NMSP would need to follow the designation procedures in NMSA section 304, including consulting with affected interests and preparing an environmental impact statement.

The high vertical relief of the Bank discourages trawler operators from fishing on the Bank. Data summaries for trawl sets from 1997 to 2002 indicate that trawl activity in the Sanctuary is on the soft sediments north of the Bank (see Section 3.6 for detailed discussion). The benthic cover and relief of the Bank also tend to entangle long lines. Data from submersible surveys on the Bank document entangled gear on almost all of the 22 habitat survey tracks on the Bank. Most are long lines entangled on the bottom with a few remnant gill nets. What is of even greater concern than existing gear types and fisheries is the development of new gear types or fisheries that could negatively affect the invertebrate community or the reef structure in the high relief areas of the Bank.

Benthic Habitat Protection

Proposed Action

In addition to the above proposed seabed protection regulation, the Sanctuary will rely upon an existing benthic habitat protection regulation that prohibits removing, taking, or injuring benthic invertebrates or algae on Cordell Bank or within the 50-fathom isobath surrounding the Bank. (See Table 2-1 for revised wording of this prohibition.) As stated in the text of the proposed regulatory language, this prohibition would not apply to bottom contact gear used during fishing activities, which is prohibited pursuant to 50 CFR Part 660 (Fisheries off West Coast States and in the Western Pacific). Like the above proposal regarding seabed protection, bottom-contact fishing is restricted by regulations recently promulgated by NOAA Fisheries under the MSA (71 FR 27408) to designate EFH and protect these areas from potentially harmful fishing activities. Therefore, additional protection of benthic resources would be achieved through the MSA. The NMSP would rely on NOAA Fisheries to address specific types of fishing gear through the MSA and the NMSP would proceed with clarifying its existing general prohibition against injury of benthic resources, without specific reference to prohibited fishing gear types. In addition, the reference to 50-fathom isobath will be changed to “a line representing the 50-fathom isobath”, to clarify and assign latitude and longitude coordinates to better define this area.

The two proposed regulations protecting the Bank would virtually eliminate the risk of harmful impacts from commercial activities on the benthos on Cordell Bank and within the 50-fathom isobath surrounding the Bank.

Alternative Benthic Habitat Protection Regulation

The alternative regulation would achieve the same purpose as the Proposed Action but would involve additional wording to address fishing exceptions under the regulatory authority of the NMSA, in the event that fishing regulations to protect benthic resources were not fully implemented through the MSA or were adopted in such a way as they did not meet the Sanctuary’s goals and objectives for protection on the Bank. The NMSP would narrow the fishing exception by allowing removal, injury, or takings of benthic invertebrates or algae only as incidental and necessary to “the lawful use of any fishing gear (other than non-bottom contact gear) during normal fishing operations” on Cordell Bank and within the 50-fathom isobath surrounding the Bank.

The exception for non-bottom contact fishing gear would allow for incidental take as a result of fishing gear that does not directly target or affect benthic habitat. See above definition of bottom contact gear in the alternative Seabed Protection regulation. This prohibition would not apply to areas other than within a line representing the 50-fathom isobath surrounding the Bank. At present, hook and line fishing is the only type of fishing activity operating around the Bank. There is no other fishing activity on the Bank due to the rockfish closure. Prior to the closure there was a long line fishery on the Bank.

In order for this regulation to be promulgated by the CBNMS, the NMSP would need to modify Article 5 of the CBNMS Sanctuary Designation Document, which states that “The regulation of fishing is not authorized under Article IV.” Since modifying the designation document is not part of the preferred action and is not contemplated under the scope of this EIS, the NMSP would need to follow the designation procedures in NMSA section 304, including consulting with affected interests and preparing an environmental impact statement.

Wildlife Disturbance

Both CBNMS and GFNMS propose a new prohibition (MBNMS already has this prohibition) on the taking of any marine mammal, sea turtle, or bird in the sanctuary. This prohibition mirrors Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), and Migratory Bird Treaty Act (MBTA) regulations. The prohibition is proposed as follows:

(12) Taking any marine mammal, sea turtle, or bird within or above the Sanctuary, except as permitted by regulations, as amended, promulgated under the Marine Mammal Protection Act, as amended, (MMPA), 16 USC 1362 et seq., the Endangered Species Act, as amended, (ESA), 16 USC 1531 et seq., and the Migratory Bird Treaty Act, as amended, (MBTA), 16 USC 703 et seq.

(13) Possessing within the Sanctuary (regardless of where taken, moved or removed from) any marine mammal, sea turtle or bird taken except as authorized under the MMPA, ESA, MBTA, and any regulation, as amended, promulgated under these acts, or as necessary for valid law enforcement purposes.

This comprehensive prohibition includes all marine mammals, sea turtles and birds in and above the sanctuaries. This prohibition would provide additional protection of marine mammals, sea turtles, and birds consistent with other sanctuaries, including MBNMS. The intent of this regulation is to bring a special focus to the protection of the diverse marine mammal, sea turtle and bird populations within the sanctuaries. The regulation would be written to complement the existing permit authorities under the MMPA, ESA, and the MBTA. This would provide greater consistency in the regulations across the four sanctuaries in California. Also, by incorporating the prohibition into Sanctuary regulations, it would provide a greater deterrent, with civil penalties up to \$130,000 per day per violation.

2.2.3 Gulf of the Farallones National Marine Sanctuary Regulations

Substantive regulatory actions proposed for GFNMS address boundary clarifications, white shark attraction, water quality, seagrass protection, deserted vessels, and wildlife disturbance.

Boundary Change

A boundary modification is proposed to permanently fix the Sanctuary’s boundary as it relates to the portion adjacent to the Pt. Reyes National Seashore (PRNS) in Tomales Bay. The PRNS boundary along the western shore in Tomales Bay has been changed by the National Park Service since establishment of the Sanctuary in

1981, and thereby removed area from the original designation. The sanctuary proposes to permanently fix the boundary to its location at the time the GFNMS was designated in 1981. This clarification requires amending the Sanctuary designation document (see Section 2.5).

White Shark Attraction and Approaching

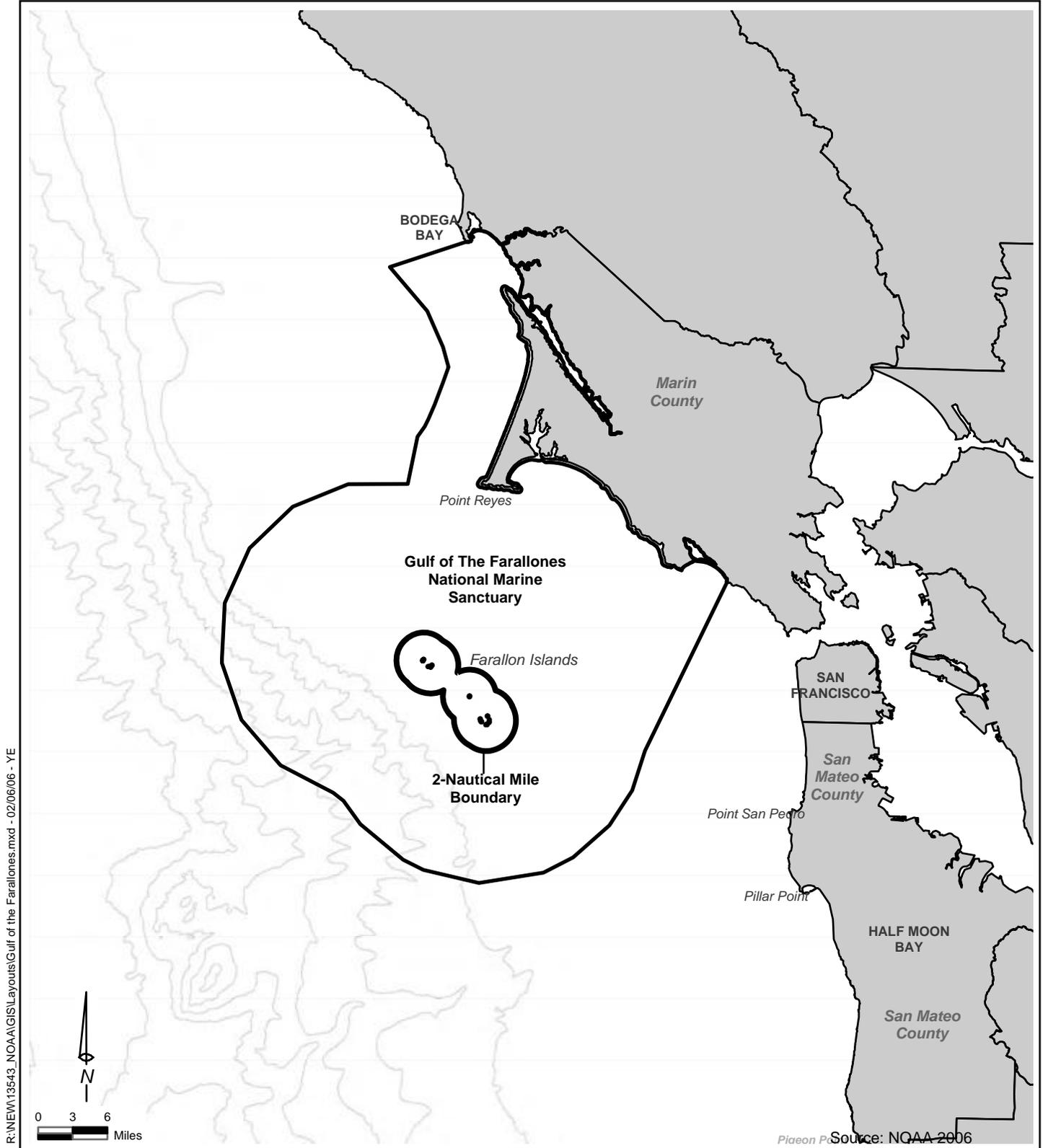
Proposed Prohibition

GFNMS is proposing a new regulatory prohibition to address wildlife disturbance issues associated with approaching white sharks. This regulation would prohibit attracting white sharks anywhere in the Sanctuary and approaching within 50 meters of any white shark within two nm around the Farallon Islands. The approach prohibition would apply only to marine waters within a line approximating two nm (3.7 km; 2.3 miles) around the islands (see Figure 2-2). Elsewhere in GFNMS, white sharks could be approached but not attracted. To clarify the meaning of “attracting” in the proposed prohibition, a new definition of “attracting” would be added to the regulations (see Table 2-1).

Currently, there is no specific GFNMS regulation regarding attracting white sharks, although there is one in MBNMS. Wildlife disturbance within the sanctuary is governed by a multitude of federal and state laws, including the NMSA, the MMPA, the MBTA, and the California Endangered Species Act (CESA). Site-specific regulations for GFNMS currently address wildlife disturbance through prohibitions such as those against disturbing seabirds or marine mammals by flying motorized aircraft at lower than 304 meters (1,000 feet) (location specific) and discharging or depositing matter into Sanctuary waters (with exceptions). However, none of these regulations specifically address the harassment of white sharks. This proposed prohibition would help resolve user conflicts between adventure tourism operators and wildlife biologists in the vicinity of the Farallon Islands and would control harmful impacts on white sharks throughout the GFNMS. This proposed prohibition would ensure a distinct definition to the term “attracting” a white shark, which would help reduce the amount of potential wildlife disturbance.

Alternative Prohibition

The alternative to the proposed white shark regulation is to establish a prohibition against approaching a white shark throughout the entire Sanctuary, not just within two nm (2.3 miles; 3.7 km) of the islands, in addition to prohibiting attracting white sharks throughout the Sanctuary. Therefore, no white shark attraction activities or approaching would be permitted within the Sanctuary. This alternative would provide for consistent enforcement throughout the Sanctuary.



Gulf of The Farallones National Marine Sanctuary

Northern California

Water Quality—Deposit and Discharge From Outside the Sanctuary

In order to strengthen the Sanctuary’s ability to protect water quality and make regulations consistent with those of MBNMS and CBNMS, the following new prohibition is proposed regarding discharges and deposits outside of the Sanctuary boundaries:

(2) Discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality, except for the exclusions listed in paragraph (2) (A) through (D) and (3) of this section.

The NMSA defines “injure” as “to change adversely, either in the short or long term, a chemical, biological or physical attribute of, or the viability of. This includes, but is not limited to, to cause the loss of or destroy” (15 CFR 922.3). “Sanctuary resource” is defined at 15 CFR 922.3 as “any living or non-living resource of a National Marine Sanctuary that contributes to the conservation, recreational, ecological, historical, research, educational, or aesthetic value of the Sanctuary, including, but not limited to, the substratum of the area of the Sanctuary, other submerged features and the surrounding seabed, carbonate rock, corals and other bottom formations, coralline algae and other marine plants and algae, marine invertebrates, brine-seep biota, phytoplankton, zooplankton, fish, seabirds, sea turtles and other marine reptiles, marine mammals and historical resources.” “Sanctuary quality” is defined at 15 CFR 922.3 as “any of those ambient conditions, physical-chemical characteristics and natural processes, the maintenance of which is essential to the ecological health of the Sanctuary, including, but not limited to, water quality, sediment quality and air quality.”

Existing regulations prohibit discharging or depositing matter within the Sanctuary. This prohibition would apply to activities adjacent to or beyond the Sanctuary, in which matter could be discharged and ultimately enter the Sanctuary and cause harm. Such activities could include coastal land uses as well as offshore uses that occur outside of Sanctuary boundaries. This proposed regulation is in addition to the proposed discharge prohibitions identified for all three sanctuaries (see Section 2.2.1 above). This language is already part of the regulations for the other two sanctuaries.

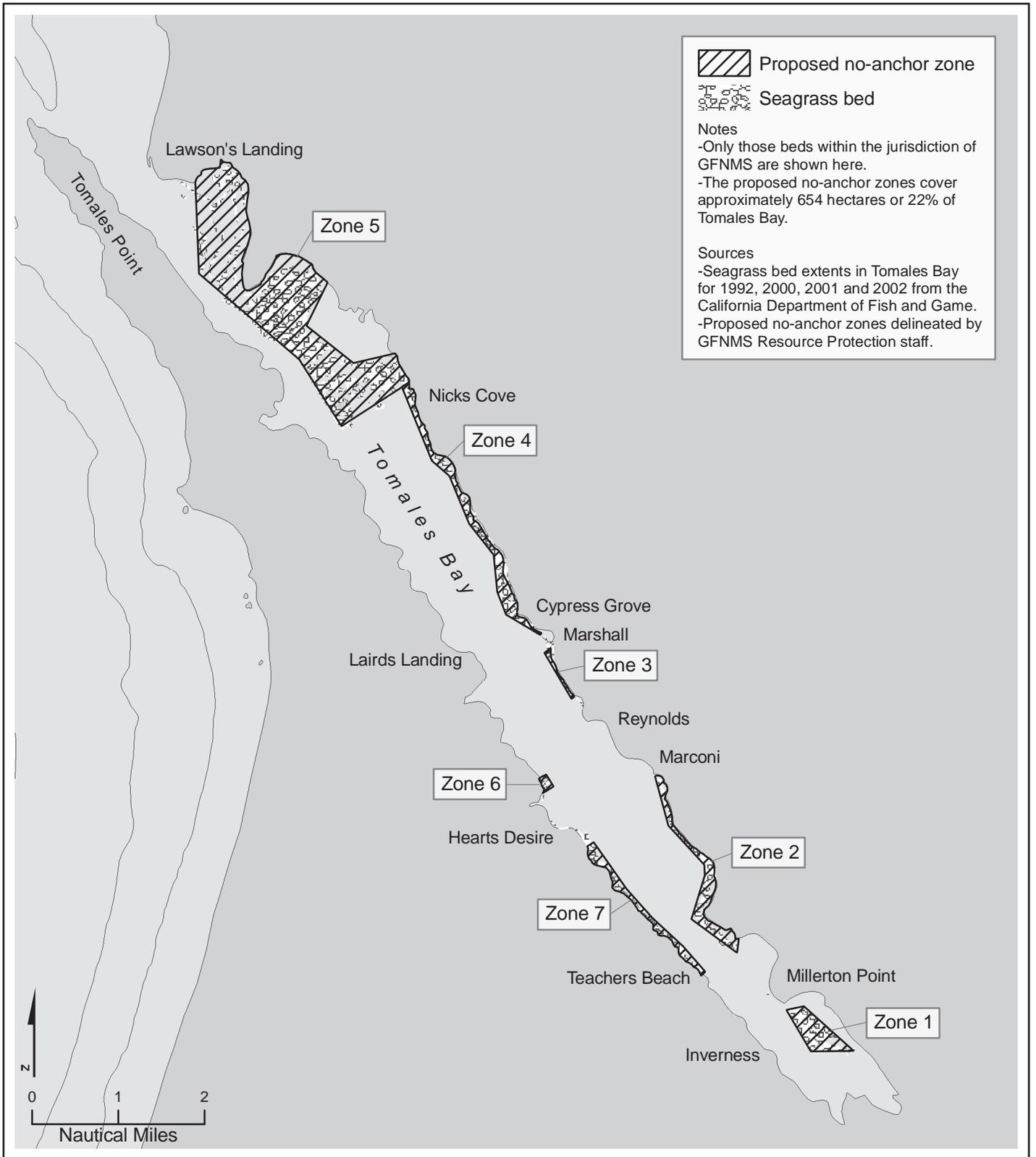
Seagrass Protection

Proposed Action

GFNMS proposes to add a provision to Sanctuary regulations to prohibit vessels from anchoring in designated seagrass protection zones in Tomales Bay, except as necessary for mariculture operations conducted pursuant to a valid lease, permit, or license. There are seven proposed no-anchoring zones that protect known seagrass beds (see Figure 2-3). These seven zones encompass approximately 22% of the surface area of the Bay. In conjunction with this new prohibition, a new definition would be added to the regulations, as follows:

“Seagrass means any species of marine angiosperms (flowering plants) that inhabit portions of the seabed in the Sanctuary. Those species include, but are not limited to: Zostera asiatica and Zostera marina.”

This prohibition is proposed to protect the important and fragile seagrass found in several areas of Tomales Bay directly from the effects of vessel anchor damage. Seagrass is commonly found in tidal and upper subtidal zones in estuaries, bays and lagoons, such as Tomales Bay and Drake’s Estero. Seagrass beds help trap sediments and reduce excess nutrients and pollutants in the water column and thereby contribute



**Seagrass Bed Protection
Tomales Bay
Proposed No-Anchor Zones**

Gulf of the Farallones National Marine Sanctuary, California

Figure 2-3

towards improving water quality. Seagrass provides breeding and nursery grounds for fish such as Pacific herring, which attach their eggs directly to the seagrass blades. Seagrass provides important habitat for migratory birds, such as shorebirds, who feed upon the abundant fish and invertebrate species associated with the seagrass. Seagrass also serves as buffer zones in protecting coastal erosion. In 2003 a Technical Committee, consisting of ten local, state and federal agencies, was formed to address boating impacts, water quality, and wildlife protection in Tomales Bay. Based on the damage that can occur and the low success of seagrass restoration efforts to date in similar bays and waterways, in 2005, members of the committee discussed the need to create no anchor zones in the seagrass beds. This proposed action would help prevent damage to sensitive and productive wildlife habitat in Tomales Bay and would provide direct and indirect protection of biological resources and habitats and the ecological services they provide.

Deserted Vessels

To address concerns regarding the potential threats to the marine environment from deserted vessels, GFNMS is proposing regulations to minimize this threat. The proposed regulation would prohibit the following:

Deserting a vessel aground, at anchor, or adrift in the Sanctuary.

In conjunction with this proposed prohibition, a new definition of “deserting” would be added to the regulations to clarify the specific applicability of this prohibition (see Table 2-1 for specific wording of definition).

Once a vessel is grounded there is a high risk of discharge of harmful matter in the marine environment. Currently, removal of harmful substances (e.g., motor oil) is not specifically required unless a discharge has occurred. Therefore, GFNMS is proposing an additional regulation that would establish the following prohibition:

Leaving harmful matter aboard either a grounded or deserted vessel in the Sanctuary.

Harmful matter is any substance or combination of substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may pose a present or potential threat to Sanctuary resources or qualities. These substances include fishing nets, fishing line, hooks, fuel, oil, and those contaminants (regardless of quantity) listed pursuant to 42 USC 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) at 40 CFR 302.4.

These two new prohibitions would help reduce or avoid harm to Sanctuary resources from derelict vessels as a result of direct impact of the settling or colliding of a vessel on habitats and potential leakage of hazardous or harmful matter from a vessel. The Sanctuary would have the authority to enforce removal of deserted vessels to prevent potential groundings, collisions, or hazardous fuel leaks that could harm Sanctuary resources. Under existing regulations, vessel owners can be held liable for groundings and associated fuel spills that violate seabed disturbance or discharge regulations. The main purpose of the proposed regulations is to make enforcement easier and to require vessel owners to take care of deserted vessels before they become grounded and cause damage.

Wildlife Disturbance

GFNMS proposes the same new prohibition regarding the taking of wildlife, as described above for CBNMS, to be consistent with other marine sanctuaries, including MBNMS.

Oil and Gas Pipelines

The Sanctuary proposes to modify the existing prohibition against oil and gas facilities, which provides an exception for oil and gas pipelines that are related to hydrocarbon operations outside the sanctuary. The revised exception would limit oil and gas pipelines to pipelines that are related to operations adjacent to the Sanctuary, rather than anywhere outside the Sanctuary. This exception is further stated in proposed prohibition (5)(C). The intent of this proposed change is to limit pipelines to only those that necessarily need to cross the Sanctuary. No existing operations or pipelines would be affected by this proposed change, and this proposal is primarily technical in nature.

2.2.4 Monterey Bay National Marine Sanctuary Regulations

Proposed regulations for MBNMS address incorporation of the Davidson Seamount, motorized personal watercraft definitions, white shark attraction in federal waters, deserted vessels, definition of dredge disposal sites, and cultural resources protection.

Davidson Seamount

Seamounts have been defined as steep geologic features rising from the seafloor with a minimal elevation of 1,000 meters (0.6 mile) and with a limited extent across the summit. Steep undersea mountains are often referred to as seamounts regardless of size. Seamounts are usually of volcanic origin and are most often conical with a circular, elliptical, or more elongated base.

The Davidson Seamount is outside of MBNMS, 120 km (75 miles) to the southwest of Monterey, and is one of the largest known seamounts in US waters. It is 42 km (26 miles) long and 13 km (8 miles) wide. From base to crest, Davidson Seamount is 2,280 meters (7,480 feet) tall, yet it is still 1,250 meters (4,101 feet) below the sea surface. It has an atypical seamount shape, having a northeast-trending ridge created by a type of volcanism.

Proposed Action

The NMSP has determined that the Davidson Seamount requires protection from the take of or other injury to benthic organisms or those organisms living near the seafloor because of the seamount's special ecological and fragile qualities and potential future threats that could adversely affect these qualities. Therefore, the Davidson Seamount is proposed for inclusion in the boundary of the MBNMS. A 585-square-nautical-mile area around the seamount would be incorporated into the Sanctuary (see Figure 2-4), approximately 25 nm (46 km; 29 miles) per side. The proposed uniform shape of the boundary offers easy navigation by longitude and latitude even though the seamount is physically disconnected from the MBNMS boundaries.

Within the Davidson Seamount Management Zone (DSMZ), standard MBNMS regulations would apply, except as noted in the proposed regulations (see Table 2-1). Below 3,000 feet (914 meters), the following regulation is proposed to provide added protection to benthic resources in this area:

(i) Moving, removing, taking, collecting, catching, harvesting, disturbing, breaking, cutting, or otherwise injuring, or attempting to move, remove, take, collect, catch, harvest, disturb, break, cut, or otherwise injure, any Sanctuary resource located more than 3,000 feet below the sea surface within the Davidson Seamount Management Zone (DSMZ). This

prohibition does not apply to fishing below 3,000 feet within the DSMZ, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific).

(ii) Possessing any Sanctuary resource the source of which is more than 3,000 feet below the sea surface within the Davidson Seamount Management Zone (DSMZ). This prohibition does not apply to possession of fish resulting from fishing below 3,000 feet within the DSMZ, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific).

The NMSP will rely on the recent NOAA Fisheries designation of Davidson Seamount as EFH, through the authority of the MSA, and its regulatory amendments to the Groundfish FMP to prohibit fishing below 914 meters (3000 feet) (71 FR 27408). The rule effectively provides additional protection for the sanctuary resources below 3000 feet by prohibiting the following fishing related activities in the Davidson Seamount area:

- Fishing with dredge gear anywhere in EFH;
- Fishing with beam trawl gear anywhere in EFH;
- Fishing with bottom trawl gear anywhere in EFH;
- Fishing with bottom contact gear or any other gear that is deployed deeper than 500 fathoms (3000 feet) within the Davidson Seamount.

Thus, rather than amend Sanctuary regulations and the MBNMS Designation Document to restrict fishing activities that may harm the benthic resources on Davidson Seamount, the Sanctuary will rely upon the amended MSA regulations for the Groundfish FMP to address fishing related impacts on Davidson Seamount and limit its own regulatory authority to non-fishing activities.

Seamounts offer unique environments, and the Davidson Seamount has newly discovered species and species assemblages. Conservation issues related to seamounts revolve around endemism (species found on only one seamount), harvest, and low resilience of species to physical disturbance by humans. Existing and potential threats to the Davidson Seamount include bioprospecting (collecting organisms for developing medicines), cumulative collecting of long-lived species for research, new or unknown forms of seafloor disturbance, new technologies to harvest from the seabed, and marine debris/dumping. Although management agencies are responsible for some activities that may occur at the seamount, there is no comprehensive protection and management of organisms on the seamount or the surrounding ecosystem. Also, there are no coordinated education or research programs addressing Davidson Seamount issues. Under the proposed regulations, collecting and bioprospecting could be allowed through the Sanctuary's permitting system. By incorporating the seamount into MBNMS, its resources will be protected and opportunities will be provided for a better understanding of the seamount.

Threats from fishing are relatively remote; the top of the seamount is too deep for most fish trawling technology. However, future fishing efforts could target the seamount. Pursuant to new regulations being established by NOAA Fisheries using the MSA (described above), fishing below 914 meters (3,000 feet) would be prohibited. All lawful fishing activities within 914 meters (3,000 feet) of the sea surface would continue to be allowed.

Davidson Seamount NMSA Alternative

This alternative is intended to result in the same degree and geographic area of protection as the Proposed Action but would use the regulatory authority of the NMSA rather than the MSA to regulate fishing below the 914 meters (3,000 feet) ocean depth. This alternative regulation would be the same as the Proposed Action except that it would prohibit all fishing below 914 meters (3,000 feet) of the sea surface in the Davidson Seamount area. This alternative would be pursued in the event that a fishing regulation was not established through NOAA Fisheries under the MSA or that it did not meet the Sanctuary's specific goals and objectives for Davidson Seamount. There are no other differences between it and the Proposed Action, therefore, the physical outcome would be the same as the Proposed Action.

In order for this regulation to be promulgated by the MBNMS, the NMSP would need to modify its Sanctuary Designation Document. Since modifying the designation document is not part of the preferred action and is not contemplated under the scope of this EIS, the NMSP would need to follow the designation procedures in NMSA section 304, including consulting with affected interests and preparing an environmental impact statement.

Davidson Seamount Circular Boundary Alternative

In considering incorporation of the Davidson Seamount into the MBNMS boundaries, the JMPR Working Group evaluated several alternatives. One alternative configuration is being carried forward for full analysis in this EIS. Instead of the proposed square boundary around the seamount, the alternative would be a circular boundary encompassing the seamount, including a surface area of 707 square nautical miles. This alternative is shown in Figure 2-4. Other potential alternatives identified in the draft action plan have been screened out (see discussion in Section 2.5).

Motorized Personal Watercraft

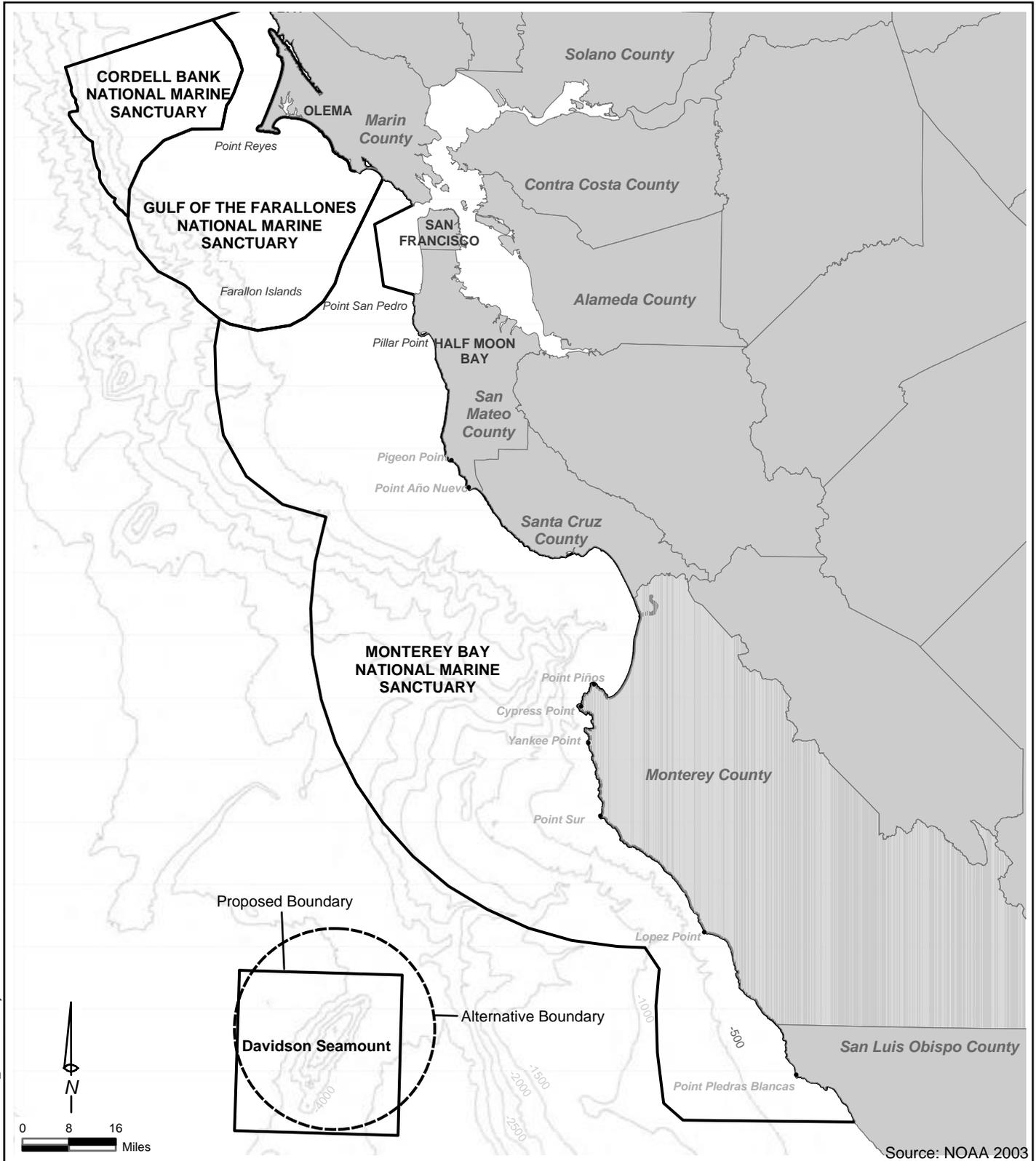
Proposed Action

Proposed changes to the definition of motorized personal watercraft (MPWC) would restrict MPWC of concern that fall outside of the current MPWC definition. Implementing this modified definition would implement the original intent of the regulation and zoning restrictions.

This proposed change is intended to minimize MPWC disturbing marine wildlife, to minimize user conflicts between MPWC operators and other recreationists, and to provide opportunities for MPWC use within MBNMS. The proposed change would expand the definition of MPWC to address a broader range of watercraft that would be restricted. In conjunction with this changed definition, a new MPWC zone would be established, as described below.

MPWC are small, fast, and highly maneuverable craft that possess unconventionally high thrust capability and horsepower relative to their size and weight. Their small size, shallow draft, instant thrust, and "quick reflex" enable them to operate closer to shore and in areas that would commonly pose a hazard to conventional craft operating at comparable speeds.

Many assessments of MPWC impacts indicate that unrestricted access to all reaches of MBNMS by such craft would pose an unacceptable threat to wildlife and other ocean users (Burger 1998; Green et al. 2002; Snow 1989). MPWC commonly accelerate and decelerate repeatedly and unpredictably and travel at rapid speeds



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The proposed boundary for Davidson Seamount covers 585 square nautical miles.

Davidson Seamount Proposed and Alternative Boundaries

Monterey Bay National Marine Sanctuary, California

directly toward shore, while motorboats generally slow down as they approach shore. To prevent the disturbance of wildlife and other nearshore users, most MPWC have been prohibited in protected marine areas adjacent to or overlapping MBNMS (e.g., GFNMS and nearshore areas of the Golden Gate National Recreation Area, Marin County, California State Parks, and the city of Santa Cruz). Proposed MBNMS management of MPWC is consistent with actions taken in these jurisdictions.

Current regulations restrict MPWC to specific zones within MBNMS (see Figure 2-5). However, the current definition of MPWC does not cover all types (as described above), although it was intended to do so. MPWCs that are larger and can accommodate three or more persons are not subject to the regulations because they are not included in the current definition. The proposed change to the definition would include these larger MPWCs.

Most MPWC operated within MBNMS are compact water jet-propelled craft that shed water from the passenger spaces. Larger size models are preferred in the high-energy ocean environment for increased power, range, and towing ability. Popular uses are operation within the surf zone, weaving in and out of wave lines, launching off the crest of waves and wakes, and towing surfers into large and/or remote wave breaks. MPWC users often travel in pairs or larger groups for camaraderie and improved safety.

Use of MPWC to tow surfers into waves has been increasing at many traditional surfing locations in MBNMS, regardless of surf conditions. On days with moderate or low surf, MPWC provide ready access and improved flexibility for positioning surfers on wave breaks. On high surf days, MPWC provide access to areas normally considered too dangerous by paddle surfers. MBNMS has received complaints by surfers, beachgoers, and coastal residents that the use of MPWC in traditional surfing areas has produced conflicts with other ocean users and has disturbed wildlife. During the designation of MBNMS, the operation of MPWC in nearshore areas was identified as an activity that should be prohibited to avoid such impacts.

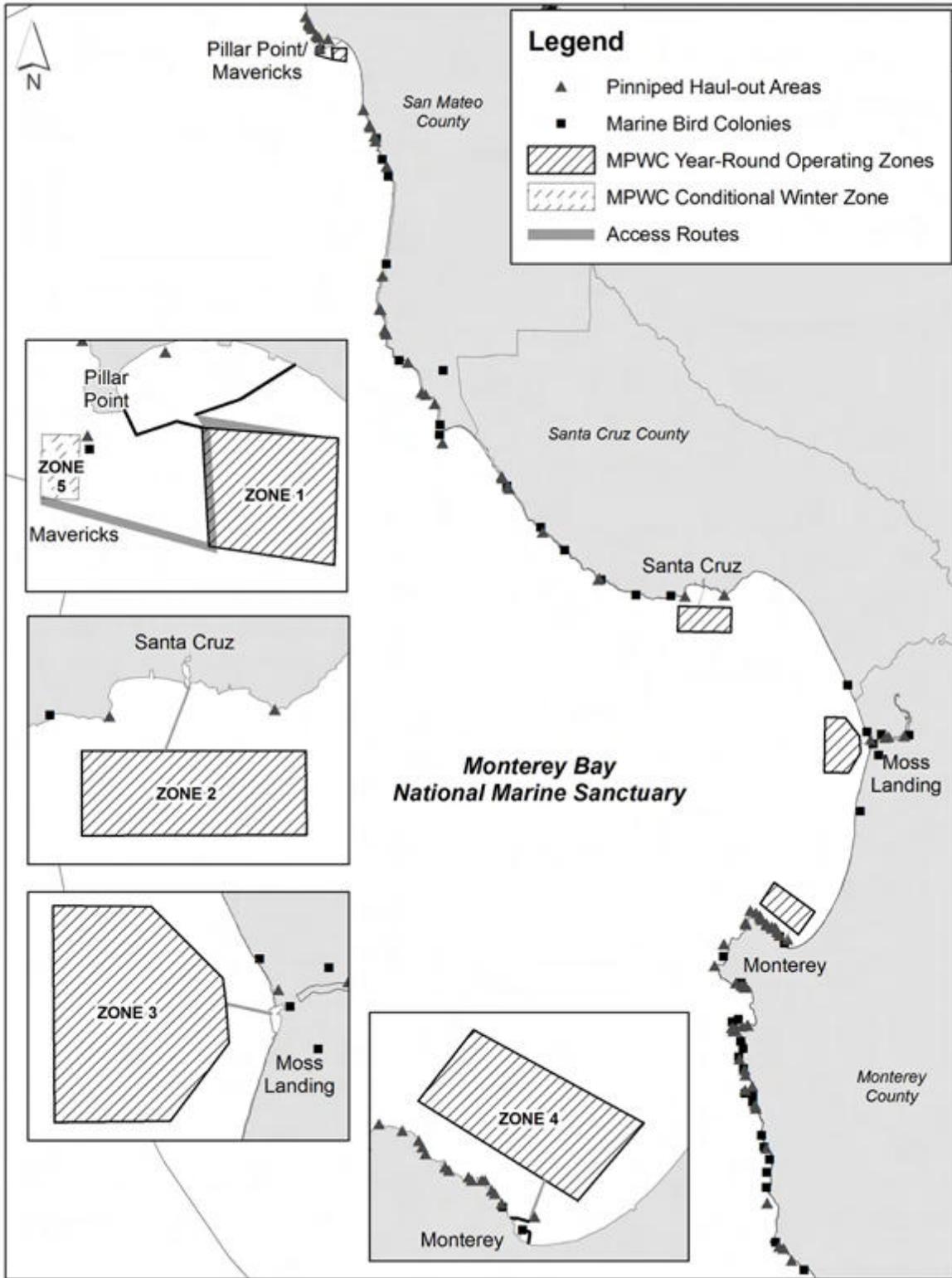
Based on reports from harbor masters and NOAA enforcement personnel, MBNMS estimates that approximately 1,200 MPWC trips were conducted in MBNMS in 2002. This represents repeat trips by an estimated 150 MPWC. MPWC use has increased significantly in some areas since that time due to the growing popularity of tow-in surfing. NOAA estimates that 80 to 90 percent of MPWC operated in the Sanctuary are three or more seats.

Proposed New MPWC Zone

A change in the definition of MPWC would limit MPWC training by public safety agencies and tow-in surfing activities, a sport that has evolved and expanded since MBNMS designation. At least eight state and local public safety agencies currently operate MPWC for purposes of surf zone rescue within MBNMS. In order to use MPWC for response in critical areas, local response agencies must train their MPWC operators to be familiar with the nearshore areas and ocean dynamics in which they may be called to operate.

Tow-in surfing debuted in MBNMS at “Mavericks,” a surf break at Pillar Point in San Mateo County, to enable experienced surfers to ride in to large 15-meter (50-foot) or greater wave crests considered too powerful or fast for traditional paddle-in surfing. The Mavericks surf break is outside of the existing MBNMS MPWC operating zones.

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Source: NOAA 2008

Motorized Personal Watercraft Zones

Northern/Central California

To address the concern about restrictions on safety training in high surf areas and on tow-in surfing at Mavericks, which is outside of current MPWC zones, NOAA proposes adding a new zone designation to allow use of MPWC at Pillar Point (Mavericks) due to the unique geographic, oceanographic, and seasonal characteristics of that site. The zone would be in effect during National Weather Service high surf warnings issued for San Mateo County in December, January, and February.

Furthermore, to accommodate the need for MPWC training, the MBNMS Management Plan contains the following measures as part of the MPWC action plan:

- Activity 2.1: Identify and Implement Official Protocols For Training of Public Safety Personnel—NMS staff will consult with public safety agencies assigned jurisdictional authority within the MBNMS area to identify MPWC training needs and develop environmental protection protocols that minimize the risk of training impacts upon wildlife and habitats in the Sanctuary. At a minimum, the protocols will limit training to official government public safety personnel assigned to local units exercising jurisdictional authority within the MBNMS. Training shall not occur in sensitive habitat areas, disturb marine wildlife, or interfere with other ocean users. Trainees shall use only agency authorized equipment that is marked for ready identification by the public to avoid a misperception of unauthorized use of an MPWC in the MBNMS.
- Activity 2.2: Permit or Authorization for Training of Public Safety Personnel—NOAA will authorize or permit public safety agencies operating MPWC within the MBNMS to conduct MPWC training for locally assigned personnel.

Motorized Personal Watercraft Alternative

As an alternative to continuing to permit MPWC in four designated zones in MBNMS, this alternative would eliminate MPWC zones and prohibit all MPWC from MBNMS. The alternative would include revising the definition of MPWC to more adequately identify all MPWC of concern, as described for the Proposed Action.

White Shark Attraction

White sharks have been harassed from cage diving operations, filming, and other wildlife watching operations. MBNMS regulations currently prohibit white shark attraction activities within specific areas of the sanctuary, including the area out to the seaward limit of state waters (three nautical miles from the coastline). The proposed change to the regulation would apply this prohibition to the entire Sanctuary.

The purpose of this prohibition is to protect white sharks from intrusive activities during their critical feeding life cycle in all areas of the Sanctuary. The prohibition would resolve user conflicts between researchers and adventure tourism and would prevent intervention with feeding behavior of white sharks. This prohibition is consistent with the proposed regulation for GFNMS.

In addition to this prohibition, the regulatory definition of “attract or attracting” would be modified to include “decoys” as an attraction mechanism that would be prohibited under the above regulation. Also, while the scope of the regulation would apply only to white sharks, the Sanctuary proposes to modify the definition of attract or attracting to apply to all animals to be consistent with definitions for other national marine sanctuaries.

Deserted Vessels

The proposed regulation and definition for MBNMS is the same as the proposed GFNMS regulation and definition regarding deserted vessels and leaving harmful matter aboard a deserted vessel. See discussion above in Section 2.2.3 and specific wording in Table 2-1.

Historical Resources

The existing regulations for MBNMS include prohibitions against “moving, removing or injuring, or attempting to move, remove or injure, a Sanctuary historical resource.” The Sanctuary proposes modifying this regulation to include a prohibition against possessing a Sanctuary historical resource anywhere. The proposed regulatory change would clarify that existing regulations prohibit possessing, either within or outside the Sanctuary (regardless of where taken, moved, or removed from) any Sanctuary historical resource. The proposed clarification would increase protection of Sanctuary resources by clearly making it illegal to possess historical resources in any geographic location, such as harbors.

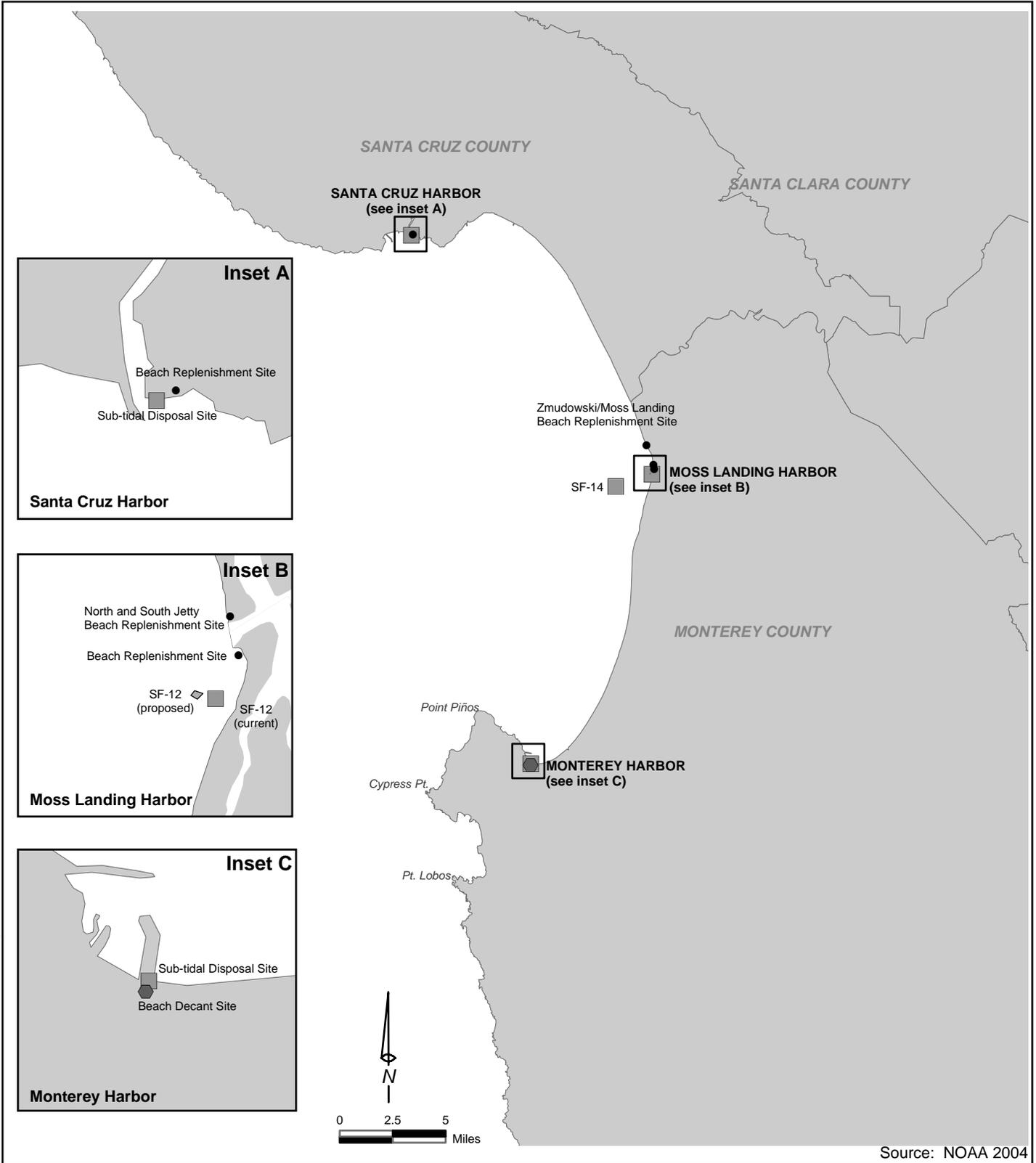
Dredge Disposal Site SF-12, Moss Landing

MBNMS will define and codify a location of dredge disposal site SF-12 (see Figure 2-6), which is necessary to clarify its exact location and to allow dredge material to be disposed of at the head of Monterey Canyon. The main reason for this correction is that the existing disposal location was ambiguously defined and did not remain in the originally-designated location. This corrected location will allow sediment to flow into the Monterey Canyon, as originally intended. The location of dredge material disposal site SF-12 has been described in agency permits in various manners, which has led to confusion about the area designated for disposal of dredge material off Moss Landing. For example, MBNMS records describe the point of disposal as “400 feet from shore,” some records describe it as “46 meters seaward of the Sandholdt Pier,” and other records describe a point of disposal at a certain depth. The Sandholdt Pier no longer exists, and the shoreline is known to change in that area. Defining and codifying an area of disposal for SF-12 in MBNMS’s regulations will provide exact coordinates and eliminate multiple descriptions of various points of disposal, while ensuring that the relocation is consistent with the original intent of the project. No increase in the volume of dredge material is a part of this action. The US Army Corps of Engineers (USACE) and Environmental Protection Agency approved this change in location in 2005.

The center of the corrected location for SF-12 is approximately 1100 feet (335 meters) west northwest of the Moss Landing Marine Lab pier abutment. The designated site is an irregular quadrangle (see Figure 2-6), and its coordinates are provided in the proposed regulations. The corrected location is approximately 900 feet (300 meters) farther offshore than the historic location. It is also in deeper waters ranging from 100-150 feet (30-45 meters) deep, as opposed to the original depth of 40-50 feet (12-15 meters).

The primary purpose of this proposal is to reduce environmental impacts on local beaches caused by disposal in the nearshore subtidal area. Disposal in this area has caused material to be washed onshore, resulting in adverse aesthetic and recreational impacts on beachgoers. Relocation will also reduce effects on the intake system at Moss Landing Marine Lab (MLML), will reduce fine silts and mud in the nearshore region, and will aid in the construction of the pier for use by the MLML. Reconstructing Sandholdt Pier, which was damaged in the Loma Prieta earthquake and subsequent storms, would conflict with the dredge disposal site at the location currently designated by MBNMS coordinates.

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Dredge site SF-12 is being moved further offshore.

Current and Proposed Dredge Disposal Sites

Legend

- Beach Decant Site
- Beach Replenishment Site (not within MBNMS jurisdiction)
- Sub-tidal Disposal Site

Monterey Bay National Marine Sanctuary, California

Formalize existing Santa Cruz and Monterey Dredge Disposal Sites

Santa Cruz and Monterey Harbor administrators have identified additional dredge disposal sites, which were in historic use prior to MBNMS designation. These sites were not recognized in the MBNMS regulations at the time of designation. These sites have since been authorized for use by the NMSP. This body recognized the surf zone area off Twin Lakes State Beach as a legal disposal site in 1997, whereby disposal activities must be conducted under a valid permit issued by the USACE prior to January 1, 1993, or a valid permit issued by the USACE after that date and authorized by MBNMS. On May 26, 2000, the NMSP recognized a historical dredge material disposal site east of Municipal Wharf II next to Monterey Harbor. Defining and codifying these areas of disposal in MBNMS's regulations will provide exact coordinates for the disposal area and will formally recognize historic sites used prior to the designation of MBNMS.

2.3 NO ACTION ALTERNATIVE

No new regulations would be adopted, and no changes to the Sanctuary Designation Documents would be made. This scenario is equivalent to the status quo, with regard to regulation. All management practices currently occurring would continue, and the current regulations would remain in place. The No Action alternative would involve maintaining the current management plans and regulations for the three sanctuaries. However, action plans and other policies and provisions of the proposed management plans not requiring regulatory or designation document changes could also be implemented.

2.4 ALTERNATIVES IDENTIFIED BUT REMOVED FROM CONSIDERATION

The Sanctuary action plans considered many alternatives for addressing individual issues. The alternatives analysis began with the working groups, who provided input to the action plans. Many strategies, activities, and regulatory modifications were considered but dismissed as the working groups or internal teams made their recommendations, during the Sanctuary Advisory Council's deliberation of the proposed action plans, or from further staff analysis.

Regulatory alternatives considered but dismissed during the working group or SAC deliberation and recommendation phase of the JMPR are listed below, by sanctuary. These alternatives were proposed by the public, working group members, SAC members, or staff. These alternatives were rejected for various reasons, including lack of feasibility, the need for more analysis beyond the current scope of the JMPR, the ability to address the particular issue within the scope of existing regulations, or the lack of consensus by the SAC for recommendation to NOAA. For these reasons, these regulations or boundary alternatives were dismissed from further consideration for this joint management plan update.

Cross-Cutting Alternatives

Discharge Regulations (Exceptions)

The JMPR team and working groups considered revising regulations to eliminate some of the discharge exceptions (for example, fish parts, chumming materials, deck wash) to improve water quality in the sanctuaries, but these revisions would effectively eliminate all commercial and recreational boating and fishing in the sanctuaries. This would not allow the NMSP to "facilitate, to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities," NMSA Section 301(b)(6).

Cruise Ship

Various definitions of cruise ships were discussed, as well as types of allowable discharges.

Prohibiting Krill Harvesting

Several marine scientists recommended that MBNMS prohibit the harvest of krill. Krill is a critical source of food for marine mammals and fish and krill fisheries have been established in other parts of the world. Scientists were concerned that the harvest of krill and subsequent removal of a food source could have negative impacts on the food chain, cetacean feeding patterns, and commercial fisheries, such as groundfish, salmonids, and squid which all feed on krill. The MBNMS Krill harvesting Working Group and Sanctuary Advisory Council recommended prohibiting any future harvest in MBNMS. Similar recommendations from the CBNMS and GFNMS Advisory Councils initiated a recommendation to the PFMC to take the necessary action to prohibit krill harvesting in all California national marine sanctuaries. In 2005, the PFMC adopted a recommendation to ban krill harvesting for the entire West Coast Exclusive Economic Zone (EEZ), which extends 200 miles (320 km) offshore, under the MSA. The NMSP continues to work with the Council and NOAA Fisheries to ensure that this action gets fully implemented in the three sanctuaries in northern-central California, and along the entire West Coast EEZ.

CBNMS Alternatives

Cordell Bank Seabed and Benthic Habitat Protection

The Sanctuary initially considered, as an alternative to the proposed actions identified in Section 2.2, regulatory provisions that would prohibit all seabed disturbance within the 50-fathom isobath around the Bank and would prohibit all seabed disturbance except fishing in the remainder of the Sanctuary. Compared to the Proposed Action, this alternative would prohibit fishing within the 50-fathom isobath and would eliminate the exception for anchoring in areas outside it, thus further minimizing seabed disturbance within the Sanctuary. Similarly, a benthic habitat provision was considered in which the current regulation, which prohibits removing, taking, or injuring or attempting to remove benthic invertebrates or algae on the Bank or within the 50-fathom isobath surrounding the Bank would be modified to delete the exception for fishing. Both of these potential alternatives were eliminated from further consideration because NOAA staff determined that in order to achieve specific Sanctuary goals and objectives it was not necessary to eliminate all fishing either within the 50-fathom isobath or elsewhere in the Sanctuary. Further the NMSP, through consultations with the PFMC, determined that its benthic habitat protection goals could be met by pursuing regulatory actions under the MSA. In addition, socioeconomic consequences related to fishing were considered too substantial compared to the benefits of the intended action.

Prohibiting Lightering

With the increase of liquefied natural gas (LNG) imports into the US and the interest in building LNG storage facilities along the coast of California, CBNMS was concerned that LNG would be transferred between vessels or between vessels and at-sea transfer stations (a process known as lightering) in the Sanctuary. To be shipped across the ocean, natural gas is chilled to minus 260 degrees Fahrenheit. That turns the gas to liquid and shrinks it to 1/600th of its original gaseous volume. Then it can be loaded into a double-hulled tanker ship. Ships carrying the fuel contain energy much more concentrated than crude oil. To pump it to shore, the liquid is warmed at offshore transfer sites, turned back to gas, and then pumped to shore. LNG is highly volatile, and although an explosion is unlikely, like an oil spill, a single incident could be devastating to the marine resources. With further review, agency staff realized that the sea conditions and distance from shore makes CBNMS an unlikely location for lightering of LNG or other matter.

Prohibiting Intentionally Feeding or Attracting a Living Resource (For Example, Chumming)

The concern was operators of wildlife viewing vessels attracting wildlife, primarily seabirds, with fish oil. The intent of this alternative was also to be consistent with GFNMS, to the extent there is a need. After further consideration, agency staff determined that this is adequately covered and prohibited under the discharge regulation, and if there were a misunderstanding about the intent of the discharge regulation that outreach would be a more effective tool than an additional prohibition.

Inclusion of Bodega Canyon and Additional Areas to the North and West in the Sanctuary

During the JMPR scoping process, a priority issue identified for CBNMS was the expansion of CBNMS to include Bodega Canyon, which is thought to provide ecological support services to CBNMS and, like the Bank, to be an important area for marine mammals and seabirds. Additional areas to the north and west of CBNMS are areas of concern to the public due to the potential for offshore oil and gas development. Rather than propose regulatory action at this time, CBNMS's management plan includes a strategy to develop a framework for evaluating additional areas to be considered for sanctuary designation and a community-based process to evaluate and make recommendations on boundary options.

GFNMS Alternatives

Prohibiting Lightering

As described above for CBNMS, there was concern that LNG would be transferred from vessel to vessel or from vessel to shore facility in the Sanctuary. After further consideration, GFNMS determined that essential components of the LNG transfer from ship to shore are pipelines. With the laying of pipelines in GFNMS restricted to those oil and gas leases directly adjacent to the Sanctuary, the Sanctuary manager has no means to permit pipelines to be laid to support LNG transfer from ship to shore. Thus this alternative was rendered unnecessary.

Prohibiting Intentionally Feeding or Attracting a Living Resource

Of specific concern to GFNMS is wildlife disturbance associated with feeding or attracting a living resource, such as marine mammals or birds. Wildlife can be viewed from a boat, by paddling nearshore, or from the shore. The Sanctuary is home to many federally listed species, such as blue and humpback whales, marbled murrelets, and the short-tailed albatross. After further consideration, the Sanctuary determined that this issue is adequately covered and prohibited under the discharge regulation, and if there were a misunderstanding about the intent of the discharge regulation, that outreach would be a more effective tool than an additional prohibition. The Sanctuary will monitor the effectiveness of this approach and will review the need to take regulatory action. The specific issue of attracting white sharks is addressed separately in the proposed new regulations, described above in Section 2.2.

Prohibiting Mariculture in the Sanctuary

The coastal waters of the Sanctuary, particularly the estuarine habitats of Bolinas Lagoon, Tomales Bay, Estero Americano, and Estero de San Antonio are vulnerable to impacts from mariculture. Estero Americano, Estero de San Antonio, and Tomales Bay are already listed as impaired under Section 303(d) of the Clean Water Act, meaning they do not meet water quality standards for specific pollutants. The potential prohibition on mariculture was designed to protect Sanctuary resources from eutrophication, habitat impacts, disease and parasite introduction, accumulation of antibiotics, the introduction of nonnative species (including genetically altered species), and escape of hatchery stocks that may lead to interbreeding with native wild populations, which would alter genetic makeup. Intensive cage, floating pen, and other systems that are

relatively open to the natural waters have the greatest potential to cause environmental degradation from waste charges. Ocean water circulatory systems used for pools and tanks often discharge pulses of highly concentrated wastes during cleaning and harvesting. Offshore mariculture activities may have significant impacts on trophic interactions due to the extensive harvesting of krill as feed for pen-raised finfish. Currently, the CDFG manages mariculture activities in the Sanctuary in state waters and there are no mariculture activities in federal waters. NOAA will coordinate with relevant agencies on proposed new mariculture facilities in or adjacent to the Sanctuary.

Prohibiting Renewal of a Preexisting Lease or Exercise of a New Mariculture Lease Option in Tomales Bay without the Approval of the Sanctuary Director

Bays and estuaries are among the most productive natural systems yet are highly susceptible to impacts due to the generally poor circulation, particularly in the case of Tomales Bay. The eelgrass beds there support a diverse invertebrate community. Pacific herring use them for spawning, and salmon, steelhead, halibut, skates, and rays use them for parts of their life history. The members of the Water Quality Working Group found no issue with the current bivalve mariculture uses of Tomales Bay. But they were concerned about future uses and recommended the Sanctuary Director take responsibility for approving any changes to existing mariculture leases or new mariculture activities. According to the CDFG, the agencies have come to a mutually acceptable agreement on how to address this issue, outside of proposing regulatory action.

Restricting Lights from Vessels

The Wildlife Disturbance Working Group identified light impacts as an issue, particularly in regard to vessels and nesting seabirds along the coast. In the summer of 2003, night market squid (*Loligo opalescens*) fishing was observed around the Farallon Islands, disturbing the behavior of nesting and feeding Ashy Storm-Petrels and Cassin's Auklets. A working group of agency, nongovernmental organizations, and fishing representatives was formed to address the issue of light impacts from fishing vessels, which agreed to nonregulatory solutions, including developing an outreach program, working with industry to add shields to lights, and working with the fishing community to educate one another. The GFNMS Sanctuary Advisory Council fishing representative and chair, a salmon fisherman, activated a communication system among the fishing community in the region to monitor and enforce compliance. To date, these efforts have been successful, although the sanctuary will continue to monitor the effectiveness of this approach. In addition, in 2004, the California Fish and Game Commission approved a specific prohibition on fishing for market squid using attracting lights in all waters of the Gulf of the Farallones National Marine Sanctuary at any time.

Restricting Acoustic Impacts on Living Marine Resources

The Wildlife Disturbance Working Group identified acoustic impacts from motorized aircraft and vessels as a potential threat to wildlife. Close vessel passes and low-flying aircraft are known to create behavioral changes in wildlife, including flushing, stampeding, and abandonment. The working group realized that the types and frequency of impacts, particularly on seabirds and marine mammals in the sanctuary, is not well understood. The working group members changed their recommendation into a strategy in the management plan to coordinate with other agencies on field observations and creating a standardized reporting system. Once better information is obtained, the need for acoustic restrictions will be reevaluated.

Prohibiting Any Vessel Discharge in an ASBS in the Sanctuary

The State Water Quality Resources Board designed ASBSs to protect marine species or biological communities from an "undesirable alteration in natural water quality." There are five ASBSs in GFNMS. Within ASBSs, point source waste and thermal discharges are prohibited or limited by special conditions, and

nonpoint source pollution is controlled to the extent practicable. Under California law, discharges of vessel wastes are not currently restricted, although most vessel discharges would be regulated under the proposed new sanctuary regulations. The Water Quality Working Group recommended this alternative, which has since been modified and included in the water quality strategies in the management plan. It will be used to determine if there is a need to prohibit vessel discharge in ASBs in the Sanctuary to protect its resources.

Restricting Materials Used in the Maintenance or Construction of Docks in Piers and within the Footprint in Tomales Bay

This recommendation came from Sanctuary management, the concern stemming from the observed compromised condition of many docks and piers in Tomales Bay requiring maintenance or construction and the possible range of building materials that could be used for repair and replacement. Due to the corrosive nature of the marine environment, few dock or pier materials survive over time in this harsh environment. Many woods are vulnerable to marine invertebrate borers, ultraviolet light, and water logging, so they are treated with chemical compounds wood preservatives, such as creosote, chromated copper arsenate, and alkaline copper quat. These compounds leach into the marine environment, particularly copper. Concrete, on the other hand, is not harmful, except during the setting process when it can reduce the pH of the surrounding water. The primary environmental concerns with plastics are potential leachates into surrounding waters, although the impacts are considered minor. Common metals, such as aluminum, stainless steel, and galvanized steel, are harmless if left untreated or painted. The California Coastal Commission has set comparable environmental standards for marine construction materials, and the Sanctuary will defer to its expertise.

Inclusion of Pioneer Seamount in the Sanctuary

Seamounts are considered highly productive geological features, providing hard substrate for benthic invertebrates and algae to settle on, important habitat for fish, and feeding grounds for marine mammals and seabirds. Pioneer Seamount is near the southwest boundary of GFNMS. Because Pioneer Seamount is both a significant geological feature and one with high biological diversity, there has been interest for many years, including during the scoping process, to include it in the Sanctuary. Rather than propose regulatory action at this time, GFNMS's proposed management plan includes a strategy to develop a framework for evaluating additional areas to be considered for Sanctuary designation and a community-based process to evaluate and recommend options.

Inclusion of the Nearshore Waters off the Sonoma Coast in the Sanctuary

During the JMPR scoping process, a priority issue identified for GFNMS was the expansion of GFNMS to include additional areas to the north. These are considered areas of concern due to the potential for offshore oil and gas development. Rather than propose regulatory action at this time, GFNMS's management plan includes a strategy to develop a framework for evaluating additional areas to be considered for sanctuary designation, and a community-based process to evaluate and make recommendations on options.

Prohibit Discharge Through Air

There is concern that discharge such as wastewater from sources above the mean high water mark (such as outfall pipes), fuel dumping from aircraft, and airborne particulate matter that enter Sanctuary waters may injure or harm Sanctuary resources. After further review, Sanctuary staff determined that adding to the discharge regulation the proposed "enter and injure" component addresses GFNMS concerns.

Adding to Prohibition on Exploring for, Developing, and Producing Oil and Gas to Include Developing and Producing Minerals

There is concern that areas identified as potential leases for oil and gas development in GFNMS may be developed for other extractive purposes. The Sanctuary will not be addressing this concern at this time, as this issue was not identified as a priority.

Remove from the Oil and Gas Prohibition the Exception for Pipelines Related to Hydrocarbon Operations Outside the Sanctuary

Since the designation of the Sanctuary in 1981, no adjacent oil and gas leases have been developed, so no interest has been expressed in laying pipelines across the submerged lands of the Sanctuary. Sanctuary staff felt this was relic language and should be removed to simplify and streamline the regulatory language. The Sanctuary will not be addressing this at this time, as this issue was not identified as a priority.

MBNMS Alternatives

Boundary Modification to Include the SS Montebello Shipwreck

The Maritime Heritage Working Group and MBNMS Sanctuary Advisory Council recommended that MBNMS consider the appropriateness of expanding the southern MBNMS boundary by 1.6 miles (2.5 km) to include the USS Montebello, which was sunk in 1941 by a Japanese submarine. The USS Montebello contains significant amounts of crude oil in its cargo hold, and increasing structural corrosion may result in release of the crude oil into the marine environment. The Montebello is a significant cultural resource, as well as a potential threat to marine resources. MBNMS has also led research cruises to the site for investigation. MBNMS considered this boundary modification and rejected this alternative. Inclusion of the Montebello should be considered as part of a larger discussion of the southern extension of MBNMS that is occurring within the San Luis Obispo Marine Interests Group. MBNMS staff also concluded that adequate education and mapping efforts have been completed to inform the public about the resource, its history, and the potential threat. Future expeditions may check the integrity of the hull structure, and this can occur with MBNMS support without incorporation into MBNMS.

Eliminating the Monterey and Moss Landing MPWC Zone

The MPWC Working Group discussed several options regarding the regulation of MPWC, including criteria to possibly eliminate certain MPWC zones that are not traditionally used due to their location. This alternative was rejected since an alternative to consider complete elimination of the MPWC zones would be analyzed in this FEIS. Retaining these areas will also allow for the possibility of their use by MPWC riders in the southern Monterey Bay when all MPWCs are restricted to the zones. Variations of zone elimination would not result in any substantive decrease in wildlife disturbance, so they were not brought forward for further consideration.

Eliminate the Prohibition on New Dredge Disposal Sites and Regulation of Dredge Disposal in MBNMS

Members of the Harbors and Dredge Disposal Working Group requested that MBNMS no longer regulate dredge disposal in MBNMS. After some discussion, this request was discontinued due to lack of support, and the Working Group unanimously recommended an action plan without this alternative. During subsequent deliberations, the harbor representatives of the Sanctuary Advisory Council also proposed eliminating MBNMS's authority to regulate and exempt dredge disposal from the discharge prohibition. The proposal did not include a justification for increasing the amount of dredge material disposal or number of dredge disposal locations. Both actions would require modifying the designation document, which states that regulation of the

dredge disposal is a significant reason MBNMS was designated in the first place, along with restrictions on oil and gas development and discharge of sewage. No alternatives were substituted other than continued coordination with the various harbors in their dredge disposal and maintenance operations.

Eliminating MBNMS Prohibitions in a Buffer Zone Around the Four Harbors of MBNMS

This proposal was also offered by the harbor representatives in an effort to reduce MBNMS regulation of harbor activities. Currently, anchoring vessels, installing navigation aides, maintaining the harbor, including dredging entrance channels and making repairs, replacing breakwaters and jetties, or rehabilitating docks or piers are all activities exempt from MBNMS regulation. The Sanctuary Advisory Council subsequently could not find adequate reason for providing less regulation of harbor-related activities. No alternatives were substituted other than continued coordination with the various harbors in their dredge disposal and maintenance operations.

Designating an Overflight Restriction Zone in the Vicinity of Devil's Slide in San Mateo County

The Wildlife Disturbance Working Group discussed additional regulations to protect sensitive bird roosting sites at the Devil's Slide area of the San Mateo coast. Designating an overflight restriction zone would increase the mandatory ceiling for aircraft in the area and reduce the disturbance of the nesting and roosting activities of the Common Murre. This alternative was not forwarded to the Sanctuary Advisory Council due the potential conflicts with two airports in the immediate vicinity. In order to provide additional protections for that area, increased outreach and education of pilots was inserted into the action plans.

Extending the MBNMS Boundary to Include the Davidson Seamount, Sur Canyon, and Lucia Canyon

The Davidson Seamount Working Group considered various boundary configurations to protect the Davidson Seamount including a boundary alternative to extend the boundary wholly to include the Davidson Seamount as well as two canyons that extend out from the Big Sur Coast. This alternative was rejected since the alternative did not provide additional protection for the Davidson Seamount beyond the current proposal. Also, a significant portion of central California's submarine canyon habitat is currently protected by MBNMS.

Alternative Configurations for MBNMS Boundary Around Davidson Seamount

The Davidson Seamount Working Group considered several boundary options to protect the Davidson Seamount. The ellipse option provided protection of the Davidson Seamount, but the proposal did not offer the same benefits in ease of understanding for ocean users and enforcement as a boundary option with four known points (square) or being equidistant from a known point (circle). Therefore, the alternative was not further considered.

Prohibit All Fishing Below 200 Feet of the Sea Surface Within the Davidson Seamount Area

Prohibiting all fishing below 200 feet (60 meters) would further reduce the threat posed by lost gear and provide needed protection for a greater proportion of the mid-water organisms that may have ecological links to the seamount. This alternative has greater conservation benefits than the preferred alternative since the distinguishing feature of this alternative is its protection of additional communities in the water column above the seamount. This alternative was rejected since it would not allow for the development of any future mid-water trawl fishery and provides a small buffer between the existing fishing activities and the protected area. MBNMS may want a new mid-water trawl fishery to develop as long as there is no impact on the benthic habitats and surrounding water column. In addition, enforcement personnel would not be as able to

distinguish the type of gear being used as an indication of the depth being fished, and virtually any fishing vessel could be in violation.

Include Davidson Seamount Management Zone in MBNMS (only standard regulations apply)

This alternative would apply only the standard MBNMS regulations to the Davidson Seamount area and would allow activities such as anchoring, aquaculture, and lawful fishing operations, which could damage the fragile corals, rare sponge communities, and other pristine habitat in the same manner as unrestricted collection or construction of a submerged cable. This alternative was rejected since it does not meet the goals and objectives of comprehensively protecting the Davidson Seamount for its high resource qualities.

Extension of the Southern Boundary of MBNMS to Include the Entire San Luis Obispo Coastline

Early in the JMPR, MBNMS considered forming a working group to evaluate the extension of the southern boundary south to include the San Luis Obispo County coastline. Members of the community discussed various options and presented to the Sanctuary Advisory Council a proposal to form an independent group that would analyze the issues associated with threats and protective measures and return to MBNMS with recommendations. The community formed the Marine Interest Group that discussed the various issues affecting the local marine region but did not return to MBNMS with a consensus request to move the southern boundary. MBNMS will continue to coordinate with the Marine Interests Group on current and future initiatives to address concerns raised by the community.

Expanding the MBNMS Boundary by Closing the “Donut Hole” or “Exemption Zone” off the Coastline of the City of San Francisco and the Entire San Mateo Coastline

This boundary alternative was raised during the scoping phase and was to be investigated by the Cross-Cutting Working Group. It was not feasible to adequately investigate all of the issues and provide an informed recommendation regarding incorporating the exemption zone. This issue was therefore identified as a future activity to be investigated during implementation of the management plans.

2.5 PROPOSED CHANGES TO SANCTUARY DESIGNATION DOCUMENTS

In addition to and in conjunction with the revisions to the individual sanctuary regulations described in Section 2.2, there are some specific boundary and regulatory changes under consideration that would require changes to the sanctuary designation documents, as described in Section 1.4. These revisions are necessary to establish the authority for certain regulatory activities that are being proposed in the regulation changes (identified in Section 2.2). The analysis of the proposed designation document changes is incorporated in the analysis of related proposed regulatory changes since it is the regulatory changes that could result in changes in the environment.

2.5.1 Cordell Bank National Marine Sanctuary

Designation Document Article 2, Description of the Area

- Clarify that the submerged lands underlying the Sanctuary waters are legally part of the Sanctuary. The CBNMS Designation Document clearly lists Cordell Bank and its surrounding waters as part of the Sanctuary. There are existing Sanctuary regulations that protect the submerged lands, and yet the submerged lands were never explicitly mentioned in the description of the area. The NMSP is seeking to clarify that the submerged lands are part of the Sanctuary in order to make it consistent with the current NMSA authority and the Designation Documents of more recent sanctuaries.

- Modifications to the Description of the Area in the Designation document defining the Sanctuary are proposed in order to ensure accuracy and consistency in the boundary delineation. Boundary coordinates are updated to be based upon the North American Datum of 1983 (NAD 83) and adjust boundaries for technical corrections and using updated technologies. The CBNMS area will be more accurately described as approximately 399 square nm (rather than 397).

Designation Document Article 4, Scope of Regulations: Section 1—Activities Subject to Regulation

- Add authority to prohibit drilling into, dredging, or otherwise altering the submerged lands of the Sanctuary; or constructing, placing, or abandoning any structure, material, or other matter on or in the submerged lands of the Sanctuary.
- Add authority to prohibit taking any marine mammal, sea turtle, or bird in or above the Sanctuary or possessing any marine mammal, sea turtle, or bird, or part thereof, taken in the Sanctuary.
- Add authority to regulate introducing or otherwise releasing from within or into the Sanctuary an introduced species..

These proposed revisions are based on the proposed regulatory changes described above in Section 2.2.

Additional proposed changes to the Designation Document would provide: an updated and more complete description of characteristics that give the Sanctuary particular value; clarification that fishing vessels are subject to Sanctuary regulations with respect to discharges and anchoring; and minor revision in order to conform wording of the Designation Document, where appropriate, to wording used for more recently designated sanctuaries.

2.5.2 Gulf of the Farallones National Marine Sanctuary

Designation Document Article 2, Description of the Area

- Clarify that the submerged lands underlying the Sanctuary waters are legally part of the Sanctuary. The GFNMS Designation Document clearly identifies the area and lists the “intervening waters” as part of the Sanctuary. There are also regulations that protect the submerged lands, and yet the submerged lands were never explicitly mentioned in the description of the area. The NMSP is seeking to clarify that the submerged lands are part of the Sanctuary in order to capture the original intent and to make it consistent with the current NMSA authorities.
- Permanently fix the shoreward boundary adjacent to Pt. Reyes National Seashore to the location of the boundary of Pt. Reyes National Seashore as established at the time of designation of GFNMS in 1981. The purpose of this proposed action is to create a static boundary for the Sanctuary that does not fluctuate, as the boundaries of the National Seashore may change overtime. This would create consistency for the benefit of sanctuary users and would facilitate enforcement and resource protection efforts.
- Modifications to the Description of the Area in the Designation document defining the Sanctuary are proposed in order to ensure accuracy and consistency in the boundary delineation. Boundary coordinates are updated to be based upon the North American Datum of 1983 (NAD 83) and adjust boundaries for technical corrections and using updated technologies.

Designation Document Article 4, Scope of Regulations: Section 1—Activities Subject to Regulation

- Add authority to prohibit discharging or depositing from beyond the Sanctuary boundary any material or other matter that subsequently enters and injures a Sanctuary resource or quality. Currently, GFNMS regulations include prohibiting discharges from within the sanctuary, but the regulations do not address or regulate discharges outside the sanctuary that subsequently enter and injure a sanctuary resource.
- Add authority for drilling into, dredging, or otherwise altering the submerged lands of the Sanctuary; or constructing, placing, or abandoning any structure, material, or other matter on or in the submerged lands of the Sanctuary.
- Add authority to regulate the introduction or release of introduced species.
- Add authority to prohibit taking any marine mammal, sea turtle or bird in or above the Sanctuary or possessing any marine mammal, sea turtle or bird, or part thereof, taken in the Sanctuary, consistent with proposed regulations described in Section 2.1.
- Add the authority to regulate attracting or approaching animals in the Sanctuary.
- Modify authority for operating a vessel in the Sanctuary, including but not limited to, anchoring or deserting.
- Modify the authority regarding possession of a cultural or historical resource to broaden the regulation and facilitate enforcement of regulations that protect these resources.

These proposed revisions to the Sanctuary’s authority are based on the proposed regulatory changes described above in Section 2.1.

Additional proposed changes to the Designation Document would provide: an updated and more complete description of characteristics that give the Sanctuary particular value; an updated explanation of the effect of Sanctuary authority on preexisting leases, permits, licenses, and rights; and minor wording fine-tuning in order to conform wording of the Designation Document, where appropriate, to wording used for more recently designated sanctuaries.

2.5.3 Monterey Bay National Marine Sanctuary

In addition to the proposed changes listed below, the MBNMS Designation Document is proposed to be modified to replace the term “seabed” with the term “submerged lands” to appropriately acknowledge the existing Sanctuary lands in estuarine environments and reflect consistency with the terminology in the NMSA.

Designation Document Article 2, Description of the Area

- Modify the description of the MBNMS boundary to include the Davidson Seamount Management Zone.
- Modify the Description of the Area in the Designation Document defining the Sanctuary to ensure accuracy and consistency in the boundary delineation and to include the Davidson Seamount area. Boundary coordinates are updated to be based upon the North American Datum of 1983 (NAD 83); to include the Davidson Seamount; and to adjust boundaries for technical corrections and using updated technologies.

Designation Document Article 3, Characteristics of the Area that Give it Particular Value

This section is also proposed to be amended to update information on the characteristics of the area and to add discussion of the Davidson Seamount characteristics.

Designation Document Article 4, Scope of Regulations: Section 1—Activities Subject to Regulation

- Add the authority to regulate the release or other introduction of introduced species. This authority would be consistent with proposed revisions in both CBNMS and GFNMS.
- Clarify that the authority to regulate possession of a Sanctuary historical resource applies wherever the resource is found [i.e., inside or outside of the Sanctuary]. The existing Designation Document lists as subject to regulation “possessing within the Sanctuary a Sanctuary resource...” The NMSP proposes to clarify that a prohibition against possession of Sanctuary resources may apply outside the Sanctuary boundary (for example, at a harbor).

Designation Document, Appendix I and II

Appendix I and II contained tables of coordinates for the Sanctuary boundary and dredge disposal sites. These coordinate tables were removed from this section since the boundary is sufficiently described in Article II, Description of the Area and reference is made in that section to the boundary coordinates in the regulations.

The proposed changes in authority for all of these provisions are reflected in the proposed regulatory changes outlined above in Section 2.2.

2.6 TECHNICAL REGULATORY CHANGES

There are several proposed technical changes that would not result in adverse impacts and therefore are not subject to detailed environmental analysis in each issue area in Chapter 3. These technical changes are summarized below.

Cross-Cutting Terminology

The term “traditional fishing” will be replaced with “lawful fishing” in the regulations of all three Sanctuaries.

CBNMS

CBNMS Boundaries

The proposed regulatory changes would clarify that “submerged lands” are within the Sanctuary boundary, that is, part of the Sanctuary. This would update the boundary regulation to make it consistent with the revised Designation Document (see Section 2.5). Technical corrections to the textual boundary description and the list of defining coordinates for the Sanctuary are proposed in order to ensure accuracy and consistency in the boundary delineation. The Sanctuary’s outer boundary coordinates and description of the shoreline boundary demarcation are also proposed for technical corrections using the North American Datum of 1983. Since designation, the area of CBNMS has been described as approximately 397 square nautical miles. However, adjusting for technical corrections and using updated technologies, the CBNMS area is now more accurately described as approximately 399 square nautical miles. This update would not constitute a change in the geographic area of the Sanctuary but rather a more precise estimate of its size.

CBNMS Permit Requirements

A proposed modification would strengthen and augment the requirement that the Director consider certain criteria when evaluating permit applications. Whereas the existing regulation simply indicates that the Director shall evaluate certain matters in deciding whether to grant a permit, the proposed modified regulation would state that the Director may not issue a permit unless the Director first considers certain factors, including but not limited to whether: the duration of the proposed activity is no longer than necessary to achieve its stated purpose; the proposed activity will be conducted in a manner compatible with the primary objective of protection of Sanctuary resources and qualities, considering the extent to which the conduct of the activity may diminish or enhance Sanctuary resources and qualities, any potential indirect, secondary or cumulative effects of the activity, and the duration of such effects; and, it is necessary to conduct the proposed activity within the Sanctuary. The proposed modifications would also add permit application requirements. Permit applicants would be required to submit information addressing the criteria that the Director must consider in order to issue a permit. Additionally, the permit regulation would stipulate that Sanctuary permits are nontransferable and must contain certain terms and conditions. These terms and conditions would include information deemed appropriate by the Director of the National Marine Sanctuary Program. Furthermore, the regulation would require that the permittee agree to hold the United States harmless against any claims arising out of the conduct of the permitted activities.

GFNMS

Boundaries

Technical corrections to the textual boundary description and the list of defining coordinates for the Sanctuary are proposed in order to ensure accuracy and consistency in the boundary delineation.

Submerged Lands Protection

The Sanctuary proposes to modify the regulation prohibiting disturbance to the submerged lands in order to clarify the regulation. Proposed changes are shown on Table 2-1.

Revising the regulation results in a clear statement of the exceptions. The proposed regulation would delete the exception for “construction of an outfall.” This exception is considered relic language since no outfall pipes have been proposed in the Sanctuary in over 20 years. This provision has also been removed from the certification of permits section. The proposed reference to oil and gas pipelines is consistent with proposed technical modifications to the Sanctuary’s oil and gas regulation (see below), which would allow pipelines only in relation to leases adjacent to the Sanctuary. The new language prohibiting “placing or abandoning any structure” provides clarification that structures are not allowed, regardless of whether they are constructed on, transported to, or abandoned on the submerged lands. The proposed regulation would delete the exception for “ecological maintenance” as this term has never been defined or exercised as an exception to the disturbance to the submerged lands regulation. The exception for fishing would be changed from “bottom trawling from a commercial fishing vessel” to “conducting lawful fishing operations,” consistent with other references to lawful fishing.

GFNMS Cultural Resources Protection

The NMSA and site regulations mandate the management and protection of Sanctuary cultural and historical resources. Cultural resources are defined as any historical or cultural feature, including archaeological sites, historic structures, shipwrecks, and artifacts. Historical resources are defined as any resource possessing historical, cultural, archaeological, or paleontological significance, including sites, contextual information,

structures, districts, and objects significantly associated with or representative of earlier people, cultures, maritime heritage, and human activities and events. Historical resources include “submerged cultural resources” and “historical properties,” as defined in the National Historic Preservation Act, as amended, and its implementing regulations, as amended.

The area encompassed by GFNMS is rich in cultural and historical resources, and has a long and interesting maritime history. The seafloor preserves remnants of the sites where people lived and of the vessels in which they conducted trade and fought wars. Ships, boats, wharves, prehistoric sites, and other heritage treasures lie covered by water, sand, and time. The primary cultural resources in GFNMS consist of submerged ships and aircraft. Current Sanctuary regulations prohibit disturbance of these resources. However, the following modification is proposed to the regulatory prohibition regarding historical or cultural resources to provide additional protection:

(7) ~~Removing or damaging any historical or cultural resource~~ Possessing, moving, removing, or injuring, or attempting to move, remove or injure a Sanctuary historical resource.

Overall, the proposed changes to the language of this regulation are marginal and primarily serve the purpose of being consistent with newer regulation language for other sanctuaries, reflecting a greater emphasis by the NMSP to protect cultural sanctuary resources, as mandated by the NMSA. The proposed regulatory language differs from the original regulation by adding prohibitions on “possessing, moving or injuring” or “attempting to move, remove or injure” a Sanctuary historical resource. The addition of the prohibition on “possessing” a cultural resource applies to possessing a resource inside or outside the Sanctuary. This would broaden the authority and would facilitate enforcement of regulations that protect these historical and cultural resources. The term “injure” is defined in the program-wide regulations.

Historical resources in the marine environment are fragile, finite, and nonrenewable. This prohibition is designed to protect these resources so they may be researched and information about their contents and type made available for the benefit of the public. The Sanctuary would be able to ensure that all parties affecting historical resources within the Sanctuary conduct their activities in a systematic fashion according to recognized archaeological procedures and consistent with the National Historic Preservation Act, California State Penal Code Section 622.5 (Objects of Archaeological or Historical Interest), and the Abandoned Shipwreck Act of 1987. Since cultural resources are already protected under state and federal law, this proposed change would not cause additional impacts.

Administrative Technical Changes (Vessel Regulation)

The existing GFNMS regulations prohibit cargo vessels within an area extending two nm (3.7 km; 2.3 miles) from the Farallon Islands, Bolinas Lagoon, or any ASBS). Historically, the number of spills from transiting vessels is small, but the potential impacts are significant, given the number and volume of vessels and the hazardous cargo lane’s proximity to the Farallon Islands and major seabird and marine mammal populations.

A minor change is proposed to clarify vessel regulation language in the current prohibition #4. The proposed change is considered a technical change, as the language in the current regulation has been restructured by putting the prohibition first, followed by the exceptions to the prohibition. Neither the content nor the intent of the regulation has been altered in any way. The proposed change is not intended to pose any additional burden on user groups in the Sanctuary. The structure of this regulation is consistent with new and revised Sanctuary regulations throughout the NMSP.

GFNMS Manager Permit and Modifications to Permit Regulations

GFNMS proposed modifications to their regulations on permit procedures and issuance criteria include a provision to establish a manager permit. Establishing a manager permit is considered a technical change, without implications for environmental effects.

Additionally, in deciding whether to issue a permit, the Director of the NMSP would be required to consider the proposed activity in terms of duration, effects on Sanctuary resources and qualities, potential indirect, secondary, or cumulative effects, and whether it is necessary to conduct the activity in the Sanctuary. In addition, the proposed modifications to the permit procedures and criteria (15 CFR 922.72) would further refine current requirements and procedures found in the general NMSP regulations (15 CFR 922.48[a] and [c]). The revised section would also add language to the GFNMS permit regulations about permit duration. The proposed modifications to the permit regulations would also expressly require that the permittee agree to hold the United States harmless against any claims arising out of the permitted activities.

MBNMS

MBNMS Boundaries

Technical corrections to the textual boundary description and the list of defining coordinates for the Sanctuary are proposed in order to ensure accuracy and consistency in the boundary delineation. The Sanctuary has proposed technical changes to its boundaries, which are minor for purposes of clarifying existing boundaries. For example, NOAA has redefined the shoreline boundary at Santa Cruz Harbor as a virtual line extending from the tip of the east breakwater to the center of the west breakwater light at the entrance to the small craft harbor. The area between the west breakwater light and the Pt. Santa Cruz lighthouse is now part of the MBNMS, which is consistent with the original intent of MBNMS designation.

Submerged Lands

The proposed regulatory changes would modify the prohibition against altering the seabed of the Sanctuary. The term “seabed” would be replaced with “submerged lands” to be consistent with the NMSA. Additionally, the submerged lands in estuarine areas within the Sanctuary, such as Elkhorn Slough, are not accurately described as “seabed.” The proposed regulatory changes would also clarify that activities currently excepted from the prohibition against altering the submerged lands or constructing, placing or abandoning any matter on them are only excepted to the extent that disturbing the submerged lands is necessary to their completion.

Wildlife Protection

The slight modifications to MBNMS prohibitions regarding the taking of wildlife (prohibition 5) are technical in nature and have no physical or environmental effect.

**Table 2-1
Proposed and Alternative Regulatory Changes**

CBNMS	GFNMS	MBNMS
Introduced Species—Cross-Cutting		
<p>Existing: None</p> <p>Proposed: Prohibits introducing or otherwise releasing from within or into the Sanctuary an introduced species, except striped bass (<i>Morone saxatilis</i>) released during catch and release fishing activity. (GFNMS also exempts species cultivated by existing mariculture activities in Tomales Bay pursuant to a valid lease, permit, license or other authorization issued by the State of California and in effect on the effective date of the final regulation, provided that the renewal by the State of any authorization does not increase the type of introduced species being cultivated or the size of the area under cultivation with introduced species).</p> <p>Defines “introduced species” as (1) a species (including, but not limited to, any of its biological matter capable of propagation) that is nonnative to the ecosystem(s) protected by the Sanctuary; or (2) any organism into which altered genetic matter or genetic matter from another species has been transferred in order that the host organism acquires the genetic traits of the transferred genes.</p> <p>Alternative: None</p>		
Discharge Regulations Clarifications & Exceptions—Cross-Cutting		
<p>Existing: Prohibits (1)(1) Depositing or discharging, from any location within the boundary of the Sanctuary, material or other matter of any kind except: [Existing language also prohibits discharge from outside the Sanctuary—see below under Water Quality.]</p> <p>Proposed: Prohibits (1)(1) Discharging or depositing, from within or into the Sanctuary, other than from a cruise ship, any material or other matter except:</p> <p>Alternative: None</p>	<p>Existing: Prohibits Discharging or depositing any material or other matter except:</p> <p>Proposed: Same as CBNMS</p> <p>Alternative: None</p>	<p>Existing: Prohibits (1)(1) Depositing or discharging, from any location within the boundary of the Sanctuary, material or other matter of any kind except: [Existing language also prohibits discharge from outside the sanctuary—see below under Water Quality.]</p> <p>Proposed: Same as CBNMS</p> <p>Alternative: None</p>
<p>Existing: Exception for (A) Fish, fish parts, chumming materials (bait) produced and discarded during routine fishing activities conducted in the Sanctuary;</p> <p>Proposed: Exception for (A) Fish, fish parts, or chumming materials (bait) used in or resulting from lawful fishing activity within the Sanctuary and discharged or deposited while conducting lawful fishing activity within the Sanctuary;</p> <p>Alternative: None</p>	<p>Existing: Exception for Fish or fish parts and chumming materials (bait)</p> <p>Proposed: Same as CBNMS</p> <p>Alternative: None</p>	<p>Existing: Exception for Fish, fish parts, chumming materials (bait) produced and discarded during routine fishing activities conducted in the Sanctuary;</p> <p>Proposed: Exception for Fish, fish parts, or chumming materials, or bait used in or resulting from lawful fishing operations within the Sanctuary, provided that such discharge or deposit is during the conduct of lawful fishing operations within the Sanctuary;</p> <p>Alternative: None</p>
Marine Sanitation Devices & Graywater—Cross-Cutting		
<p>Existing: Exception for (B) Water (including cooling water) and other biodegradable effluents incidental to use of a vessel in the Sanctuary and generated by: Marine sanitation devices approved by the United States Coast Guard; routine vessel maintenance, e.g., deck wash down; engine exhaust; or meals on board vessels.</p> <p>Proposed: Exception for (B) For a vessel less than 300 gross registered tons (GRT) or a vessel 300 GRT or greater without sufficient holding tank capacity to hold sewage while within the Sanctuary, clean effluent generated incidental to vessel use and generated by: an operable Type I or II marine sanitation device (US Coast Guard classification) approved in accordance with section 312 of the Federal Water Pollution Control Act, as amended (FWPCA), 33 USC 1322. Vessel operators must lock all marine sanitation devices in a manner that prevents discharge of untreated sewage; (C) Clean material or other matter resulting from deck wash down or vessel engine cooling water; (D) Vessel engine exhaust.</p> <p>Proposed Definition of “clean”: Clean means not containing detectable levels of harmful matter.</p> <p>Proposed New Definition of “Harmful Matter”: Harmful matter means any substance, or combination of substances, which because of its quantity, concentration, or</p>	<p>Existing: Exception for (ii) Water (including cooling water) and other biodegradable effluents incidental to vessel use of the Sanctuary generated by: (A) Marine sanitation devices; (B) Routine vessel maintenance, e.g., deck wash down; (C) Engine exhaust; or (D) Meals on board vessels.</p> <p>Proposed: Same as CBNMS</p>	<p>Existing: Exception for (B) Biodegradable effluent incidental to vessel use and generated by marine sanitation devices approved in accordance with section 312 of the Federal Water Pollution Control Act, as amended, (FWPCA), 33 USC 1322 et seq.; (C) Water generated by routine vessel operations (e.g., cooling water, deck wash down and graywater as defined by section 312 of the FWPCA) excluding oily wastes from bilge pumping; (D) Engine exhaust;</p> <p>Proposed: B same as CBNMS; New definitions of “clean” and “harmful matter” same as CBNMS.</p> <p>(C) Clean vessel deck wash down, vessel engine cooling water, vessel generator cooling water, anchor wash, or bilge water (D) For a vessel less than 300 gross registered tons (GRT) or a vessel 300 GRT or greater without sufficient holding capacity to hold graywater while within the Sanctuary, clean graywater as defined by section 312 of the FWPCA; (E) Vessel engine or generator exhaust; (F) (remains the same as existing regulation)</p>

**Table 2-1
Proposed and Alternative Regulatory Changes**

CBNMS	GFNMS	MBNMS
<p><i>physical, chemical, or infectious characteristics may pose a present or potential threat to Sanctuary resources or qualities, including but not limited to: fishing nets, fishing line, hooks, fuel, oil, and those contaminants (regardless of quantity) listed pursuant to 42 USC 9601(14) of the Comprehensive Environmental Response, Compensation and Liability Act at 40 CFR 302.4</i></p> <p>Alternative: None</p>	<p>Alternative: None</p>	<p>Alternative: None</p>
Cruise Ship Discharge & Definition- Cross-Cutting		
<p>Existing: None</p> <p>Proposed: Prohibits <i>Discharging or depositing, from within or into the Sanctuary, any material or other matter from a cruise ship except clean vessel cooling water, vessel generator cooling water, or anchor wash.</i> Definition: <i>Cruise ship means a vessel of 250 or more passenger berths for hire.</i></p> <p>Alternative: <i>Discharging or depositing, from within or into the Sanctuary, any material or other matter from a cruise ship except clean vessel engine cooling water, vessel generator cooling water, or anchor wash and water treated to a level not to exceed the standards set forth by the Coast Guard in Alaska at 33 CFR 159, Subpart E (Discharge of Effluents in Certain Alaska Waters by Cruise Vessel Operations), provided that the owner/operator has satisfactorily demonstrated compliance with these standards to the Director prior to discharge or deposit.</i></p>	<p>Existing: None</p> <p>Proposed: Same as CBNMS</p> <p>Alternative: Same as CBNMS</p>	<p>Existing: None</p> <p>Proposed: Same as CBNMS</p> <p>Alternative: Same as CBNMS</p>
Water Quality—Discharges from Outside Sanctuary (GFNMS)		
<p>Existing: Prohibits <i>Depositing or discharging, from any location beyond the boundaries of the Sanctuary, material or other matter of any kind, except for the exclusions listed in paragraph (a)(1)(i) of this section, which enter the Sanctuary and injure a Sanctuary resource.</i></p> <p>Proposed: (no substantive change, only minor changes so the language mirrors other sites) <i>Discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality, except for the exclusions listed in paragraph (a)(1)(i) through (a)(1)(ii) of this section.</i></p> <p>Alternative: None</p>	<p>Existing: none</p> <p>Proposed: <i>Discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality, except for the exclusions listed in paragraph (a)(2)(i) through (iv) and (a)(3) of this section.</i></p> <p>Alternative: None</p>	<p>Existing: (no change) Prohibits <i>(ii) Discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality, except those listed in paragraphs (a)(2)(i) (A) through (D) of this section and dredged material deposited at the authorized disposal sites described in appendix B to this subpart, ...</i></p> <p>Proposed: None</p> <p>Alternative: None</p>
Vessels Adrift and Deserted (GFNMS)		
<p>No existing or proposed language</p>	<p>Existing: None</p> <p>Proposed: <i>Deserting a vessel aground, at anchor, or adrift in the Sanctuary.</i></p> <p><i>Leaving harmful matter aboard a grounded or deserted vessel in the Sanctuary.</i></p> <p>[See Marine Sanitation Devices & Graywater—Cross-Cutting (above) for new definition of “Harmful Matter.”] USC</p> <p>Proposed New Definition of “Deserting”: <i>a) leaving a vessel aground or adrift: (1) without notification to the Director of the vessel going aground or becoming adrift within 12 hours of its discovery and developing and presenting to the Director a preliminary salvage plan within 24 hours of such notification; (2) after expressing or otherwise manifesting intention not to undertake or to cease salvage efforts; or (3) when the owner/operator cannot after reasonable efforts by the Director be reached within 12 hours of the vessel's condition being reported to authorities; or b) leaving a vessel at anchor when its condition creates potential for a grounding, discharge, or deposit and the owner/operator fails to secure the vessel in a timely manner."</i></p> <p>Alternative: None</p>	<p>Existing: None</p> <p>Proposed: Same as GFNMS</p> <p>Proposed New Definition of “Harmful Matter”: Same as GFNMS</p> <p>Proposed New Definition of “Deserting”: Same as GFNMS</p> <p>Alternative: None</p>

**Table 2-1
Proposed and Alternative Regulatory Changes**

CBNMS	GFNMS	MBNMS
Wildlife Disturbance (GFNMS and CBNMS)		
<p>Existing: None</p> <p>Proposed: Prohibits (11) Taking any marine mammal, sea turtle, or bird within or above the Sanctuary, except as authorized by Marine Mammal Protection Act, as amended, (MMPA), 16 USC 1362 et seq., the Endangered Species Act, as amended, (ESA), 16 USC 1531 et seq., and the Migratory Bird Treaty Act, as amended, (MBTA), 16 USC 703 et seq., or any regulation, as amended, promulgated under the MMPA, ESA, or MBTA.</p> <p>(12) Possessing within the Sanctuary (regardless of where taken, moved or removed from) except as necessary for valid enforcement purposes, any marine mammal, sea turtle or bird taken, except as authorized under the MMPA, ESA, MBTA, under any regulation, as amended, promulgated under these Acts, or as necessary for valid law enforcement purposes.</p> <p>Alternative: None</p>	<p>Existing: None</p> <p>Proposed: Same as CBNMS</p> <p>Alternative: None</p>	<p>Existing: Prohibits (5) Taking any marine mammal, sea turtle or seabird in or above the Sanctuary, except as permitted by regulations, as amended, promulgated under the Marine Mammal Protection Act, as amended, (MMPA), 16 USC 1361 et seq., the Endangered Species Act, as amended, (ESA), 16 USC 1531 et seq., and the Migratory Bird Treaty Act, as amended, (MBTA), 16 USC 703 et seq.</p> <p>Proposed: Technical Change (5): seabird changed to birds to clarify applicability and to be consistent with CB and GF; and existing language conformed to proposed CB and GF language.</p> <p>Existing: Prohibits (8) Possessing within the Sanctuary (regardless of where taken, moved or removed from), except as necessary for valid law enforcement purposes, any historical resource, or any marine mammal, sea turtle or seabird taken in violation of regulations, as amended, promulgated under the MMPA, ESA or MBTA.</p> <p>Proposed: Technical Change only, Prohibits (8) Possessing within the Sanctuary (regardless of where taken, moved or removed from), any marine mammal, sea turtle or bird, except as authorized under the MMPA, ESA, MBTA, under any regulation, as amended, promulgated under the MMPA, ESA, or MBTA, or as necessary for valid law enforcement purposes. [Deleted reference to historical resource - possession of historical resource is now covered in prohibition #3—see historical resources change below.]</p> <p>Alternative: None</p>
Historical Resources (MBNMS)		
<p>No changes.</p>	<p>No substantive changes</p>	<p>Existing: Prohibits (3) Moving, removing or injuring, or attempting to move, remove or injure, a Sanctuary historical resource.</p> <p>Proposed: (3) Possessing, moving, removing, or injuring, or attempting to possess, move, remove or injure, a Sanctuary historical resource. This prohibition does not apply to possession, moving, removing, or injury resulting incidentally from kelp harvesting, aquaculture, or lawful fishing operations. [Makes possession outside of a sanctuary prohibited.] The same exceptions will continue to apply.</p> <p>Alternative: None</p>
Seabed Protection		
<p>Existing: None</p> <p>Proposed: 4(i) On or within the line representing the 50-fathom isobath surrounding Cordell Bank, drilling into, dredging, or otherwise altering the submerged lands; or constructing, placing, or abandoning any structure, material or other matter on or in the submerged lands. This prohibition does not apply to bottom contact gear used during fishing activities, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific).</p> <p>(ii) In the Sanctuary beyond the line representing the 50-fathom isobath surrounding Cordell Bank, drilling into, dredging, or otherwise altering the submerged lands; or constructing, placing, or abandoning any structure, material or matter on or in the submerged lands, except as incidental and necessary for anchoring any vessel or use of any lawful fishing gear during normal fishing operations. This prohibition does not apply to bottom contact gear used during fishing activities, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific). The coordinates for the line representing the 50-</p>	<p>Existing: Prohibits (3) Except in connection with the laying of pipelines or construction of an outfall if certified in accordance with Sec. 922.84: (i) Constructing any structure other than a navigation aid, (ii) Drilling through the seabed, and (iii) Dredging or otherwise altering the seabed in any way other than by anchoring vessels or bottom trawling from a commercial fishing vessel, except for routine maintenance and navigation, ecological maintenance, mariculture, and the construction of docks and piers in Tomales Bay.</p> <p>Proposed: (no substantive changes) Prohibits Constructing any structure other than a navigation aid; drilling through the submerged lands; placing or abandoning any structure; and dredging or otherwise altering the submerged lands in any way, except: (A) By anchoring vessels in a manner not otherwise prohibited by this part (see Sec. 922.82 (16)); (B) Bottom trawling from a commercial fishing vessel; (C) the laying of pipelines related to hydrocarbon operations in leases adjacent to the Sanctuary in accordance with prohibition (1) of this section; (D) Routine maintenance and construction of docks and piers on Tomales Bay; and (E)) Mariculture activities conducted pursuant to a valid lease, permit, license or other authorization issued by the State of California.</p>	<p>No substantive changes to existing regulations, except that exception added for lawful fishing operations and exceptions listed in (a) (4) (ii) through (a) (4) (vii) do not apply in the Davidson Seamount Management Zone.</p>

**Table 2-1
Proposed and Alternative Regulatory Changes**

CBNMS	GFNMS	MBNMS
<p><i>fathom isobath are listed in Appendix B to this subpart.</i></p> <p>[The Proposed Action exempts lawful fishing activities and defers the regulation of bottom contact fishing gear to recent NOAA Fisheries amendments to the Groundfish Fishery Management Plan (71 FR 27408). The impacts of Proposed Action and Alternative would the same.]</p> <p>Alternative: 4)(i) <i>Except incidental and necessary to lawful use of any fishing gear (other than bottom contact gear), during normal fishing operations: drilling into, or dredging; or otherwise altering Cordell Bank or the submerged lands within the line representing the 50-fathom isobath; or constructing, placing or abandoning any structure, material or other matter on the Bank or on the submerged lands within the line representing the 50-fathom isobath surrounding the Bank. The coordinates for the line representing the 50-fathom isobath are listed in Appendix B to this subpart.</i></p> <p>(ii) <i>Except as is incidental and necessary for anchoring a vessel or use of any lawful fishing gear (other than bottom contact gear), during normal fishing operations: drilling into, dredging, or otherwise altering the submerged lands in the Sanctuary beyond the line representing the 50-fathom isobath surrounding Cordell Bank; or constructing, placing, or abandoning any structure, material or matter on the submerged lands in the Sanctuary beyond the line representing the 50-fathom isobath surrounding Cordell Bank. The coordinates for the line representing the 50-fathom isobath are listed in Appendix B to this subpart.</i></p> <p>Alternative would include a new definition for “bottom contact gear”: <i>fishing gear designed or modified to make contact with the bottom. This includes, but is not limited to, beam trawl, dredge, fixed gear, set net, demersal seine, dinglebar gear, and other gear (including experimental gear) designed or modified to make contact with the bottom. Gear used to harvest bottom dwelling organisms (e.g. by hand, rakes, and knives) are also considered bottom contact gear for purposes of this subpart.</i></p>	<p>Alternative: None</p>	<p>Alternative: None</p>
White Shark Attraction and Approaching (GFNMS and MBNMS)		
<p>No existing or proposed language</p>	<p>Existing: None</p> <p>Proposed: Prohibits <i>Attracting a white shark in the sanctuary; or approaching within 50 meters of any white shark within the line approximating 2 nm around the Farallon Islands. The coordinates for the line approximating 2 nm around the Farallon Islands are listed in Appendix B to this subpart.</i></p> <p>Proposed New Definition: <i>Attract or attracting means the conduct of any activity that lures or may lure any animal in the Sanctuary by using food, bait, chum, dyes, decoys (e.g., surfboards or body boards used as decoys), acoustics or any other means, except the mere presence of human beings (e.g., swimmers, divers, boaters, kayakers, surfers).</i></p> <p>Alternative: Prohibits <i>attracting or approaching white sharks anywhere within the Sanctuary.</i> [Alternative would include proposed new definition, above]</p>	<p>Existing: Prohibits (10) <i>Attracting any white shark in that part of the Sanctuary out to the seaward limit of State waters. For the purposes of this prohibition, the seaward limit of State waters is a line three nm distant from the coastline of the State, where the coastline is the line of ordinary low water along the portion of the coast in direct contact with the open sea. The coastline for Monterey Bay, which is inland waters, is the straight line marking the seaward limit of the Bay, determined by connecting the following two points: 36°57'6"N, 122°01'45"W and 36°38'16"N, 121°56'3"W.</i></p> <p>Existing Definition: <i>Attract or attracting means the conduct of any activity that lures or may lure white sharks by using food, bait, chum, dyes, acoustics or any other means, except the mere presence of human beings (e.g., swimmers, divers, boaters, kayakers, surfers).</i></p> <p>Proposed: Prohibits <i>Attracting any white shark within the Sanctuary.</i></p> <p>Proposed Definition: Same as GFNMS. (white sharks changed to “any animal” and decoys added.) <i>Attract or attracting means the conduct of any activity that lures or may lure any animal in the Sanctuary by using food, bait, chum, dyes, decoys, acoustics or any other means, except the mere presence of human beings (e.g., swimmers, divers, boaters, kayakers, surfers).</i></p> <p>Alternative: none</p>

**Table 2-1
Proposed and Alternative Regulatory Changes**

CBNMS	GFNMS	MBNMS
Benthic Habitat Protection (CBNMS)		
<p>Existing: Prohibits (2) Removing, taking, or injuring or attempting to remove, take, or injure benthic invertebrates or algae located on Cordell Bank or within the 50 fathom isobath surrounding the Bank. There is a rebuttable presumption that any such resource found in the possession of a person within the Sanctuary was taken or removed by that person. This prohibition does not apply to accidental removal, injury, or takings during normal fishing operations.</p> <p>Proposed: Prohibits (2) On or within the line representing the 50-fathom isobath surrounding Cordell Bank, removing, taking, or injuring or attempting to remove, take, or injure benthic invertebrates or algae. This prohibition does not apply to bottom contact gear used during fishing activities, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific). The coordinates for the line representing the 50-fathom isobath are listed in Appendix B to this subpart. There is a rebuttable presumption that any such resource found in the possession of a person within the Sanctuary was taken or removed by that person.</p> <p>[The Proposed Action defers the regulation of bottom contact fishing gear to recent NOAA Fisheries amendments to the Groundfish Fishery Management Plan (71 FR 27408). The impacts of Proposed Action and Alternative would be the same.]</p> <p>Alternative: Prohibits Except incidental and necessary to lawful use of any fishing gear (other than bottom contact gear), during normal fishing operations: removing, taking, or injuring or attempting to remove, take, or injure benthic invertebrates or algae located on Cordell Bank or within or on the line representing the 50-fathom isobath surrounding the Bank. The coordinates for the line representing the 50-fathom isobath are listed in Appendix B to this subpart. There is a rebuttable presumption that any such resource found in the possession of a person within the Sanctuary was taken or removed by that person.</p> <p>[Alternative would add same definition of “bottom-contact gear” as described for Seabed Protection alternative.]</p>	<p>No existing or proposed regulation.</p>	<p>No existing or proposed regulation.</p>
Seagrass Beds (GFNMS)		
<p>No existing or proposed regulation</p>	<p>Existing: none</p> <p>Proposed: New prohibition: Anchoring a vessel in a designated seagrass protection zone in Tomales Bay, except as necessary for mariculture operations conducted pursuant to a valid lease, permit or license. The coordinates for the no-anchoring seagrass protection zones are listed in Appendix B to this subpart.</p> <p>New definition: Seagrass means any species of marine angiosperms (flowering plants) that inhabit portions of the seabed in the Sanctuary. Those species include, but are not limited to <i>Zostera asiatica</i> and <i>Zostera marina</i>.</p>	<p>No existing or proposed regulation</p>
Oil and Gas Pipelines (GFNMS)		
<p>No changes</p>	<p>Existing: Prohibition on: Exploring for, developing and producing oil or gas except that pipelines related to hydrocarbon operations outside the Sanctuary may be placed at a distance greater than 2 NM from the Farallon Islands, Bolinas Lagoon and Areas of Special Biological Significance (ASBS) where certified to have no significant effect on Sanctuary resources in accordance with Section 922.84.</p> <p>Proposed: Exploring for, developing and producing oil or gas except that pipelines related to hydrocarbon operations adjacent to the Sanctuary may be placed at a distance greater than 2 NM from the Farallon Islands, Bolinas Lagoon and Areas of Special Biological Significance (ASBS) where certified to have no significant effect on Sanctuary resources in accordance with Section 922.84.</p>	<p>No changes</p>

**Table 2-1
Proposed and Alternative Regulatory Changes**

CBNMS	GFNMS	MBNMS
	Alternative: None	
Boundary Changes (MBNMS & GFNMS)		
<p>No substantive changes</p>	<p>Existing: The western shoreward boundary adjacent to the Pt. Reyes National Seashore in Tomales Bay currently changes every time the National Park Service modifies the boundary for the Pt. Reyes National Seashore.</p> <p>Proposed: Permanently fix the shoreward boundary adjacent to Pt. Reyes National Seashore to the location of the boundary of Pt. Reyes National Seashore as established at the time of designation of GFNMS in 1981. The Sanctuary boundary, as described in Sec. 922.80 and Appendix A of the proposed rule, “fixes” the GFNMS boundary to the boundary that was in place at the time of sanctuary designation.</p> <p>Alternative: None</p>	<p>Existing: Davidson Seamount is not included in MBNMS.</p> <p>Proposed: Adds Davidson Seamount Management Zone (DSMZ) to the Sanctuary: <i>This area, bounded by a rectangle centered on the top of the Davidson Seamount, consists of approximately 585 square NM of ocean waters and the submerged lands thereunder. This portion of the Sanctuary is located approximately 70 NM off the coast of San Simeon in San Luis Obispo County.</i></p> <p><i>Definitions: The Davidson Seamount Management Zone means the ocean waters and submerged lands thereunder, bounded by coordinates West: 123°W; East: 122.5°W; North: 35.9°N; South: 35.5°N</i></p> <p><i>The exceptions listed in subparagraphs (a)(4)(ii) through (a)(4)(vii) of this section do not apply in the Davidson Seamount Management Zone.</i></p> <p><i>(11) (i) Moving, removing, taking, collecting, catching, harvesting, disturbing, breaking, cutting, or otherwise injuring, or attempting to move, remove, take, collect, catch, harvest, disturb, break, cut, or otherwise injure, any Sanctuary resource located more than 3,000 feet below the sea surface within the Davidson Seamount Management Zone (DSMZ). This prohibition does not apply to fishing below 3,000 feet within the DSMZ, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific).</i></p> <p><i>(ii) Possessing any Sanctuary resource the source of which is more than 3,000 feet below the sea surface within the Davidson Seamount Management Zone. This prohibition does not apply to possession of fish resulting from fishing below 3,000 feet within the DSMZ, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific).</i></p> <p>[The Proposed Action exempt fishing activities and defers the regulation of bottom contact fishing gear to recent NOAA Fisheries amendments to the Groundfish Fishery Management Plan (71 FR 27408). The impacts of Proposed Action and Alternative would be the same.]</p> <p>Alternative 1: Restrictions on fishing below 3000 feet would be applied and no exception for disturbing the submerged lands for lawful fishing operations would be provided.</p> <p>Alternative 2: Circular boundary encompassing 707 sq. miles with same regulations as proposed.</p>
Personal Watercraft (MBNMS)		
<p>No existing or proposed regulations</p>	<p>Existing: (no change) Prohibits: (7) <i>Operation of motorized personal watercraft, except for the operation of motorized personal watercraft for emergency search and rescue mission or law enforcement operations (other than routine training activities) carried out by National Park Service, US Coast Guard, Fire or Police Departments or other Federal, State or local jurisdictions.</i></p> <p>Proposed: None</p>	<p>Existing: Definition: <i>Motorized personal watercraft means any motorized vessel that is less than fifteen feet in length as manufactured, is capable of exceeding a speed of fifteen knots, and has the capacity to carry not more than the operator and one other person while in operation. The term includes, but is not limited to, jet skis, wet bikes, surfjets, miniature speed boats, air boats, and hovercraft.</i></p> <p>Prohibits: (7) <i>Operating motorized personal watercraft within the Sanctuary except within the four designated zones and access routes within the Sanctuary described in appendix E to this subpart.</i></p> <p>Proposed: Redefines MPWC as: (1) <i>any vessel, propelled by machinery, that is designed to be operated by standing, sitting, or kneeling on, astride, or behind the vessel, in contrast to the conventional manner, where the operator stands or sits inside the vessel; or (2) any vessel less than 20 feet in length overall as manufactured and propelled by machinery and that has been exempted from compliance with the US Coast Guard’s Maximum Capacities Marking for Load Capacity regulation found at 33 CFR Parts 181 and 183 (except submarines); or (3) any other vessel that is less than 20 feet in length overall as manufactured, and is propelled by a water jet pump or drive.</i></p>

**Table 2-1
Proposed and Alternative Regulatory Changes**

CBNMS	GFNMS	MBNMS
		<p>Revised Prohibition: (7) <i>Operating motorized personal watercraft within the Sanctuary except within the five designated zones and access routes within the Sanctuary described in appendix E to this subpart. Zone Five (at Pillar Point) exists only when a high surf warning has been issued by the National Weather Service and is in effect for San Mateo County, and only during December, January, and February.</i></p> <p>Alternative: Prohibits: <i>Operating motorized personal watercraft within the Sanctuary.</i> Same definition as proposed.</p>
<i>Dredge Disposal (MBNMS)</i>		
<p>No existing or proposed regulation</p>	<p>No existing or proposed regulation</p>	<p>Existing: Allows disposal of <i>dredged material deposited at the authorized disposal sites described in appendix B to this subpart, provided that the dredged material disposal is pursuant to, and complies with the terms and conditions of, a valid Federal permit or approval.</i></p> <p>Proposed: MBNMS will define and recognize a location of dredge disposal site SF-12. Redefinition of the SF-12 site is needed to clarify its exact location and to allow disposal of dredge material to occur at the intended location, at the head of the Monterey Canyon. Also will define and codify Santa Cruz and Monterey Disposal Sites.</p> <p>Alternative: None</p>

CHAPTER 3

AFFECTED ENVIRONMENT AND IMPACT ANALYSIS

SECTION 3

AFFECTED ENVIRONMENT AND IMPACT ANALYSIS

3.1 INTRODUCTION TO AFFECTED ENVIRONMENT AND IMPACT ANALYSIS

3.1.1 Chapter Overview

This chapter provides an overview of the baseline physical, biological, social, and economic conditions that occur within the region of influence (ROI) (the potentially affected area or study area for a particular resource) and is an analysis of the environmental consequences of the Proposed Action (preferred alternative), the Alternative Regulatory Actions, and the No Action alternative. The Proposed Action is the set of regulatory changes for each Sanctuary, as described in Chapter 2. In addition, cumulative impacts are assessed in each resource area.

The chapter is organized by sections on each resource area. As applicable, each section includes a definition of the ROI for that resource, a general overview of relevant legislative and regulatory requirements governing the resource, and a discussion of the general conditions of the resource within the ROI. Because the Proposed Action includes a series of separate regulatory actions that may not equally affect all areas of the three sanctuaries, the affected environment is described in general terms across the three-sanctuary area, with more specific information provided regarding resources affected by specific regulatory changes. As a result, some sections, such as air quality (Section 3.2), provide only a general discussion of the resource conditions, while the biological resources discussion (Section 3.3) provides a more specific discussion of the resources and impacts on each sanctuary.

The second part of each section describes the methodology used for impact analysis and criteria used to determine the significance of direct and indirect impacts (40 CFR 1508.8). Direct impacts are those that are caused by the Proposed Action and occur at the same time and place. Indirect impacts are those that are caused by the Proposed Action but occur later in time or are farther removed in distance from the Proposed Action.

To determine whether an impact is significant, CEQ regulations (40 CFR 1508.27) and NOAA guidance (NAO 216-6) also require the consideration of context and intensity of potential impacts. Context normally refers to the setting, whether local or regional, and intensity refers to the severity of the impact. Also, an EIS should include a discussion of the possible conflicts between the Proposed Action and the objectives of federal, regional, state, and local land use plans and policies for the area concerned (40 CFR 1502.16 [c]).

The impact analysis for each resource category includes a description of how the Proposed Action would change the environment relative to existing conditions and the current management programs. The analysis focuses on issues that could result in potentially significant effects. Impacts are also discussed for those resources that would experience a less than significant or minor impact, but for which one might expect a greater level of impact. Impacts are described for the cross-cutting regulations (regulatory changes that are applicable to all three sanctuaries) first, to limit redundancy, followed by a detailed analysis of the regulatory changes specific for each sanctuary. Potential mitigation for significant adverse impacts is identified where applicable. Related elements of the Proposed Action (such as Discharge Regulation Clarifications and Discharge—Marine Sanitation Devices and Graywater) may be discussed jointly, where separating them out is infeasible or may result in a simple repeat of the discussion. Finally, each section concludes with a discussion of the possible cumulative impacts the project may have on the environment when combined with reasonably foreseeable past, present, and future projects undertaken outside the scope of the proposed regulatory changes.

Impacts are classified according to the following categories:

- Significant unavoidable—Significant and not likely to be mitigated to a level that is not significant;
- Significant mitigable—Significant but could be reduced to a level that is less than significant with identified mitigation;
- Less than significant—Adverse but not significant;
- Beneficial—A positive effect as a result of the Proposed Action; and
- No impact.

Impacts in the top two categories (significant unavoidable or significant mitigable) are assigned an impact number in the text (e.g., *Impact 1: Modification of the existing view*) with a corresponding numbered mitigation. Impacts in the next three categories (less than significant, beneficial or no impact) are not assigned an impact number.

3.1.2 Scope of Impact Analysis

Only the background environmental and socioeconomic conditions relevant to the Proposed Actions are presented, including air quality, biological resources, oceanography and geology, water quality, commercial fisheries, cultural resources, hazardous waste/hazardous materials, land use and development, marine transportation, public access and recreation, research and education, socioeconomics and environmental justice, and visual resources. Resource areas that have been determined to have no potential for significant impacts by the Proposed Action or the Alternative Regulatory Actions are not discussed in this FEIS. See Section 5.5 for a summary of impacts found to be not significant. The analysis of the proposed designation document changes is incorporated in the analysis of related proposed regulatory changes since it is the regulatory changes that could result in changes in the environment and not the change in the designation document.

Within each resource area, the impact analysis addresses only those proposed regulations that have the potential to impact the specific resource. Where there is no potential for a specific proposed regulation to affect a particular resource, the regulation is generally not discussed. The reasoning behind a no impact

finding is discussed only where an impact might reasonably be expected in that context. Beneficial impacts are described when they occur.

Technical Changes

Regulatory changes that are technical and that will result in no direct or indirect impact on any resources in the ROI are not discussed in the impact analysis. These changes include technical administrative changes, minor technical boundary modifications, and other minor technical wording changes that do not change the regulatory intent or compliance requirements, as discussed in Section 2.6.

Analysis of Related Actions

As described in the introduction to Chapter 2, management plan actions that do not result in regulatory changes and have no potential for significant impacts are not considered in this FEIS. These action plans are described in detail in the FMPs in Volumes I, II, and III and summarized in Appendix B. Because the FMPs and non-regulatory action plans will be implemented regardless of whether the Proposed Action or Alternative Regulatory Actions would be approved, the generally beneficial impacts of the FMPs are discussed in the cumulative analysis rather than as part of the direct impact analysis for each resource section.

NOAA Fisheries, in coordination with the PFMC, has promulgated regulations amending the Groundfish Fishery Management Plan along the Pacific coast. These regulations, described in more detail in Sections 3.3.4 and 3.6.2, were finalized on May 11, 2006, and became effective on June 12, 2006 (71 FR 27408). The Proposed Action discussion in this FEIS, therefore, assumes that the regulatory and environmental baseline includes these NOAA Fisheries regulations. In addition, during preparation of this FEIS, the NMSP developed alternatives for CBNMS and Davidson Seamount, as discussed in Sections 2.2.2 and 2.2.4 of the Project Description. These alternatives provide that in the unlikely event that the NOAA Fisheries regulations are not implemented or did not meet the Sanctuary's goals and objectives for each area, bottom-contact fishing would continue to be restricted within the 50-fathom isobath surrounding Cordell Bank, and below 3,000 feet at Davidson Seamount under the NMSA. These alternatives would ensure protection of groundfish and their impacts analyzed under Alternative Regulatory Actions.

3.1.3 Scoping Issues

During the Jmpr public scoping process, many issues were raised. The scoping process included solicitation of comments on issues to be addressed in the management plan review, as well as comments on issues to be analyzed in this FEIS. A summary scoping report was prepared, based on over 12,500 comments received during the scoping process for the Jmpr, and is provided in Appendix A. The issues raised are listed below in Table 3-1. The majority of scoping issues relate to the management plans rather than to the FEIS, and many of these issues are addressed by non-regulatory action plans in the FMPs. In most cases, proposed regulations analyzed in this FEIS do not affect these identified issues.

Table 3-1
Location of Major Scoping Issue Discussions in Document

Major Scoping Issue	Discussion in Document
Acoustics	Section 3.3 (Biological Resources)
Aquaculture and kelp harvest	Sections 3.3 (Biological Resources), 3.5 (Water Quality), 3.6 (Commercial Fisheries), 3.9 (Land Use and Development)
Boundary modifications	Section 3.3 (Biological Resources)
Coastal armoring impacts on recreational uses	Section 3.11 (Public Access and Recreation)
Coastal development	Section 3.5 (Water Quality), 3.9 (Land Use and Development), 3.14 (Visual Resources)
Coastal erosion and protective armoring	Sections 3.4 (Oceanography and Geology), 3.9 (Land Use and Development)
Conflicts between recreational users and marine wildlife	Sections 3.3 (Biological Resources), 3.11 (Public Access and Recreation)
Cruise ship impacts	Sections 3.5 (Water Quality), 3.10 (Marine Transportation)
Cultural resources	Section 3.7 (Cultural and Maritime Heritage Resources)
Ecosystem-based conservation and management	Sections 3.3 (Biological Resources), 3.6 (Commercial Fisheries)
Education	Sections 3.7 (Cultural and Maritime Heritage Resources), 3.12 (Research and Education)
Enforcement	Sections 3.3 (Biological Resources), 3.7 (Cultural and Maritime Heritage Resources), 3.10 (Marine Transportation)
Exotic species	Sections 3.3 (Biological Resources), 3.5 (Water Quality), 3.6 (Commercial Fisheries), 3.10 (Marine Transportation)
Fishing	Sections 3.3 (Biological Resources), 3.6 (Commercial Fisheries), 3.11 (Public Access and Recreation)
Fishing regulations	Section 3.6 (Commercial Fisheries)
Habitat alteration	Sections 3.3 (Biological Resources), 3.6 (Commercial Fisheries), 3.9 (Land Use and Development)
Impacts from fishing gear	Sections 3.3 (Biological Resources), 3.6 (Commercial Fisheries)
Krill harvesting	Section 3.6 (Commercial Fisheries)
Marine bioprospecting	Sections 3.4 (Oceanography and Geology), 3.9 (Land Use and Development), 3.13 (Socioeconomic, Demographic, and Environmental Justice Resources)
Marine debris and discharge	Sections 3.3 (Biological Resources), 3.4 (Oceanography and Geology), 3.5 (Water Quality), 3.8 (Hazardous Wastes and Waste Disposal), 3.10 (Marine Transportation)
Military activities	Sections 3.3 (Biological Resources), 3.8 (Hazardous Wastes and Waste Disposal), 3.9 (Land Use and Development)
MPWC	Sections 3.5 (Water Quality), 3.11 (Public Access and Recreation), 3.13 (Socioeconomic, Demographic, and Environmental Justice Resources)
Oil and gasoline development	Sections 3.3 (Biological Resources), 3.4 (Oceanography and Geology), 3.5 (Water Quality), 3.8 (Hazardous Wastes and Waste Disposal), 3.9 (Land Use and Development), 3.14 (Visual Resources)
Partnerships between NOAA and community recreational groups	Section 3.11 (Public Access and Recreation)
Radioactive waste	Sections 3.3 (Biological Resources), 3.4 (Oceanography and Geology), 3.5 (Water Quality), 3.8 (Hazardous Wastes and Waste Disposal)
Recreational user conflicts	Section 3.11 (Public Access and Recreation)

Table 3-1
Location of Major Scoping Issue Discussions in Document (*continued*)

Major Scoping Issue	Discussion in Document
Regulations on Recreational Activities	Section 3.11 (Public Access and Recreation)
Research	Section 3.7 (Cultural and Maritime Heritage Resources), 3.12 Research and Education
Socioeconomic impacts on abalone farming, white shark viewing, ecotourism, recreational activities, and other industry sectors that are influential in regional economies	Sections 3.11 (Public Access and Recreation), 3.13 (Socioeconomic, Demographic, and Environmental Justice Resources)
Spill response and contingency planning	Sections 3.3 (Biological Resources), 3.5 (Water Quality), 3.8 (Hazardous Wastes and Waste Disposal)
Surfing restrictions	Section 3.11 (Public Access and Recreation)
Sustainable fisheries	Section 3.6 (Commercial Fisheries)
Tidal scour in Elkhorn Slough	Section 3.4 (Oceanography and Geology)
User conflicts	Sections 3.6 (Commercial Fisheries), 3.9 (Land Use and Development), 3.11 (Public Access and Recreation)
Vessel traffic	Sections 3.3 (Biological Resources), 3.8 (Hazardous Wastes and Waste Disposal), 3.10 (Marine Transportation)
Water quality and Sanctuary beach closures	Sections 3.5 (Water Quality), 3.8 (Hazardous Wastes and Waste Disposal)
Wildlife disturbance	Section 3.3 (Biological Resources), Section 3.11 (Public Access and Recreation)

3.1.4 Cumulative Effects Scenario

CEQ regulations implementing NEPA require that the cumulative impacts of a proposed action be assessed (40 CFR Parts 1500-1508). A cumulative impact is an “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR 1508.7, NAO 216-6). Cumulative impacts can result from individually minor but collectively significant actions taking place over time (40 CFR 1508.7). NAO 216-6 also requires that cumulative actions, when viewed with other proposed actions that have cumulatively significant impacts, should be discussed in the same impact statement. Per section 5.09(a) of NAO 216-06, impacts of subsequent specific actions by the program will be assessed in subsequent specific NEPA documents.

CEQ’s guidance for considering cumulative effects states that NEPA documents “should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant” (CEQ 1997). This section presents the methods used to evaluate cumulative impacts, and lists projects that may have cumulative effects when combined with the impacts from the Proposed Action and alternatives discussed in this EIS. At the end of each resource-specific section is a discussion of the cumulative impact on that resource resulting from the contribution of the Proposed Action or alternatives to the impact of the cumulative projects listed in Table 3-2.

Cumulative Impact Assessment Methods

CEQ’s cumulative effects guidance sets out several different methods to determine the significance of cumulative effects, such as checklists, modeling, forecasting, and economic impact assessment, where changes in employment, income, and population are assessed (CEQ 1997). This FEIS uses a variety of methods, depending on the resource area, to determine cumulative socioeconomic and environmental effects. Methods

for gathering and assessing data on cumulative impacts include interviews, use of checklists, and trends analysis.

In general, past, present, and future foreseeable projects are assessed by resource area in Chapter 3. Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects. Interactive effects may be either countervailing, where the adverse cumulative effect is less than the sum of the individual effects, or synergistic, where the net adverse cumulative effect is greater than the sum of the individual effects (CEQ 1997). Where applicable, the resource sections include a discussion of whether project impacts will accelerate any ongoing trends of resource degradation. The ROI for cumulative impacts is often larger than the ROI for direct and indirect impacts.

The projects in Table 3-2 are anticipated to occur in the reasonably foreseeable future within the cumulative impact ROI for this project. NOAA has considered the effects of these actions in combination with the impacts of the Proposed Action to determine the overall cumulative impact on the resources discussed in Section 3.

Past, Present, and Reasonably Foreseeable Future Projects

This section identifies numerous projects that could contribute to cumulative impacts (Table 3-2), and provides specific descriptions, where available, for the identified cumulative projects.

The list of cumulative projects was compiled from numerous sources. The initial list of identified projects was reviewed and revised to include only those with some potential to contribute to cumulative impacts. The projects expected to contribute to cumulative impacts are similar in scope to the proposed activities, relate to marine activities, have similar types of impacts within the ROI for a particular resource, affect similar resources within the ROI that are affected by the proposed regulatory changes, or are large enough to have far-reaching effects on a resource. This approach was taken to include both projects for which detailed descriptions and expected impacts are known, as well as projects that have less defined impacts, but, as development projects, may contribute to regional construction-related impacts.

Table 3-2
Projects Expected to Contribute to Cumulative Impacts

Project	Related Project Location	Project Sponsor	Project Description	Projected Completion Date
Revised Management Plan for CBNMS	Sanctuary and adjacent areas	NOAA	The CBNMS proposed management plan includes five action plans addressing education and outreach, ecosystem protection, partnerships with community groups, conservation science, and administration.	Ongoing
Revised Management Plan for GFNMS	Sanctuary and adjacent areas	NOAA	The GFNMS proposed management plan includes nine action plans addressing water quality, wildlife disturbance, introduced species, ecosystem protection, vessel spills, education, conservation science, resource protection and administration.	Ongoing
Revised Management Plan for MBNMS	Sanctuary and adjacent areas	NOAA	The MBNMS proposed management plan includes twenty-two action plans that will guide the Sanctuary for the next five years. Most of the Action Plans are grouped into four main marine management themes: coastal development, ecosystem protection, water quality, and wildlife disturbance. Two additional sections, partnerships and opportunities, as well as operations and administration, compose Action Plans and strategies that address how the Sanctuary will function and operate.	Ongoing
Amendment 19 to Groundfish Fishery Management Plan	All three sanctuaries	NOAA Fisheries/ PFMC	Proposes to establish fishing gear restrictions and prohibitions; closes areas to bottom trawling (including outer Cordell Bank, Farallon Islands/Fanny Shoal, Half Moon Bay, Monterey Bay/Canyon, Point Sur Deep, Big Sur Coast); and closes areas to all fishing that contacts the bottom (including the area within 50 fathoms of Cordell Bank, and the area below 3,000 feet (914 meters) over Davidson Seamount).	May 2006
General NPDES Permits for Discharges with Low Threat to Water Quality	MBNMS	Regional Water Quality Control Boards (RWQCB)	MBNMS Permit # 2001-047. This permit would apply to many types of waste discharges with very low pollutant content and with no likely adverse effect on water quality, including, among others, brine from small desalination facilities to marine waters and flow-through seawater systems (such as aquariums and aquaculture operations).	Ongoing
Advanced Cabled Observatory in the Monterey Bay Canyon	Monterey Bay	Monterey Bay Aquarium Research Institute	Installation of a 31.7-mile-long (51-km) submerged cable, extending from the shore at Moss Landing in Monterey Bay to the northwest, north of the submarine Monterey Canyon, and along the continental margin to the southeastern part of a shelf slope formation known locally as Smooth Ridge.	Winter—spring 2006 until November 2030
Seawall and Shore Armoring Projects	Shoreline within Sanctuaries	Individuals or Municipalities	Coastal armoring projects may include simple installation of riprap, construction of cribwalls, or large-scale construction to protect erosion-prone areas of the coastline. Permitting Agencies are the five counties with jurisdiction for shorelines in the sanctuaries and the California Coastal Commission.	Various

Table 3-2
Projects Expected to Contribute to Cumulative Impacts *(continued)*

Project	Related Project Location	Project Sponsor	Project Description	Projected Completion Date
Monterey County General Plan and Local Coastal Plans	Monterey County, adjacent to MBNMS	Monterey County (Approval by Board of Supervisors)	Monterey County is updating its General Plan, which includes elements on land use, recreation, and infrastructure. The General Plan update will also include possible revisions of the local coastal programs in Monterey County, including, the North County, Carmel Area, Del Monte Forest Area, Big Sur Coast, Big Sur River and Little Sur River Plans, which serve as local coastal programs for those areas of Monterey County.	August 2005
San Mateo County General Plan and Local Coastal Plans	San Mateo County, adjacent to MBNMS	San Mateo County (Approval by Board of Supervisors)	San Mateo County is updating its General Plan, which includes elements on land use, recreation, and infrastructure, and the local coastal program.	Ongoing
San Francisco County General Plan and Local Coastal Plans	San Francisco County, near MBNMS	San Francisco County (Approval by Board of Supervisors)	San Francisco County is updating its General Plan, which includes elements on land use, recreation, and infrastructure.	Ongoing
Marin County General Plan and Local Coastal Plans	Marin County, adjacent to GF & MBNMS	Marin County (Approval by Board of Supervisors)	Marin County is updating its General Plan, which includes elements on land use, recreation, and infrastructure.	2007
Bolinas Lagoon Restoration Project	Marin County, GFNMS	Marin County Open Space District, NOAA and US Army Corps of Engineers	Restoration of natural ecological conditions and processes and increasing tidal flow in the Lagoon.	Ongoing; studies under way
Big Lagoon Restoration	Marin County, near GF and MBNMS	National Park Service, Marin County, San Francisco Zen Center	Restoration of ecological conditions and processes, reducing flooding of local infrastructure, and providing public access to the beach and restored wetland and creek. The National Park Service is undertaking a comprehensive conservation planning and environmental impact analysis regarding the proposed restoration/enhancement of the lower Redwood Creek watershed at Muir Beach. The purposes of the project are to restore or enhance ecological conditions and processes, reduce flooding of local infrastructure, and provide public access to the beach and restored wetland and creek.	Ongoing; studies under way

Table 3-2
Projects Expected to Contribute to Cumulative Impacts *(continued)*

Project	Related Project Location	Project Sponsor	Project Description	Projected Completion Date
Pleasure Point Study	Nearshore Areas of the Pleasure Point area of Santa Cruz County within MBNMS	US Geologic Survey	Installation, maintenance, and recovery of temporary oceanographic research equipment mounted in a patch of sand in the surf zone to conduct geology and oceanographic studies.	October 2005—September 2007
Planktonic Studies project	Within Monterey Bay.	Partnership for Interdisciplinary Studies of Coastal Oceans	To deploy bottom-mounted instrumentation for planktonic studies.	September 2005—May 2007
Santa Cruz Harbor Dredging and Disposal	Santa Cruz Harbor, and disposal offshore of Twin Lakes State Beach, adjacent to MBNMS	Port of Santa Cruz	Yearly dredging is undertaken by the Santa Cruz Port District, co-funded by USACE, and can remove up to 350,000 cubic yards of spoils. The dredge disposal authorization is up for renewal by MBNMS.	Ongoing
Moss Landing Harbor Dredge and Disposal	Moss Landing Harbor, adjacent to MBNMS		Yearly dredging removes 50,000-150,000 cubic yards of spoils from the harbor.	Ongoing
Bodega Bay Dredging	Bodega Bay Harbor, adjacent to GFNMS	US Army Corps of Engineers, Sonoma County Parks Department	USACE dredged the federal channel in order to maintain safe navigation.	2005

3.2 AIR QUALITY AND CLIMATE

This section addresses air quality issues related to the proposed actions. The climate, meteorology, and existing air quality of the region are described, and a summary of federal, state, and local guidelines pertaining to air quality is provided. The impact analysis presents the standards used to evaluate impacts on air quality and addresses potential effects of the proposed actions on air quality. The ROI for the air quality analysis varies according to the type of air pollutant being discussed; some pollutants, such as carbon monoxide, have a localized area of effect, while other pollutants, such as ozone, have a regional area of effect.

3.2.1 Regulatory Overview

The US Environmental Protection Agency (USEPA) has established national ambient air quality standards (NAAQS) for ozone, nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), 10-micron particulate matter (PM₁₀), 2.5-micron particulate matter (PM_{2.5}), and airborne lead. Areas with air pollution levels above these standards are considered “nonattainment areas” and are subject to planning and pollution control requirements that are more stringent than normal requirements. Attainment status for each air basin in the ROI is discussed below in Section 3.2.2.

In addition, the California Air Resources Board (CARB) has established standards for ozone, CO, NO₂, SO₂, sulfates, PM₁₀, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases.

Both state and national air quality standards consist of two parts—an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance) or to a relatively lower average concentration over a longer period (eight hours, 24 hours, or one month). For some pollutants there is more than one air quality standard, reflecting both its short-term and long-term effects. Table 3-3 presents the state and national ambient air quality standards for selected pollutants. The California ambient air quality standards are generally set at concentrations that are lower than the federal standards and in some cases have shorter averaging periods.

Section 176(c) of the Federal Clean Air Act (FCAA) (CARB 2004) contains provisions that apply specifically to federal agency actions, including actions that receive federal funding. This section of the FCAA requires federal agencies to ensure that their actions are consistent with the FCAA and with applicable state air quality management plans.

The USEPA’s general conformity rule applies to federal actions occurring in nonattainment or in certain designated maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements of the conformity rule are called de minimis levels. Emissions associated with stationary sources that are subject to permit programs are incorporated into the state implementation plan and are not counted against the de minimis threshold. Applicable threshold levels for federal actions in the San Francisco Air Basin (SFAB), the North Central Coast Air Basin (NCCAB), and the South Central Coast Air Basin (SCCAB) are 91 metric tons

**Table 3-3
Federal and State Ambient Air Quality Standards**

Ambient Air Quality Standards							
Pollutant	Averaging Time	California Standards ¹		Federal Standards ²			
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,5}	Method ⁷	
Ozone (O ₃)	1 Hour	0.08 ppm (130 µg/m ³)	Ultraviolet Photometry	0.12 ppm (285 µg/m ³) ⁸	Same as Primary Standard	Ultraviolet Photometry	
	8 Hour	—		0.18 ppm (157 µg/m ³) ⁸			
Respirable Particulate Matter (PM ₁₀)	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation ⁶	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis	
	Annual Arithmetic Mean	20 µg/m ³		50 µg/m ³			
Fine Particulate Matter (PM _{2.5})	24 Hour	No Separate State Standard		65 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis	
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation ⁶	15 µg/m ³			
Carbon Monoxide (CO)	8 Hour	3.0 ppm (10mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m ³)	None	Non-Dispersive Infrared Photometry (NDIR)	
	1 Hour	20 ppm (23 mg/m ³)		35 ppm (40 mg/m ³)			
	8 Hour (Lake Tahoe)	8 ppm (7.1 mg/m ³)		—			
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m ³)	Same as Primary Standard	Gas Phase Chemiluminescence	
	1 Hour	0.25 ppm (470 µg/m ³)		—			
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m ³)	—	Spectrophotometry (Paroselen line Method)	
	24 Hour	0.04 ppm (126 µg/m ³)		0.14 ppm (385 µg/m ³)			
	3 Hour	—		—			0.5 ppm (1,000 µg/m ³)
	1 Hour	0.25 ppm (355 µg/m ³)		—			—
Lead ¹	30 Day Average	1.5 µg/m ³	Atomic Absorption	—	—	—	
	Calendar Quarter	—		1.5 µg/m ³			Same as Primary Standard
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (3.17 — 80 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tapes.		No			
Sulfates	24 Hour	26 µg/m ³	Ion Chromatography ⁷	Federal			
Hydrogen Sulfide	1 Hour	0.03 ppm (48 µg/m ³)	Ultraviolet Fluorescence	Standards			
Vinyl Chloride ⁹	24 Hour	0.01 ppm (20 µg/m ³)	Gas Chromatography				

¹ On June 20, 2002, the Air Resources Board approved staff's recommendation to revise the PM₁₀ annual average standard to 20 µg/m³ and to establish an annual average standard for PM_{2.5} of 12 µg/m³. These standards will take effect upon final approval by the Office of Administrative Law, which is expected in February 2003. Information regarding these revisions can be found at <http://www.arb.ca.gov/research/aqqs/cls/clsstd.rs.htm>

Source: California Air Resources Board 2003b

Notes:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
8. New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. Contact U.S. EPA for further clarification and current federal policies.
9. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

(100 tons) per year of ozone precursors (volatile organic compounds and nitrogen oxides) and 91 metric tons per year of PM₁₀. The federal agency providing the funding for the proposed action is responsible for submitting conformity determination documentation to the USEPA. As described in Section 3.2.8, the Proposed Action would not result in emissions that exceed the thresholds; therefore, the Proposed Action is not subject to a formal conformity determination.

3.2.2 Regional Overview of Affected Environment

The main sources of air pollution from within the sanctuaries come from diesel exhaust from ship engines, and from incineration of garbage on vessels within the sanctuaries. The State Water Resources Control Board estimates that cruise ships in California emit over 12 tons of pollutants per day (SWRCB 2003). Vessel traffic within the sanctuaries contributes to the degradation of air quality. Diesel exhaust has a high sulfur content, producing sulfur dioxide, nitrogen dioxide, and particulate matter in addition to common products of combustion such as carbon monoxide, carbon dioxide, and hydrocarbons.

CBNMS and GFNMS are located within the SFAB, and MBNMS is located within the NCCAB and the SCCAB in San Luis Obispo County. The following section describes the existing climate and attainment status of the San Francisco, North Central Coast, and South Central Coast air basins. The attainment status for the three air basins is summarized in Table 3-4.

San Francisco Air Basin

Climate

The SFAB includes the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, Santa Clara, San Mateo, plus portions of Solano and Sonoma Counties. The San Francisco Bay Area climate is characterized by moderately wet winters and dry summers. The summer climate of the West Coast is dominated by a semipermanent high centered over the northeastern Pacific Ocean. Because this high pressure cell is quite persistent, storms rarely affect the California coast during the summer. Thus the conditions that persist along the coast of California during summer are a northwest air flow and negligible precipitation. A thermal low pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay Area much of the summer.

The steady northwesterly flow around the eastern edge of the Pacific high pressure cell exerts a stress on the ocean surface along the west coast. This induces upwelling of cold water from below. Upwelling produces a band of cold water that is approximately 130 km (80 miles) wide off San Francisco. During July the surface waters off San Francisco are 17°C (30°F) cooler than those off Vancouver, more than 1,000 km (700 miles) farther north.

Air approaching the California coast, already cool and moisture-laden from its long trajectory over the Pacific, is further cooled as it flows across this cold bank of water near the coast, thus accentuating the temperature contrast across the coastline. This cooling is often sufficient to produce condensation – a high incidence of fog and stratus clouds along the Northern California coast in summer.

**Table 3-4
Air Quality Attainment Status for Air Basins within the Sanctuaries**

Criteria Air Pollutant	San Francisco Air Basin¹	North Central Coast Air Basin²	South Central Coast Air Basin³
Ozone – Federal 1-hour	Non-Attainment	Maintenance Area	Unclassified/Attainment Ventura County- Nonattainment
Ozone – Federal 8-hour	Marginal nonattainment	Unclassified/Attainment	Unclassified/Attainment Ventura County- Nonattainment
State Ozone	Nonattainment	Moderate nonattainment	San Luis Obispo County - Attainment Santa Barbara and Ventura Counties - Nonattainment
Federal PM10	Unclassified	Attainment/ Unclassifiable	Attainment/ Unclassifiable
State PM10	Nonattainment	Nonattainment	Nonattainment
State PM2.5	Nonattainment	Attainment ³	Unclassified Ventura County- Nonattainment ³
Federal PM2.5	Attainment/ Unclassifiable	Attainment/ Unclassifiable	Attainment/ Unclassifiable
Federal CO and NOx	Unclassified/ Attainment	Attainment/ Unclassifiable	Attainment/ Unclassifiable
State CO	Attainment ³	Unclassified/ Attainment ³	Attainment ³
State NOx	Attainment	Attainment	Attainment
Federal SOx	Attainment	Unclassified	Unclassified Ventura County- Attainment
State H2S	Unclassified	Unclassified	Attainment Ventura County- Unclassified
State Sulfates	Attainment	Attainment	Attainment
State Pb	Attainment	Attainment	Attainment
State Visibility Reducing Particles	Attainment	Unclassified	Unclassified

Sources:

1. BAAQMD 2004b
2. City of Santa Cruz 2004.
3. CARB 2005.

During the winter season, the Pacific High weakens and shifts southward, upwelling ceases, and winter storms become frequent. Almost all of the Bay Area's annual precipitation takes place in the November through April period. Winter rains (December through March) account for about 75 percent of the average annual rainfall; about 90 percent of the annual total rainfall is received in the November-April period; and between June 15 and September 22, normal rainfall is typically less than 1/10 inch. During the winter rainy periods, inversions are weak or nonexistent, winds are often moderate, and air pollution potential is very low. However, there are frequent winter dry periods lasting over a week. It is during some of these periods that CO and particulate pollution episodes develop (BAAQMD 2004a).

Attainment Status

The SFAB is managed by the Bay Area Air Quality Management District (BAAQMD). Under the FCAA, the SFAB is designated as a nonattainment-unclassified area for the federal one-hour ozone NAAQS and a marginal nonattainment area for the federal eight-hour ozone NAAQS. Under the California Clean Air Act (CCAA), the basin is a nonattainment area for the state ozone AAQS. Further, the basin is designated a nonattainment basin for the state PM₁₀ and PM_{2.5} AAQS. The basin is classified as attainment or unclassified for the rest of the state and federal pollutant standards (BAAQMD 2004b). All attainment status designations are shown in Table 3-4.

North Central Coast Air Basin

Climate

The NCCAB, which is just south of the San Francisco Bay Area Air Basin, covers an area of 13,362 square km (5,159 square miles) and contains the counties of Santa Cruz, San Benito, and Monterey. The NCCAB has a similar climate to the SFAB, in that it is characterized by moderately wet winters and dry summers with fog and low coastal clouds. Marine breezes from off the Pacific Ocean dominate the climate of the NCCAB. Westerly winds predominate in all seasons but are strongest and most persistent during the spring and summer months. The extent and severity of the air pollution problem in the NCCAB is a function of the area's natural physical characteristics (weather and topography), as well as human-created influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the NCCAB area (City of Santa Cruz 2004).

In general, the air pollution potential of the coastal areas is relatively low due to persistent winds. The NCCAB is, however, subject to temperature inversions that restrict vertical mixing of pollutants, and the warmer inland valleys of the NCCAB have a high pollution potential.

Attainment Status

The NCCAB is managed by the Monterey Bay Unified Air Pollution Control District (MBUAPCD). Under the FCAA, the NCCAB is designated a maintenance area for the federal one-hour ozone AAQS. The NCCAB was redesignated from a moderate nonattainment area to a maintenance area in 1997 after meeting the federal one-hour ozone standard in 1990. The NCCAB is designated as an attainment area for the federal eight-hour ozone NAAQS. Under the CCAA, the NCCAB is a moderate nonattainment area for the state ozone AAQS. Further, the NCCAB is designated a nonattainment basin for the state PM₁₀ AAQS (City of Santa Cruz 2004). The NCCAB is classified as attainment or unclassified for the rest of the state and federal pollutant standards. All attainment status designations are shown in Table 3-4.

South Central Coast Air Basin

Climate

The southernmost section of MBNMS abuts San Luis Obispo County and the SCCAB, which encompasses San Luis Obispo, Santa Barbara, and Ventura Counties. The northern portion of this air basin is separated by mountains from the more polluted southern areas, which are adjacent to the South Coast Air Basin. The air quality in the northern portion of the basin is more linked to conditions in San Francisco Bay and San Joaquin Valley than to the South Coast Air Basin. The San Luis Obispo area has a Mediterranean climate, with about 315 days of sunshine on average each year. Spring and fall brings daytime temperatures in the 70s and cool nights. Summer days are warm and sunny with foggy mornings.

Attainment Status

The SCCAB is managed by the San Luis Obispo County Air Pollution Control District (SLOAPCD). SCCAB is designated as unclassified/ attainment for both the Federal 1-hour and 8 hour ozone standard except for Ventura County, which is designated nonattainment. SCCAB is designated unclassifiable for the federal PM₁₀ standard and unclassifiable/attainment for the other federal criteria pollutant standards (CARB 2005). The SCCAB is designated nonattainment for the state PM₁₀ standard and unclassified for state PM 2.5 standards except for Ventura County, which is designated as a nonattainment area. The SCCAB is designated attainment for state ozone in San Luis Obispo County and nonattainment for state ozone in Santa Barbara and Ventura Counties. The SCCAB is designated unclassifiable or attainment for the other state criteria pollutant standards. All attainment status designations are shown in Table 3-4.

3.2.3 Significance Criteria and Impact Methodology

Criteria to determine the significance of air quality impacts are based on federal, state, and local air pollution standards and regulations. Impacts are considered to be significant if project emissions would result in the following:

- Increase ambient pollutant levels from an attainment or nonattainment-transition status to nonattainment under the NAAQS or California Ambient Air Quality Standards;
- Exceed the thresholds the regional air agencies use for determination of significance for California Environmental Quality Act (CEQA) purposes (thresholds are based on the amount of emissions projected to be generated by a project and are expressed in terms of either pounds per day or tons per quarter); or
- Otherwise violate the NMS or NOAA Program Regulations.

For the purposes of this analysis, major factors considered in determining whether a project alternative would have a significant impact on air quality include the following:

- The amount of net increase in emissions per year of criteria pollutants within a given air basin or offshore sanctuary (the Clean Air Act sets a threshold of 91 metric tons [100 tons] per year for nonattainment areas);
- Whether relatively high emissions would occur on a continuing basis for periods longer than the timeframe of relevant ambient air quality standards (e.g., 8-hour periods for ozone precursors; 3-hour and 24-hour periods for sulfur oxides; 24-hour periods for PM₁₀);

- Whether emissions of precursors to ozone or other secondary pollutants would occur in such quantities and at such locations as to have a reasonable potential to cause or contribute to a violation of federal or state ambient air quality standards; or
- Whether emissions of hazardous air pollutants could exceed state standards or other hazardous air pollutant exposure guidelines at locations accessible to the general public.

The overall methodology, including data sources and assumptions, used to conduct the air quality and climate impact evaluation is consistent with the NOAA NEPA guidelines (NAO 216-6). Pursuant to the above criteria, no adverse air quality impacts were identified for the proposed actions, as implementation of the proposed actions would serve to reduce air emissions rather than increase emissions. Therefore, regional and state thresholds regarding air emission quantities are not discussed further since the proposed and alternative regulatory changes will not result in increases in daily, monthly, or annual emission volumes.

3.2.4 Cross-Cutting Regulations –Environmental Consequences

The cross-cutting regulations identified in Table 2-1 include identical or very similar changes to the regulations in all of the three sanctuaries. The impacts resulting from these changes are discussed as a group to reduce redundancy in this EIS.

The Proposed Action

Introduced Species

Implementing stricter regulations to reduce the number of introduced species into the sanctuaries would have no impact on air quality.

Vessel Discharge Regulations and Clarifications

Amending the language within discharge regulations is expected to have a negligible but beneficial impact on air quality within the Sanctuaries. Large vessels (300 GRT or greater) would no longer be allowed to discharge sewage and graywater effluents if they have sufficient holding tank capacity to hold their waste while in the Sanctuary. Clarifying other discharge regulations could affect how current activities within the sanctuary are conducted and could reduce the amount of discharges from marine vessels, including discharges of liquid or solid pollutants that in-turn can generate air pollutant emissions. If there is a significant reduction in oily wastes from bilges, ballast water or wastes from meals on board vessels, and raw sewage from MSDs, the amount of petrochemicals and other chemicals and compounds that could vaporize and become airborne may be reduced. This could indirectly improve air quality within the sanctuaries by reducing the amount of air pollutants that occur in the ROI. However, the degree to which this beneficial effect may occur is not known.

Cruise Ship Discharge

The proposed regulations on cruise ships within the three sanctuaries are expected to provide a negligible but beneficial impact on air quality within the sanctuaries. Though the regulation does not address air pollution and engine exhaust directly, stricter regulations that prohibit cruise ships from discharging liquid and solid wastes into the sanctuaries are expected to reduce the overall amount of sewage, graywater, blackwater, and other oily and hazardous wastes into the Sanctuary, which could become airborne. Reducing the overall amount of discharged wastes would reduce the possibility that these wastes could vaporize and degrade the overall air quality. Therefore, this regulation would have slight, though unknown, beneficial impacts to air quality.

Alternative Regulatory Actions

The only alternative regulatory action under this section is for cruise ship discharge, which would allow cruise ships to discharge in the sanctuary as long as they are within US Coast Guard standards for Alaska. Since the alternative would presumably allow the discharge of some chemicals, compounds or oily wastes, the impacts of this Alternative Regulatory Actions would be slightly less beneficial than the Proposed Action.

The No Action Alternative

The No Action alternative would continue to manage the sanctuaries as they are currently managed. The No Action alternative would maintain the status quo and would not provide the sanctuaries with enhanced air quality protections described for the proposed action.

3.2.5 Cordell Bank National Marine Sanctuary –Environmental Consequences

The Proposed Action

The several proposed regulatory changes for CBNMS may result in a slightly beneficial net effect on air quality, when considered collectively for future conditions. Individually, the effects are negligible, as described below.

Seabed Protection

Stricter regulations prohibiting construction, drilling, and dredging within the Sanctuary would have the potential to slightly reduce the amount of future marine traffic in that specific area within the sanctuary boundaries. The proposed regulation would have the potential to avoid future air emissions that could otherwise occur under the existing regulations, as it would prohibit future activities that could cause air emissions as a by-product of construction, drilling, dredging, and other prohibited activities. However, there are no current or proposed uses involving construction, drilling, or dredging activities, so there would be no change to the current marine vessel traffic. Therefore, this proposed prohibition would not result in a change in existing air emissions or air quality associated with those activities.

Benthic Habitat Protection

The proposed regulatory change only slightly modifies the existing regulation relating to removing, taking or injuring or attempting to remove, take or injure benthic invertebrates on or within the line representing the 50-fathom isobath surrounding Cordell Bank. These minor changes are not anticipated to result in changes to existing air emissions or air quality associated with those activities. The impact of this provision on air quality would be the same as under the Seabed Protection provision, above.

Wildlife Disturbance

Adopting the proposed prohibition regarding the taking or possessing of protected wildlife within the sanctuaries duplicates existing regulations established in the MMPA, ESA, and MBTA. Since sanctuary users are already required to comply with these regulations, current activities in the sanctuary would not change. The proposed action would not affect the amount of marine traffic within the sanctuary boundaries. If the enforcement provisions associated with the proposed prohibition acted as a substantial deterrent to current illegal practices (although there is no documentation of the level of illegal activities that may be taking place), there may be a very slight reduction in marine vessel activity and associated air emissions. Therefore, this proposed prohibition would not result in a change to existing air emissions or air quality associated with those activities and would have a negligible impact on air quality.

Alternative Regulatory Actions

The net impact on human use is the same for the preferred alternative and the alternative regulatory actions. The alternatives would have the same negligible beneficial impacts on air quality as identified in the Proposed Action.

Seabed Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action, that met the Sanctuary's goals and objectives for protecting the benthic habitats in this area. This alternative, in addition to the prohibitions discussed above under the Proposed Action, would prohibit bottom contact fishing gear within the 50-fathom isobath around the Bank. Because the outcome of the alternative would be the same as under the Proposed Action, there would be no change in existing air emissions or air quality associated with those activities, and no impact on air quality from this provision.

Benthic Habitat Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within a line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. This alternative, in addition to the prohibitions discussed above under the Proposed Action, would prohibit bottom contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank. Because the outcome of the alternative would be the same as under the Proposed Action, there would be no change in existing air emissions or air quality associated with those activities, and no impact on air quality from this provision.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed; this would result in no change to impacts on air quality in the ROI.

3.2.6 Gulf of the Farallones National Marine Sanctuary – Environmental Consequences

The Proposed Action

Deserted Vessels

Prohibiting marine vessel owners from deserting vessels adrift, at anchor, or aground could indirectly have a slight beneficial impact on local air quality. When a vessel is deserted, there is a risk of it grounding on the shoreline, breaking apart, and discharging harmful matter (e.g., motor oil) into the marine environment, which could include emissions into the air basin. With the new prohibition, the likelihood of these occurrences would be reduced. The proposed action also includes a provision that would prohibit leaving harmful matter aboard a grounded or adrift and unattended vessel. This prohibition could provide further air quality benefits by reducing the potential for discharge of oil and fuel and associated pollutant emissions, which can negatively impact air quality. This proposed prohibition would result in a decrease in the amount of spilled substances, including those that could become airborne such as oily and hazardous wastes, which would have a slightly beneficial impact on local air quality.

Oil and Gas Pipeline Clarification

The proposed minor change to the existing regulation regarding the placement of oil and gas pipelines in GFNMS would have a negligible effect on air quality. Since pipelines would be permitted only for oil and gas operations that are adjacent to the Sanctuary, rather than oil and gas operations anywhere outside of the Sanctuary, the potential for future pipeline development would be more limited. However, there are no current oil and gas operations in the area and none planned in the near future. Therefore, there this regulation would have a negligible effect on air quality.

Wildlife Disturbance

Adopting the proposed prohibition regarding the taking or possessing of protected wildlife within the sanctuaries duplicates existing regulations established in the MMPA, ESA, and MBTA. Since sanctuary users are already required to comply with these regulations, current activities in the sanctuary would not change. The Sanctuary is also proposing to regulate the attracting and approaching within 50 meters of a white shark. The proposed actions are not likely to result in significant decreases in the amount of marine traffic within the sanctuary boundaries. If the enforcement provisions associated with the proposed prohibition acted as a substantial deterrent to current illegal practices (although there is no documentation of the level of illegal activities that may be taking place), there may be a very slight reduction in marine vessel activity and associated air emissions. Therefore, this proposed prohibition would not result in a change to existing air emissions or air quality associated with those activities and would have a negligible beneficial impacts on air quality.

Alternative Regulatory Actions

The alternative regulatory action is to prohibit attracting or approaching white sharks anywhere in the sanctuary. This provision may result in a slight reduction of vessel traffic in the Sanctuary from those few operators who only seek out encounters white sharks; however, this amount of traffic is negligible in comparison with all the other shipping and other vessels using the Sanctuary. Therefore, the alternative would have negligible beneficial impacts on air quality.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no change in impacts on air quality.

3.2.7 Monterey Bay National Marine Sanctuary–Environmental Consequences**The Proposed Action****Deserted Vessels**

This proposed two-part regulation is the same as described for GFNMS. Therefore, air quality benefits from this proposed regulation in MBNMS would be the same as described in Section 3.2.6, Deserted Vessels, for GFNMS. This proposed prohibition would result in a decrease in the amount of spilled substances, including those that could become airborne such as oily and hazardous wastes, which would have a slightly beneficial impact on local air quality.

Boundary Changes/Davidson Seamount

Adding the Davidson Seamount to the boundary of MBNMS would have minimal yet beneficial impacts on air quality. The proposed regulation would protect Davidson Seamount from future disturbance or from

resource exploitation. The standard MBNMS discharge regulations and seabed disturbance regulations relating to drilling, dredging, seabed alterations, construction, and anchoring would apply to the DSMZ (with certain exceptions). At depths greater than 3,000 feet (914 meters) below the sea surface, the NMSP would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or otherwise injuring Sanctuary resources (or attempting to do those activities), except for fishing, which is prohibited pursuant to the MSA (50 CFR part 660). The Sanctuary would also prohibit the possession of Sanctuary resources taken from below 3,000 feet within the DSMZ, except for the possession of fish resulting from fishing, which is prohibited pursuant to the MSA. The NMSP would rely upon the NOAA Fisheries regulatory amendments to the Groundfish FMP to regulate any fishing-related impacts below 3000 feet. Applying the various sanctuary discharge regulations to the seamount area could result in reduced discharges and associated pollutant emissions from vessels transiting the area, such as cruise ships. However, other existing discharge regulations already apply to non-sanctuary waters, so the potential benefit, if any, is very minor.

Motorized Personal Watercraft

Amending the language that defines MPWC within the sanctuary could result in a beneficial impact on air quality since it would limit the type of MPWC that can be used legally in the Sanctuary. If some of these users, who normally operate outside of the existing zones, do not want to restrict their MPWC use to the existing four zones and new seasonal zone, they may choose not to operate in the Sanctuary. This would reduce the number of MPWC operating in the Sanctuary and thus reduce the amount of exhaust, and fuel leaking into the Sanctuary. Currently 12 million marine engines are operated in the US (including MPWC). These marine engines are among the highest contributors of hydrocarbons (HC) and nitrogen oxides (NO_x) emissions in many areas of the country (USEPA 1996). Based upon reports from harbor masters and NOAA enforcement personnel, MBNMS estimates that 1,200 MPWC trips were conducted in the Sanctuary in 2002, which represents repeated activity of approximately 150 individual MPWC. Clearly defining which types of MPWC are allowed to be used in designated areas within MBNMS may result in a slight reduction in the number of MPWC operating in the Sanctuary, which in turn would reduce the amount of pollutants emitted from these vessels. Therefore, this regulation would have slight beneficial impacts on local air quality.

Dredge Disposal

Redefining and officially locating disposal site SF-12 would ensure that dredged material is deposited into the deeper Monterey Canyon and not at shallower nearshore areas where wash-ups could occur and result in odors due to hydrogen sulfide and other compounds. Odors have been a concern along the shoreline where dredged materials have washed up in the surf zone. This proposed action would eliminate the dredge material from washing on shore and subsequently becoming airborne, and thus would have a beneficial impact on air quality.

Alternative Regulatory Actions

The alternatives would have the same impacts on air quality as identified in the Proposed Action, with the following minor differences:

Davidson Seamount Circular Boundary Alternative

The circular configuration of the David Seamount addition to MBNMS would have similar but slightly greater beneficial impacts on air quality as identified in the Proposed Action. Applying the various sanctuary discharge regulations to the seamount area could result in reduced discharges and associated pollutant emissions from vessels transiting the area, such as cruise ships. However, other existing discharge regulations already apply to non-sanctuary waters, so the potential benefit, if any, is very minor. This circular boundary

alternative would add 707 square miles to the Sanctuary, versus 585 square miles for the preferred option. As such it would have slightly greater benefits to air quality.

Motorized Personal Watercraft Alternative

This alternative would essentially ban all MPWC from the sanctuary. With this comprehensive prohibition, including elimination of the four zones where MPWC are currently allowed, this alternative would result in a greater beneficial impact on air quality than the Proposed Action by reducing all MPWC air and water emissions in the Sanctuary. It would also reduce the overall marine vessel air pollutant emissions throughout the sanctuary. Therefore, this regulation would have beneficial impacts on air quality.

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuary as it is currently managed. This would result in no change in impacts on air quality.

3.2.8 Clean Air Act de Minimis Level Impact Evaluation

The proposed sanctuary regulations would result in negligible, if any, increases in emissions. In fact, as described in the above impact analysis, most of the proposed and alternative regulations would have the potential to reduce emission levels in the sanctuaries. Because of these low emissions levels, the proposed action is not subject to the FCAA conformity determination rule (described in Section 3.2.1), and a draft Record of Non-applicability is provided in the Administrative File.

3.2.9 Cumulative Impacts

Due to the high mobility of air pollution, the ROI for cumulative impacts on air quality is larger than for other resources. The ROI for cumulative projects includes the three air basins that encompass the three sanctuaries: SFAB, the NCAAB, and the northern portion of the SCCAB.

A trends analysis was done by CARB in 2004 for the overall state and the five most populated air basins in California. The SFAB, NCCAB, and SCCAB would have similar trends due to their proximity to each other, therefore only the trends for SFAB are discussed in detail. The emission levels for the ozone precursors NO_x and Reactive Organic Gases (ROG) have been trending downward in the SFAB since 1975 and 1980, respectively. CO emissions have also been trending downward since 1975. On-road motor vehicles are the largest contributors to CO, ROG, and NO_x emissions in the air basin. Implementing stricter mobile source (both on-road and other) emission standards will continue to decrease vehicle emissions in this air basin. Controls on stationary source solvent evaporation and fugitive emissions will also continue to reduce ROG emissions. Direct emissions of PM_{2.5} have declined slightly from 1975 to the present date in the SFAB and are expected to decline up to the year 2010. However direct emissions of PM₁₀ have increased in the SFAB between 1975 and the present date and are expected to continue to increase up to the year 2010. This increase is due to growth in emissions from area-wide sources, primarily fugitive dust sources (CARB 2004).

Implementation of the FMPs will contribute to the ROI's regional ecosystem health, including air quality, by applying the various action plans in CBNMS, GFNMS, and MBNMS. Implementation of cross-cutting ecosystem management and similar Sanctuary-specific action plans will provide the Sanctuaries with more complete information regarding air quality within their boundaries. Non-regulatory action plans that address vessels spills, water quality, and MPWCs in particular, may have generally minor beneficial impacts on air quality.

The Proposed Action

The proposed regulations, individually or collectively, would not contribute to the cumulative adverse trend in PM₁₀ emissions noted above; therefore, there would be no cumulative adverse impacts. Impacts on air resources from the Proposed Action are expected to be positive, and emission levels for other pollutants are trending downward; this would result in a contribution to a cumulative beneficial impact.

Alternative Regulatory Actions

Cumulative impacts would be the same as those described under the Proposed Action, with a slight increase in the level of beneficial impacts due to the increased levels of protection afforded by alternatives, such as the MPWC Alternative.

The No Action Alternative

The No Action alternative would maintain the status quo of sanctuary management. As described above, only cumulative PM₁₀ emissions are expected to increase in the ROI in the near future; other criteria pollutant emissions (CO, ROG and NO_x) are expected to decrease in the future. Continued sanctuary management activities would not contribute to substantive increases in PM₁₀ emissions or result in reductions in emissions; therefore the No Action alternative would have no adverse cumulative effects on air quality.

3.3 BIOLOGICAL RESOURCES

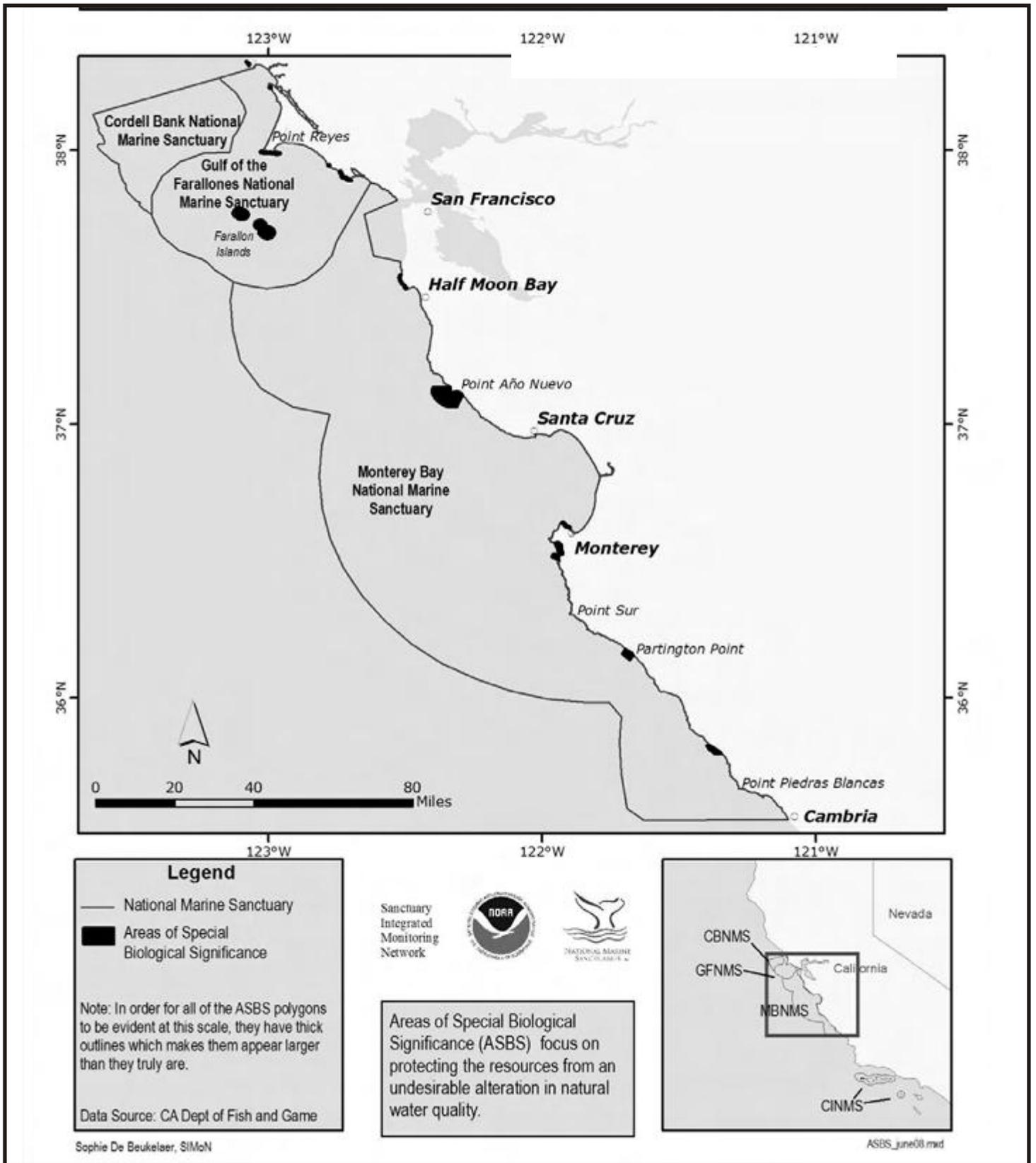
The ROI for biological resources is the 5,364 square nm km (18,422 square km; 7,113 square miles) of open ocean encompassed within the three sanctuaries, plus the 585 square nm km (2,007 square km; 775 square miles) of ocean included within the proposed Davidson Seamount addition to MBNMS. It also includes the near-coastal onshore environment along approximately 400 miles (644 km) of shoreline, which is about one-third of the California coast, in central and northern California. The ROI for the terrestrial biological resources analysis extends to 500 feet (152 meters) on the shore side areas of the sanctuaries.

Biological resources are plant and animal species and the habitats or communities in which they occur. This section is a discussion of regulatory considerations, general vegetation and wildlife species, sensitive or special status species, sensitive habitats, essential fish habitat (EFH), and wetlands. Addressed are onshore and offshore biological resource issues related to the Proposed Action and alternatives. These resources are marine mammals, sea turtles, birds, and benthic (bottom-dwelling) organisms, as well as terrestrial vegetation and wildlife resources and habitat adjacent to the shoreline of the ROI.

A large amount of biological data is available covering biological resources within the ROI. NOAA staff gathered this information for existing and future management efforts, to monitor conservation objectives, and as part of ongoing resource assessment and research. Some information on habitat suitability and species use of the ROI is provided in *A Biogeographic Assessment off Northern/Central California: To Support the Joint Management Plan Review for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries: Phase 1- Marine Fishes, Birds and Mammals* (NOAA 2003b) and *Ecological Linkages: Marine and Estuarine Ecosystems in Central and Northern California* (Airamé, Gaines, and Caldwell 2003). The biogeographic assessment addressed key or locally important species and certain special status species of fish, marine mammals, and birds. This assessment determined species' use of the sanctuaries and abundance within the area. Figure 3-1 depicts the Areas of Special Biological Significance within the Sanctuaries.

The affected environment section is an overview of the key biological features of each Sanctuary, followed by a general description of habitat types, wildlife resources, and special status species found in the ROI. This section is a discussion in predominantly general terms of biological resources within the ROI. For a more detailed discussion on species and seasonal use changes within the ROI, please refer to MBNMS, GFNMS, and CBNMS FMPs, which precede this FEIS, the biogeographic assessment (NOAA 2003b), and the ecological linkages report (Airamé, Gaines, and Caldwell 2003) mentioned above, as well as the resource characterizations on each site's Web site. In addition, Appendix C of this FEIS contains comprehensive lists of wildlife and plant species known to occur in each of the three sanctuaries.

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Areas of Special Biological Significance

Northern/Central California

3.3.1 Regional Overview of Affected Environment

CBNMS, GFNMS, and MBNMS are in coastal and marine habitats of central and northern California from Bodega Bay, in Sonoma County, to Cambria, in San Luis Obispo County. Each Sanctuary includes unique geological and biological features yet shares many other features due to its proximity and the influence of similar currents, seasonal upwelling, and weather patterns. Geological features in the ROI include a broad continental shelf, rocky shores, sandy beaches, coastal estuaries such as San Francisco Bay, Elkhorn Slough, and Tomales Bay, offshore banks and seamounts, such as Cordell Bank and Davidson Seamount, and the sloping edges of the continental shelf, dissected by deepwater canyons, such as the Monterey Submarine Canyon.

This unique combination of oceanographic conditions and undersea topography make the sanctuaries rich and diverse in a variety of marine species. This includes a wide array of temperate cold-water species and occasional influxes of warm-water species. The species diversity is directly related to the diversity of habitats and oceanic conditions, which are described in the following section, and the location of the sanctuaries within a broad transition zone providing a complex gradient of changing environments in which the relative proportions of species changes from north to south.

The species north of Point Conception, encompassing the entire study region and beyond right up through Washington State, are part of the Oregonian biogeographic province. The relative amount and location of upwelling and downwelling and, consequently, the amount of productivity seen along the coast are affected by seasonal weather patterns and the influence of the California and Davidson currents. The distribution of each species in the ocean is determined by a multitude of factors, including temperature, salinity, oxygen content, nutrient availability, current speeds and direction, species interactions, frequency of perturbation, and food availability.

Coastal bluff habitat occurs immediately shoreward of the coastline. Bluffs along the coasts drop steeply to intertidal areas that, depending on their location within the ROI, consist of sand, rock, or riprap. Beds of giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis luetkeana*) occur offshore.

With respect to the terrestrial areas along the MBNMS and GFNMS coastlines, the most prominent physiographic feature is the California Coastal ranges. These mountains are composed of Tertiary sandstones overlaying Salinian granite basement rock. Along the coast these sandstones form the sea cliffs. Coastal streams, bays, estuarine lagoons, and sandy beaches complete the shoreline.

Cordell Bank National Marine Sanctuary

The waters around Cordell Bank provide valuable habitat for a variety of wildlife, including seabirds, marine mammals, fishes, and other species. In addition, many of these species are listed as threatened or endangered under the ESA. CBNMS provides critical foraging habitat for many species of seabirds. Seabird density over Cordell Bank can be among the highest of any area in central and northern California. Fifty-nine seabird species have been identified feeding in or near the Sanctuary. The composition of seabirds found at Cordell Bank is a mix of local breeding birds and highly migratory open-ocean species. While the local representatives use the nearby Farallon Islands and Point Reyes areas to nest, some migrants nest thousands of miles away. Black-footed Albatross (*Phoebastria nigripes*) and other migratory species use the productive waters around Cordell Bank as a stopover on their annual migration route. Hundreds of thousands of Sooty Shearwaters (*Puffinus griseus*) can be seen on days when they are migrating through the Sanctuary. Sanctuary waters are equally important to local breeders. Most of the world's small population of Ashy Storm-Petrels (*Cymochorea*

homochroa), which nest on Southeast Farallon Island, can be seen on the water near Cordell Bank. More than 20,000 Cassin's Auklets (*Ptychoramphus aleuticus*) have been counted in a single day. Some other regularly occurring Sanctuary species include the Northern Fulmar (*Fulmarus glacialis*), various Storm-Petrel species (family Hydrobatidae), Rhinoceros Auklet (*Cerorhinca monocerata*), Phalaropes (family Scolopacidae), and many species of gulls (family Laridae).

Twenty-six species of marine mammals (a combination of resident and migratory species) have been observed within the Sanctuary. Gray whales (*Eschrichtius robustus*), for example, pass Cordell Bank on their annual migrations between Arctic feeding grounds and Mexican breeding areas. The Dall's porpoise (*Phocoenoides dalli*) is one of the most frequently sighted marine mammals in the Sanctuary, along with humpback (*Megaptera novaeangliae*) and blue whales (*Balaenoptera musculus*). Individuals of all species use the Sanctuary as a destination feeding ground. Large numbers of the eastern Pacific humpback whales and blue whales feed during the summer within the Cordell Bank-Bodega Canyon area.

The harbor porpoise (*Phocoena sinus*), a species widely distributed in coastal waters but rarely seen offshore, is regularly observed within the Sanctuary's shallow areas. Pacific white-sided dolphins (*Lagenorhynchus obliquidens*) and northern right whale dolphins (*Lissodelphis borealis*) are abundant. Other cetaceans observed in the Sanctuary include Risso's dolphins (*Grampus griseus*) and killer whales (*Orcinus orca*).

The California sea lion (*Zalophus californianus*), the most abundant pinniped in California waters, has been observed in CBNMS more frequently and in greater numbers than other pinnipeds. The northern fur seal (*Callorhinus ursinus*) is also abundant in the area in late fall and winter (most of them use summer breeding grounds in the Channel Islands). Steller sea lions (*Eumetopias jubatus*) have decreased drastically in California in recent years, but Cordell Bank remains a feeding area for this species, possibly because of the abundance of rockfish (*Sebastes* spp.) and sardines. Nearby rookeries include Año Nuevo Islands and the Farallon Islands. The sea lions' winter haul-out grounds include Point Reyes and offshore rocks along the Sonoma County coast. Northern fur seals also occur in CBNMS.

More than 180 species of fishes have been identified in CBNMS. Many species of rockfish can be found at all depths and habitats on and around Cordell Bank. Cordell Bank provides critical habitat for young of the year, juvenile, and adult rockfishes. Lingcod (*Ophiodon elongatus*) are especially numerous in the wintertime, when they move up onto Cordell Bank to spawn. Many species of flatfish (order Pleuronectiformes) use the soft-bottom habitat around Cordell Bank, and albacore tuna (*Thunnus alalunga*) and salmon (*Oncorhynchus* spp.) frequent the Sanctuary seasonally. Albacore and salmon both feed on lanternfishes (*Myctophum punctatum*), which migrate nightly into shallow surface layers from deeper daytime haunts. The recovery of Pacific sardine (*Sardinops sagax*) populations is apparent in the waters surrounding Cordell Bank.

An abundant cover of benthic organisms can be seen on the upper rock surfaces of Cordell Bank. The high light penetration allows for algal photosynthesis far deeper than in nearshore coastal waters. The constant food supply washing Cordell Bank, combined with a hard substrate for attachment, provide ideal conditions that support a rich assemblage of benthic invertebrates. Space is the limiting factor on the upper pinnacles and ridges of Cordell Bank. Ridges are thickly covered (up to one foot thick in some places) with brightly colored sponges, anemones, hydrocorals, hydroids, and tunicates and scattered crabs, holothurians, and gastropods.

Gulf of the Farallones National Marine Sanctuary

GFNMS protects an area of 966 square nm (1,279 square miles; 3,250 square km) off the northern and central California coast. Located a few miles west of San Francisco, the waters within GFNMS are part of a nationally significant marine ecosystem. Encompassing a diversity of highly productive marine habitats, the Sanctuary supports an abundance of species.

One of the most spectacular components of this Sanctuary's abundant and diverse marine life is its nesting and migratory seabirds at the Farallon Islands. The Farallon Islands support the largest concentration of breeding seabirds in the contiguous US. Eleven of the sixteen species of seabirds known to breed along the US Pacific Coast have breeding colonies on the Farallon Islands and feed in the Sanctuary. For a list of these, please see the Offshore Islands section under Habitats below. In addition to the islands, the Sanctuary protects four estuaries, a lagoon, and one large coastal bay that provide foraging habitat for aquatic birds such as shorebirds, pelicans, loons, ducks, and grebes. These habitats are pristine compared to most coastal wetlands in California and provide habitat for thousands of migrating and wintering birds. More than 160 species of birds use the Sanctuary for shelter, food, or as a migration corridor. Of these, 54 species are known to use the Sanctuary during their breeding season.

Thirty-six species of marine mammals have been observed in GFNMS, including six species of pinnipeds (seals and sea lions), 28 species of cetaceans (whales, dolphins, and porpoises), and two species of otter. Many of these mammals occur in large concentrations and depend on the productive and secluded habitats for breeding, pupping, hauling out, feeding, and resting during migration.

Fish resources are abundant over a wide portion of the Gulf of the Farallones area. Because of the comparatively wide continental shelf and the configuration of the coastline, the area is vital to the health and existence of many fish, including salmon (chinook [*Oncorhynchus tshawytscha*] and coho [*O. kisutch*]), northern anchovy (*Engraulis mordax*), rockfish, and flatfish species. The extension of Point Reyes and the resulting current patterns tend to retain larval and juvenile forms of these and other species within the area. The Farallon Islands act as an offshore mecca for shallow and intertidal fishes, which further enhance pelagic fishery populations (for example, anchovy, salmon, sardine, and tuna).

The Sanctuary includes many diverse habitats, thereby contributing to the region's high productivity. Bays and estuaries are especially important as feeding, spawning, and nursery areas for a wide variety of finfish, including Pacific herring, flatfish and rockfish. The rocky intertidal zone supports a specialized group of fishes adapted for life in tide pools, including monkey face pricklebacks (*Cebidichthys violaceus*), rock eels (*Xiphister mucosus*), dwarf surfperch (*Micrometrus minimus*), juvenile cabezon (*Scorpaenichthys marmoratus*), sculpins (family Cottidae), and blennies (family Blennidae). Many of these populations are important as forage for shorebirds and seabirds. Subtidal habitats support large populations of juvenile finfish. Nearshore pelagic environs are habitat to large predatory finfish, such as sharks and tunas, and forage fish and invertebrates such as anchovies, market squid (*Loligo opalescens*), and Pacific mackerel (*Scomber japonicus*). Pelagic fish resources generally parallel species living in the nearshore subtidal zone. At the mid-depth or meso-pelagic range over sand and mud bottoms, bocaccio (*Sebastes paucispinis*), chilipepper (*S. goodei*), widow rockfish (*S. entomelas*), and Pacific hake (*Merluccius productus*) are abundant.

Significant algal and plant communities within the Sanctuary include kelp beds, salt marshes, and seagrass (e.g. eelgrass) (*Zostera pacifica*) beds. Kelp beds substantially increase the useable habitat for pelagic and demersal

species and offer protection to juvenile finfish. The highest concentration of kelp beds in the Sanctuary occurs along the mainland coast between Point Reyes Headlands and Bolinas lagoon.

Salt marshes offer food and protected habitat for many coastal species during vulnerable lifecycle stages. For example, the striped bass (*Morone saxatilis*) and some flounders (family Paralichthyidae) breed near salt marshes to allow juveniles to develop in the marsh system. Herons, sandpipers, ducks, rails, and geese also depend on the marsh for feeding and breeding.

Seagrass beds are situated on subtidal estuarine flats, in bays, and coastal inlets. Seagrass beds provide important breeding and nursery habitat for organisms such as Pacific herring, which attach their eggs to seagrass. Although some marine organisms feed directly on seagrass, the principal food chain supported by seagrass is based on detritus and the associated algae and phytoplankton.

Benthic fauna (communities of invertebrates living directly on or in the seafloor) differ according to habitat type and exist in all habitats of GFNMS (bays and estuaries, intertidal zones, nearshore, and offshore). Generally, each habitat area supports differing benthic assemblages of most classes, such as worms, clams, or crabs. The most conspicuous species include abalone (*Haliotis* spp.), crabs, and sea urchins (*Strongylocentrotus* spp.). Hundreds of other species are critical links in the food chains of fishes, birds, and mammals.

Monterey Bay National Marine Sanctuary

Similar to CBNMS and GFNMS, the unique and diverse environment of MBNMS is host to a multitude of biological resources. MBNMS is one of the most diverse marine ecosystems in the world, with numerous types of habitats, and a multitude of wildlife species, including 36 species of marine mammals, 94 species of seabirds, 345 species of fishes, and numerous invertebrates and plants. In addition to the kelp forests, rocky and soft bottom sub- or inter-tidal habitats, Monterey Canyon, unique hydrothermal vents and cool seeps, and deep-sea (pelagic) habitats, the many miles of rocky coastline support a variety of intertidal organisms.

Seabirds are relatively numerous at MBNMS compared to other portions of the west coast due to an abundance of prey and waters being nutrient rich as a result of the persistent upwelling plume produced by the California Current system that emanates southward from Año Nuevo Point, bringing nutrient rich water up to the surface. Seabirds heavily use MBNMS waters, with 94 species known to occur in the Sanctuary. Tidal and wetland areas, such as shores, marshes, and estuaries, are frequented by about 90 species of birds. Overall, many more seabirds are seasonally transient versus breeding or resident in MBNMS.

The waters of MBNMS provide wintering habitat for many species that use the rich prey resources that result from the upwelling. Due to the presence of submarine canyons in MBNMS, very deep water occurs within a few km of shore, and in fact this constitutes the predominant habitat in terms of total surface area of Sanctuary waters. As a result of this bottom topography, surface waters overlying these depths (over 6,562 feet deep; 2,000 meters deep;) provide habitat for deep water, or pelagic, birds, such as the Black-footed Albatross, Ashy Storm-Petrel, and Xantus's Murrelet (*Synthliboramphus hypoleucus*) during summer and fall, and Northern Fulmars and Black-legged Kittiwakes (*Rissa tridactyla*) during winter and early spring. Along the continental shelf break (656 to 6,558 feet; 200 to 1,999 meters), a relatively narrow habitat, seabird densities are also substantial. These waters are dominated by Sooty Shearwaters during spring and summer and by fulmars and gulls during winter; other characteristic species are Pink-footed (*Puffinus creatopus*) and Buller's Shearwaters (*P. bulleri*), Black Storm-Petrels (*Oceanodroma melania*), and Rhinoceros Auklets. Inshore of slope waters (greater than 200 meters; 656 feet deep), the prevalent bird species consist of Sooty Shearwaters,

Western Grebes (*Aechmophorus occidentalis*), Pacific Loons (*Gavia pacifica*), California Brown Pelicans (*Pelecanus occidentalis californicus*), Brandt's (*Phalacrocorax penicillatus*) and Pelagic Cormorants (*P. pelagicus*), Western Gulls (*Larus occidentalis*), and Common Murres (*Uria aalge*). In waters very close to shore, in the surf zone, are Surf (*Melanitta perspicillata*) and White-winged Scoters (*M. fusca*) and Marbled Murrelets (*Brachyramphus marmoratus marmoratus*).

There are a few breeding species in MBNMS. Since very little breeding habitat exists, locally breeding species typically occur in very small numbers, with the exception of the Brandt's Cormorant, which breeds in large numbers. Otherwise, typical breeding species are the Pelagic and Double-crested Cormorants (*Phalacrocorax auritus*), Western Gulls, Caspian Terns (*Sterna caspia*), Common Murres, Pigeon Guillemots (*Cepphus columba*), Rhinoceros Auklets, and Marbled Murrelets. Seasonal shifts and temporal shifts in seabird distribution have been observed at MBNMS. There is some evidence that the numbers of marine birds using MBNMS habitat have been declining, most likely due to a shift in ocean climate.

There are several species of special concern in MBNMS that are listed predominantly due to their small population sizes. Among these species are the endangered Brown Pelican (which had historic breeding ground in the Sanctuary), the threatened Marbled Murrelet (the MBNMS population is known to be the smallest, most disjunctive and, therefore, most precarious breeding population of this species), and several species being considered for listing (such as Black Storm-Petrel, Ashy Storm-Petrel, and Xantus's Murrelet). The world's largest known concentration of ashy storm-petrel can be found in Monterey Bay in the fall.

The Sanctuary also has a large assemblage of marine mammals for the same reasons that seabirds occur; that is, the high level of prey and the deep water habitats. There are six species of pinnipeds, 26 species of cetaceans, and one species of sea otter occurring (southern sea otter [*Enhydra lutris nereis*]). California sea lions occur with great frequency, but the fastest growing marine mammal population is the northern elephant seal (*Mirounga angustirostris*), with haul-out sites at Año Nuevo, Point Piedras Blancas, and isolated Big Sur beaches. Numerous species of large whales occur, several of which are listed under the ESA, including the humpback, fin (*Balaenoptera physalus*), blue whale, sperm whale (*Physeter macrocephalus*), and, rarely, North Pacific right whale (*Eubalaena japonica*). Gray whales, recently delisted, are known migrants and pass through on both their southward and northward routes. In addition, minke whales (*Balaenoptera acutorostrata*) and several toothed whale species, such as killer whales and beaked whales (family Ziphiidae), occur.

Fish populations in MBNMS are diverse, including about 200 commercial and recreational fisheries species, as well as many other species. Anadromous fish, including coho and chinook salmon and steelhead, are an important part of the MBNMS ecosystem. Thousands of species of invertebrates inhabit MBNMS. Kelp forests, which support marine mammals, fishes, algae, and invertebrates, are prominent throughout nearshore waters. The marine algae found in MBNMS ranges from microscopic phytoplankton to seaweed and surfgrasses to giant kelp.

Approximately 24 wildlife species occurring in MBNMS are listed as threatened or endangered.

Davidson Seamount

Davidson Seamount, proposed to be included in MBNMS, is 120 km (75 miles) to the southwest of Monterey. One of the largest known seamounts in US waters, it is 26 miles (42 km) long and 8 miles (13.5 km) wide. From base to crest, Davidson Seamount is 7,546 feet (2,400 meters) tall, yet it is 4,265 feet (1,300 meters) below the sea surface. Davidson Seamount has an atypical seamount shape, with northeast-trending

ridges. Many undersea explorations have occurred here, resulting in characterizations of species patterns of distribution and abundance at the Seamount. Species associated with the Davidson Seamount can be divided into different habitats, including the sea surface habitat (birds in flight and sea surface), the mid-water habitat (0 to 4,101 feet; 0 to 1,250 meters), below sea surface, the crest habitat (4,101 to 4,921 feet; 1,250 to 1,500 meters), the slope habitat (0.9 to 1.6 miles; 1,500 to 2,500 meters), and the base habitat (1.6 to 2.2 miles; 2,500 to 3,500 meters). The surface habitat hosts a variety of seabirds, marine mammals, and surface fishes. The mid-water habitat is patchy with marine “snow,” organic matter that continually rains down from the sea surface, most likely providing an important food source for deep-sea animals. The crest habitat is the most diverse, including large gorgonian coral (*Paragorgia* sp.) forests, vast sponge fields, crabs, deep-sea fishes, shrimp (family Periclimenes), and basket stars (*Astrophyton muricatum*). The slope habitat is composed of cobble and rocky areas interspersed with areas of ash and sediment. This area hosts a diverse assemblage of sessile invertebrates and rare deep-sea fishes. Finally, the base habitat is the interface between rocky outcrops and the deep soft bottom. Species here are similar looking to their relatives in the nearshore, including sea cucumbers (*Holothuria leucospilota*), urchins (family *Echinometridae*), anemones (order *Actiniaria*), and sea stars (*Luidia* spp.).

3.3.2 Habitat Types

The ROI is primarily aquatic although there are some terrestrial areas along MBNMS and GFNMS coastlines and offshore islands, largely consisting of coastal bluff vegetation. The ROI contains a broad diversity of habitats and micro environments due to geological, chemical, temperature, and topographic variation throughout. For the purpose of this document, habitats were divided into broader scale communities that have common elements and support a distinct array of species. Habitats are based on CDFG marine and estuarine habitat definitions (Shaffer 2002), as well as habitats discussed in the ecological linkages report (Airamé, Gaines, and Caldwell 2003). Habitats within the ROI include coastal bluffs, intertidal zones, subtidal and nearshore waters, estuarine and lagoon areas, continental shelf and slope, offshore waters and offshore islands, and benthic zones. Within these habitats it is possible to find the following types of substrates or formations: rocky shores, sandy beaches, estuaries, lagoons and bays, subsurface ridges, lush kelp forests, islands, and underwater canyons. There are a variety of substrate types within the ROI that shape these habitats and the communities they support.

Coastal Bluff Vegetation

Coastal bluff vegetation includes vegetation growing from the higher high tide line to the bluff tops. These are harsh environments where plants must withstand strong winds with high salt content. Species from three communities described by Holland (1986) are included in this category: northern foredune, central dune scrub, and northern coastal bluff scrub. Due to the prevalence of invasive nonnative species, such as iceplant (*Carpobrotus edulis*), in this California habitat, almost all vegetation on the cliff top consists of nonnative plants. Along the coastal cliffs are Monterey pine (*Pinus radiata*), cypress (*Cupressus* spp.), eucalyptus (*Eucalyptus* spp.), and various ornamental shrubs and trees.

Intertidal Zone

Intertidal habitat, by definition, is found between the lowest and highest tidal level. This transitional area between sea and land is the strip of shore between the uppermost surfaces exposed to wave action during high tides and the lowermost areas exposed to air during low tides. Intertidal habitats vary in the type of material and the degree of exposure to surf they receive. Bottom habitat types include those of fine muds, sand, gravel, shale, cobble, boulders, and bedrock. Intertidal habitat within the ROI includes rocky and sandy

beaches. Rocky shores are found throughout the Gulf of the Farallones region, particularly at Bodega Head and Duxbury Reef. Approximately 56 percent of the coastline of MBNMS is composed of rocky shores.

Subtidal and Nearshore Waters

Subtidal and nearshore waters refer to the area from the lowest low tide line to the point where the seafloor drops and the deeper offshore waters begin. This is on the land side of the continental shelf-slope transition. The substrate can be sand, mud, or rock providing essential habitat for various algae, zooplankton, and phytoplankton species. All three sanctuaries contain significant areas of continental shelf habitats. Within CBNMS are rocky subtidal areas and nearshore waters that lead to soft sediment continental shelf and slope (and open ocean). The tops of Cordell Bank's ridges and pinnacles support large populations of sponges, anemones, hydrocorals, hydroids, tunicates, barnacles, crabs, worms, scallops, snails, chitons, and other algae and invertebrates. GFNMS is composed of a large expanse of the Pacific Ocean but includes nearshore tidal flats, rocky intertidal areas, rocky intertidal areas, kelp rafts, wetlands, subtidal reefs, and coastal beaches. This habitat supports fishes, birds, invertebrates, and algae. The Farallon Islands (26 nm west of the Golden Gate Bridge in the south-central part of GFNMS) are a major feature of GFNMS. In MBNMS the continental shelf area is bisected by Monterey Canyon, which helps transport cold nutrient-rich water to the surface, fueling a productive ecosystem. Elsewhere on the continental shelf, seasonal upwelling greatly contributes to the annual productivity of the area. Closer to shore, the vegetation is largely made up of marine algae and phytoplankton. The kelp forest is a prominent nearshore habitat within MBNMS that is defined and influenced by canopy-forest forming species of kelp (Shaffer 2002). Seagrass beds are another important component of nearshore subtidal habitat, as described in the GFNMS regional overview (Section 3.3.1).

Estuarine and Lagoon

An estuary is a water body that has regular exchange and interaction with ocean water, or a marine embayment with no more than a temporary separation from seawater; a lagoon is a water body often separated from ocean water exchange, with enclosure as a defining characteristic (Airamé, Gaines, and Caldwell 2003). Bays and estuaries are among the most productive natural systems. Their physical, chemical, and biological characteristics are critically important to sustaining living resources. Wetlands and seagrass beds are also found in estuaries and serve as valuable microhabitats. Phytoplankton is the primary vegetation in the open water portion of these habitats.

Lagoons and estuaries bordering or found in the vicinity of the ROI include San Francisco Bay, Tomales Bay, Estero Americano, Estero de San Antonio, Abbott's Lagoon, Drakes Estero and Estero de Limantour, Bolinas Lagoon, Bodega Bay, Pescadero Marsh, and Elkhorn Slough. San Francisco Bay (483 square miles; 1,250 square km) and the Sacramento-San Joaquin Delta (1,158 square miles; 3,000 square km) are the largest estuaries on the California coast.

Continental Shelf and Slope

The continental shelf is the zone bordering a continent extending out from where there is permanent immersion, usually at about 328 to 656 feet (100 meters to 200 meters), where there is a marked or rather steep descent toward greater depths. The continental shelf is basically the extended perimeter of each continent. This area can be covered by relatively shallow seas (shelf seas) and gulfs. The shelf usually ends at a gradual slope called the shelf break, where the bottom sharply drops off into a steep slope, and then the sea bottom below the break is the continental slope. It usually begins at 430 feet (130 meters) depth and can be up to 12.5 miles (20 km) wide.

The continental slope, which is still considered part of the continent, together with the continental shelf, is called the continental margin. These very productive habitats occur in each of the three sanctuaries, CBNMS, GFNMS, and MBNMS. CBNMS lies 115 feet (35 meters) beneath the water's surface atop the northernmost seamount on the California continental shelf. Cordell Bank itself is on the continental shelf, about 43 nm northwest of the Golden Gate Bridge and 18 nm (21 miles; 32 km) west of the Point Reyes lighthouse. The main feature of this Sanctuary is an offshore granitic bank 4.5 miles wide by 9.5 miles long (7.2 km by 15.3 km), which contains sponges, ascidians, anemones, hydrocorals, and sea stars. Species density is highest on Cordell Bank, at depths shallower than 164 feet (50 meters). This rocky submerged island emerges from the soft sediments of the continental shelf, with the upper pinnacles reaching to within 120 feet (37 meters) of the ocean's surface. The continental shelf depth at the base of Cordell Bank is roughly 400 feet (121 meters).

GFNMS covers both the continental shelf and slope. From the shoreline to about 328 to 492 feet (100 to 150 meters) deep, the shelf is nearly horizontal, with rocky outcrops, gravel, sand, clay, silt, and deposits of broken shells covering it. The Farallon Islands themselves rise up from the continental shelf to the sea surface. About 25 miles (40 km) from the coast, the seafloor drops off, creating the continental slope with a grade of about 3 degrees. The slope is from 328 to 492 feet (100 to 150 meters) deep to about 2 miles (3,200 meters) and is covered with a more uniform sandy sediment.

In MBNMS, the central segment extends from the Point Año Nuevo area to south of Point Sur. It contains the most geologically diverse and physiographically varied seafloor within MBNMS. The Ascension-Monterey Canyon system, which has extensively dissected the continental shelf and slope in the Monterey Bay area, and the many heads of Sur Canyon, which have cut the continental slope just south of Point Sur, provide valuable habitat for many species.

Offshore Waters

Offshore waters refer to open water areas seaward from the continental shelf-slope transition (Shaffer 2002). Phytoplankton is the primary vegetation in this deep ocean habitat. Offshore habitats can be divided into pelagic waters and benthic communities. Several unique environments, such as cold seep, submarine canyon, and deep-seafloor microhabitats, are found in offshore waters, which is where upwelling takes place. Upwelling is part of the reason why such habitats support such unique assemblages of species. Two major impacts of upwelling are that it brings up cold nutrient-rich waters to the surface and it has an effect on animal movement. With regard to the movement of cold waters to the surface, this encourages seaweed growth and supports blooms of phytoplankton. The phytoplankton blooms in turn form the prey base for large animal populations higher in the food chain, such as fishes, marine mammals, and seabirds. Coastal upwelling ecosystems are some of the most productive ecosystems in the world and support many of the world's most important fisheries. With regard to providing a means for movement of organisms, upwelling that moves surface water offshore moves drifting larvae. Most marine fishes and invertebrates produce microscopic larvae as young, which drift in the water as they develop. Depending on the species, they may drift in ocean currents for weeks to months. Upwelling can infuse coastal waters with critical nutrients that fuel dramatic productivity.

Some of the areas known to have offshore water habitat include large submarine canyons, such as Monterey Canyon, which extend from shallow waters near their heads to the deep sea (Airamé, Gaines, and Caldwell 2003). Deep-sea communities are found seaward of the continental shelf starting at water depths of 656 feet (200 meters). Seamounts are another offshore environment found in what is otherwise a fairly flat seafloor. The Pioneer Seamount, 1.2 miles (1,950 meters) above the seafloor, Gumdrop Seamount, 0.5 mile (800

meters) above the seafloor, and Davidson Seamount, 1.4 miles (2,300 meters) above the seafloor, are three such formations occurring within the ROI (Airamé, Gaines, and Caldwell 2003). Cold seeps are regions on the seafloor that release sulfide- and methane-rich fluids and are common along the translational margin off central California (Airamé, Gaines, and Caldwell 2003). Monterey Bay is an example of an active transform margin between the Pacific and North American plates, that is, a translational margin in which there is widespread distribution of fluid expulsion features.

Bodega Canyon is an example of offshore habitat, which marks the northern edge of Cordell Bank in CBNMS. The canyon provides excellent habitat for pelagic birds and marine mammals and creates an area with currents that bring in much of the nutrient-rich upwelling along the coast.

GFNMS is a prolific area of offshore water habitat, providing a valuable environment for species at all levels on the food chain. Just west of the Farallon Islands, the continental shelf drops off a submarine precipice, called the Farallon Escarpment, into a 6,000-foot (1,824 meters) abyss. This shelf break and the steep flanks of seamounts are near-vertical surfaces where upwelling occurs, and plant and animal plankton concentrate. These features draw predators across great distances to feast in the waters around the Farallon Islands. The Escarpment provides a localized area of high diversity within Sanctuary boundaries. During all seasons, the Farallon Escarpment consistently has the highest diversity of bird life.

Offshore Islands

There are over 100 offshore rocks and islands within the ROI that are host to breeding seabird colonies, including the well known Farallon Islands in the GFNMS and Año Nuevo Island in MBNMS. The Farallones, which contain the largest of the offshore islands, includes five granite islands located approximately 26 nm (29 miles; 48 km) west of San Francisco. The Farallones provide breeding habitat for Ashy and Leach's Storm-Petrels; Brandt's, Pelagic, and Double-crested Cormorants; Western Gulls; Common Murres; Pigeon Guillemots; and Cassin's and Rhinoceros Auklets. Black Oystercatchers (*Haematopus palliatus*), a shorebird, also breed on the Farallon Islands. Many other bird species occur, including the Short-tail Albatross (*Phoebastria albatrus*) and the Tufted Puffin (*Fratercula cirrhata*). Some of the small islands and rock outcrops are topped with sand and vegetation, though many become at least partially submerged and remain solid rock.

Just offshore from Point Año Nuevo, 46 miles (74 km) south of San Francisco, is Año Nuevo Island. This 25-acre low-lying island is part of the 4,000-acre Año Nuevo State Reserve. Two hundred years ago, the island was connected to the mainland by a narrow peninsula. Currently it is separated from the mainland by a channel that continues to grow wider. Año Nuevo Island has abundant wildlife, primarily seabirds and pinnipeds. This island is a highly sensitive habitat, and its use is restricted.

Benthic Communities

The benthic community is made up of organisms that live in and on the bottom of the ocean floor. Benthic species, which dwell on the seafloor, include worms, clams, crabs, sponges, and other organisms that live in the bottom sediments.

Benthic communities occur at CBNMS and other offshore reef areas such as Fanny Shoals in GFNMS or Point Sur in MBNMS. These deep reef areas provide critical habitat for a unique assemblage of fishes and invertebrates and are very different from shallow water communities. Fanny Shoals contains rocky areas that are excellent habitat for benthic assemblages and also is a known fishing spot for species such as albacore,

salmon, rockfish, and lingcod. In addition, upwelling and substantial offshore transport occur off Point Sur, where a coastal current flowing northward and extending from the surface to 656 feet (200 meters) deep has been studied. This northward flow contributes to convergence and offshore transport of water at Point Sur, which in turn affects distribution, transport, and survival of young fishes.

Various benthic habitats and substrates are found within the ROI. In addition, benthic communities occur in a variety of the habitats described in this section, including subtidal rocky reefs, kelp forests, soft bottom habitats, and deep ocean floor habitats. The continental shelf descends gradually from the coast to the shelf break. Benthic communities along the continental shelf are covered in part by a layer of mud. Outcropping bedrock and sand cover the continental shelf at depths greater than 295 feet (90 meters). Benthos play a critical role and make up a diverse group that are a major link in the food chain.

3.3.3 Wildlife Resources

The diverse array of habitats found in these sanctuaries are home to 36 marine mammals, 94 species of seabirds, at least 345 species of fishes, and hundreds of invertebrates and algae. Tables D-1 through D-3 in Appendix C list various general and special status species found in each of the respective sanctuaries.

Coastal Bluff Wildlife

The few wildlife species found in coastal bluff habitats include bird species that are primarily associated with other habitats in the area and that have stopped to feed or perch opportunistically or that nest in or along the cliff face. Sparrows, warblers, and hawks can be found along tree- and shrub-lined portions of the coastal bluff. Also, swallows, Pigeon Guillemot and Pelagic Cormorants breed and feed along coastal bluffs. Nesting sites of the Common Murre occur at the Devil's Slide area and Hurricane Point near Big Sur. Small rodents also may be associated with the nonnative plants that dominate the area, and the red fox (*Vulpes vulpes*) and black-tail deer (*Odocoileus hemionus columbianus*) is known to forage in this habitat (NOAA 2002).

Intertidal Zone

The intertidal habitat (the area between high tide and low tide lines) is biologically rich, supporting diverse assemblages of organisms. It is characterized by extreme conditions caused by wind, waves, and the fluctuation of tides. The animals inhabiting intertidal zones are subject to periodic immersion in water, followed by exposure to air. They must withstand varying degrees of wave shock, dramatic temperature changes, changes in moisture, attacks from both marine and terrestrial predators, and human-caused effects, such as trampling and collecting.

Four zones of rocky intertidal organisms are traditionally associated with different tidal heights. Species distributions are restricted according to physiological tolerance along the thermal and moisture gradient in the intertidal zone. The splash zone is almost always exposed to air, and has relatively few species. The high intertidal zone is exposed to air for long periods twice a day. The mid-intertidal zone is exposed to air briefly once or twice a day, and the low intertidal zone is exposed only during the lowest tides.

On unconsolidated muddy or sandy shores, algae are rare, and benthic diatoms are the only marine algae that may be present. On sandy beaches, much of the invertebrate life, such as worms, crustaceans, snails, and clams, dwell under unconsolidated substrate. Common crustaceans and mollusks include the beach hopper (*Megalorchestia californiana*), spiny mole crab (*Blepharipoda occidentalis*), and sand crab (*Emerita analoga*). Common marine worms include: *Anatides groenlandica*, *Eteone dilate*, and *Euzonus* spp.,.

Rocky shores support a richer assortment of plants and animals. Algae includes numerous species of green, brown, and red algae, as well as beds of surfgrass. A wide variety of invertebrates, including anemones, barnacles, limpets, and mussels, compete for space with the algae in the intertidal zone. Mobile invertebrates, such as sea stars, snails, and crabs, often hide in crevices or under rocks, emerging to graze on algae or prey on other animals. Small fishes may also live in the small pools of water that fill up with each tidal cycle.

Typical intertidal invertebrate species of central and northern California include lined shore crab (*Pachygrapsus crassipes*), purple shore crab (*Hemigrapsus nudus*), isopods (*Idotea* spp.), California mussels (*Mytilus californianus*), periwinkles (*Littorina* spp.), lemon nudibranch (*Anisodoris nobilis*), troglodyte chiton (*Nuttallina californica*), bat star (*Asterina miniata*), black turbin snail (*Teynla funebris*), the giant green anemone (*Anthopleura xanthogrammica*), aggregating anemone (*Anthopleura elegantissima*) and other species of bryozoans, nudibranchs, sponges and tunicates (UC Santa Cruz 1996). Intertidal fishes, such as the crevice kelpfish (*Gibbonsia montereyensis*) and the tide pool sculpin (*Oligocottus maculosus*), are limited to tide pools or to passing through the intertidal zone at high tide.

Birds forage in the intertidal zone at low tide or breed and roost in the cliffs just above the shore. There are a great many species of shorebirds along the beaches of the ROI, including Sanderlings (*Calidris alba*); Short-billed Dowitchers (*Limnodromus griseus*); and Western, Glaucous-winged (*Larus glaucescens*), and California Gulls (*L. californicus*). Shorebirds, such as Sanderlings and Dowitchers, routinely forage in the receding surf, an indication that there are sand-dwelling crustaceans. Another bird found in this area is the Snowy Plover (*Charadrius alexandrinus nivosus*), whose threatened status has resulted in some significant resource management actions in central California including restrictions on access or types of use in some shoreline areas. Some typical shorebird breeders in this habitat include the Snowy Plover, Black Oystercatcher, Killdeer (*Charadrius vociferus*), Sanderlings, Willets (*Catoptrophorus semipalmatus*), and Marbled Godwits (*Limosa fedoa*).

Brown Pelicans, Surf Scoters, grebes, cormorants (*Phalacrocorax* spp.), and many seabird species can be found in water beyond the breaking waves or flying through the area. Caspian and Forster's Terns (*Sterna forsteri*) and, Whimbrels (*Numenius phaeopus*) are some of the summer migrants that forage along the coastal beaches. Winter migrants include loons (*Gavia* spp.), Willets, Black-bellied Plovers (*Pluvialis squatarola*), Marbled Godwits, and Turnstones (*Arenaria melanocephala*).

Marine mammals are also found in this habitat. Pacific harbor seals, and California sea lions are frequently seen seaward of the surf zone; sea otters, and Steller sea lions are occasional visitors. Seals and sea lions haul out on intertidal shores for warming and breeding.

Subtidal and Nearshore Waters

Subtidal habitats (shallow-water areas below mean low water) and nearshore waters (shallow inshore waters; inshore waters are waters of the shallower part of the continental shelf, also known as onshore waters) support many different species. A comprehensive list of key species in this habitat is in the Biogeographic Assessment (NOAA 2003b) and the ecological linkages report (Airamé, Gaines, and Caldow 2003).

Krill (euphausiids), a crucial or “keystone” species in the ROI, occur in all three sanctuaries. They are small, shrimp-like crustaceans that congregate in large dense masses called swarms or clouds. Two krill species form the primary forage for upper trophic levels in the Sanctuaries. Krill feed on phytoplankton and are very important in the food web since many other species of bird, fish and animals. Krill form a key trophic link in coastal upwelling systems between primary production and higher trophic level consumers. Most marine

predators subsist at least part of the year on krill, which is the primary prey of seven of the ten most important commercial fishes on the central California coast. Krill are also very important food sources for baleen whales and seabirds.

The nutrient-rich sanctuary waters provide forage for the largest concentration of breeding seabirds in the continental US. More than 120 species of birds use these three sanctuaries for shelter, food, or as a migration corridor. Of these, over 40 species are known to use the Sanctuary during their breeding season. These same productive waters also support a variety of marine mammals, including gray whales (*Eschrichtius robustus*), humpback whales (*Megaptera novaeangliae*), blue whales (*Balaenoptera musculus*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena sinus*), Pacific white-sided dolphins (*Lagenorhynchus obliquidens*), northern right whale dolphins (*Lissodelphis borealis*), Risso's dolphins (*Grampus griseus*) and killer whales (*Orcinus orca*). Some species, such as the gray whale are only seasonal migrants, others travel to the area to feed (blue and humpback whales, killer whale), and yet others can be found year-around (harbor seals, sea lions).

Six species of pinnipeds are found in the ROI, some of which are federally listed. Pinnipeds spend a large amount of time in offshore waters, or on offshore islands, but some of the rookeries (breeding places or breeding colonies usually crowded with the same species) or haul-out areas occur in this habitat. Species found in the ROI are California sea lion, Pacific harbor seal, Steller sea lion, northern elephant seal, northern fur seal, and on occasion, the Guadalupe fur seal (*Arctocephalus townsendi*). The various species have numerous seal rookeries or colonies throughout the ROI and are found in the sanctuaries at different times of the year, feeding on the abundant fish and invertebrate resources of the island shelves or hauling out on rocks and beaches.

A variety of fish species occur within these habitats, including rockfishes, cabezon, surfperch (family Embiotocidae), wrasses (family Labridae) and senorita (*Oxyjulus californica*). Commercially harvested species include salmon, tuna, crab, squid, and various rockfish. The salmon, crab, and squid fisheries are among the most important ones in the sanctuaries. The West Coast Dungeness crab fishery is considered the most sustainable large-scale commercial crab fishery in the world. Both chinook and coho salmon are coastal migrants. They are mobile, nonresidential, nearshore pelagic species. Commercial landings from open-water habitats represented 36 percent of the total landings at ports near the Sanctuaries from 1981 to 2000. Further information about commercial fishing is found in Section 3.6, Commercial Fisheries.

Kelp forests support a variety of species, including sea otters and sea urchins. Other marine mammals, such as harbor seals and California sea lions, are common in and around kelp forests, as are a variety of fishes, such as the señorita (*Oxyjulus californica*), the kelp surfperch (*Brachyistius frenatus*), blue rockfish (*Sebastes mystinus*), and olive rockfish (*S. serranoides*). The kelp canopy, stipes, and holdfasts increase the available habitat for nearshore species and offer protection to juvenile finfish. Bat star (*Asterina miniata*), sea lemon (*Anisidaris nobilis*), barnacles (*Balanus* spp.), red volcano sponge (*Acarnus erithacus*), and urchin are a few of the many types of invertebrates that inhabit the kelp forest and rocky subtidal habitats.

Estuarine and Lagoon

Estuaries and lagoons serve as important habitats for many fishes, birds, and mammals. They provide suitable habitat for reproduction, feeding, resting, and cover. Estuaries and lagoons support unique biological communities with both aquatic and terrestrial characteristics. Halophytic vegetation, such as pickleweed (*Allenrolfea occidentalis*), grows higher in the marsh where flooding occurs less frequently and salt may become concentrated. However, little vegetation can grow in areas characterized by high evaporation and high soil

salinity. A diverse assemblage of wetland plants grows in areas near tidal creeks where fresh water input is high. As the plant matter breaks down into detritus, it is consumed by various filter feeders, deposit feeders, and other omnivores and scavengers. These species, in-turn, provide abundant food resources for other species of fish, birds and mammals. Brackish water supports a distinctive assemblage of invertebrate and fish species, including the endangered tidewater goby (*Eucyclogobius newberryi*), delta smelt (*Hypomesus transpacificus*), and the stickleback (*Gasterosteus aculeatus leiuus*). Other estuarine species can include jacksmelt (*Atherinopsis californiensis*), Pacific sardine, Pacific herring (*Clupea pallasii*), staghorn sculpins (*Leptocottus armatus*), several rockfishes, salmonids, clupeids (*Clupeonella* spp.), and embiotocids (*Embiotocidae*).

The estuaries and bays of coastal California are part of the Pacific Flyway, one of the four principal bird migration routes in North America. San Francisco Bay supports a large number of migratory and resident birds. Also important for birds are Tomales Bay, Bolinas Lagoon, Pescadero Marsh, and Elkhorn Slough. Bolinas Lagoon and Tomales Bay are designated wetlands of significant international importance under the Convention on Wetlands. Marine mammals, including harbor seal, harbor porpoise, and sea otter, occur in these bays.

Seagrass beds, which occur in the bays and lagoons, are highly productive habitats that support a unique assemblage of invertebrates and fishes. Many fishes, including Pacific herring, spawn in seagrass beds among other habitats. The structure of seagrass beds provides protection from predation for juvenile invertebrates and fishes. Large numbers of shorebirds and waterfowl are attracted to seagrass beds, where they feed on the seagrass, fishes, and invertebrate eggs and young. (See sandy beach, rocky intertidal, and offshore island communities sections.)

Offshore Waters

Offshore waters tend to represent the more oceanic waters, though they still may relate to outer continental shelf waters. These are waters beyond the nearshore zone which are always submerged.

Whale species, such as the gray whale, blue whale, humpback whale, killer whale, and many others, are seen seasonally within the sanctuaries, with some evidence of certain species having a small number of year-round residents (NOAA 2002; CBNMS 2004). A variety of seabirds, such as the Black-legged Kittiwake and Rhinoceros Auklet, forage in and inhabit the ROI.

A small number of pelagic species support the fisheries of central and northern California, including northern anchovy, Pacific sardine, Pacific mackerel, and jack mackerel (*Trachurus symmetricus*). Other fishes known to this area include the Pacific butterfish (*Peprilus simillimus*), opah (*Lampris guttatus*), blue shark (*Prionace glauca*), common thresher shark (*Alopias vulpinus*), and mako shark (*Isurus oxyrinchus*) (NOAA 2002).

Offshore Islands

Offshore islands provide important habitat for a large number of marine mammal and seabird species. Some marine mammals use the islands for rookeries and as essential haul-out sites. The islands also provide important breeding sites for a variety of seabirds.

The Farallon Islands, which are protected as a National Wildlife Refuge, are home to the largest concentration of breeding seabirds in the contiguous United States, as well as one of the richest assemblages of pinnipeds (six species; see subtidal and nearshore waters section). Eleven of the 16 species of seabirds known to breed along the US Pacific coast have breeding colonies on the islands. Breeding colonies at the

Farallon Islands include Ashy and Leach's Storm-Petrels (*Oceanodroma leucorhoa*), Brandt's, Pelagic and Double-crested Cormorants, Western Gulls, Common Murres, Pigeon Guillemots, Rhinoceros Auklets, Cassin's Auklets, and Tufted Puffins.

The Farallon Islands provide critical habitat for breeding northern elephant seals and Californian sea lions. Also, northern fur seals have been sighted on the islands for the first time in decades.

Current studies show that there may be a semiresidential group of white sharks (*Carcharodon carcharias*) that inhabits the waters off the Farallons. Photo identification and mark recapture studies indicate that certain individual animals revisit the area yearly. It may be that sharks are engaging in annual feeding or reproductive activities and may even exhibit "territories." Thus, the individual animals in this area may be likely to experience frequent or cumulative encounters with humans and vessels since there has been an increase in recent years in ecotourism focused on white shark viewing and diving. Shark ecotourism is further discussed in Sections 3.11, Public Access and Recreation, and 3.13, Socioeconomics.

Año Nuevo Island supports an abundant wildlife population. The island contains nesting colonies of sea birds, including the Rhinoceros Auklet, Cassin's Auklet, Brandt's Cormorant, Black Oystercatcher, and Western Gull. California Brown Pelicans are also seen there, although they do not use the island for breeding. It also serves as a breeding ground for northern elephant seals, Pacific harbor seals (*Phoca vitulina*), California sea lions, and federally endangered Steller sea lions. Northern fur seals and federally threatened southern sea otters are occasional visitors. The elephant seal population is the most predominant and has recovered to the carrying capacity of the island, extending to the mainland. Several systematic, long-term, species monitoring efforts have taken place on Año Nuevo.

Benthic Communities

Benthic fauna communities refer to invertebrates living directly on or in the seafloor. Benthic fauna communities differ according to habitat type and exist in all habitats of the Sanctuary (bays and estuaries, intertidal zones, nearshore, and offshore). The different sediments and the range of depths on the continental shelf provide diverse habitats for a variety of marine invertebrates. Soft bottom habitats lack the physical structure and high production associated with kelp forests and rocky reefs. Generally, each habitat area supports differing benthic assemblages of most classes, for example, worms, clams, or crabs. Hundreds of species (including sea stars, clams, amphipods, and shrimp) are critical links in the food chains of fishes, birds, and mammals. Species that live on the continental shelf (which provides structure for species such as sea pens and small invertebrates) are subjected to shifting sediments due to wave action. Some species find shelter from the shifting sands by living in tubes and burrows. Clams are permanently buried in the sand with their siphons extended to the surface. Some crustaceans and mollusks live beneath the sand, emerging at night to forage. Dungeness crabs (*Cancer magister*), which are the most economically important crabs in the area, are concentrated on sandy to sandy-mud bottoms from the intertidal zone to approximately 330 feet (100 meters).

Brown and red rock crabs (*C. antennarius* and *C. productus*) are found on rocky substrate, while yellow rock crabs (*C. anthonyi*) inhabit open sand or soft bottom habitats. Concentrations of ocean shrimp (*Pandalus jordani*) are found on green mud and mud-sand bottoms at depths of 164 to 1,312 feet (50 to 400 meters). Sea pens (*Ptilosarcus gurneyi*), octopus (*Octopus rubescens*), benthic squid (*Rossia* spp.), and the sea star are examples of large epifaunal invertebrates found at depths in Monterey Bay of 197 to 328 feet (60 to 100 meters).

Estuarine fishes, such as the California halibut (*Paralichthys californicus*) and leopard shark (*Triakis semifasciata*), occupy benthic habitats in Tomales Bay and other estuaries. Flatfish, including various sole, halibut, flounder, turbot, and sanddab (*Citharichthys* spp.), are camouflaged on the sandy surface of the seafloor. Other benthic fish species found within the ROI include English sole (*Parophrys vetulus*) and Dover sole (*Microstomus pacificus*). Many rockfish species, such as widow, yellowtail (*Sebastes flavidus*), canary (*S. pinniger*), shortbelly (*S. jordani*), and vermilion (*S. miniatus*), bocaccio, and Pacific ocean perch (*S. alutus*), are found in the ROI (see Appendix C for complete listing; note that widow rockfish, canary rockfish, and Pacific ocean perch are listed as overfished species in the Sanctuaries). Some rockfish species are associated with rocky features on the continental shelf and slope and in submarine canyons.

Ophiuroids or brittlestars, such as *Ophiomusium glabrum*, *Amphiura carchara*, and *Amphilepis platytata*, are the dominant megafauna in many areas of the deep sea (Airamé, Gaines, and Caldow 2003). Seamounts, with their rocky substrate and higher elevations, support a high biomass with a diverse assemblage of species. Deep-sea communities contain unique species adapted to the extremely high pressure and low light conditions. Grenadiers (*Coryphaenoides* spp.), snailfish (*Paraliparis rosaceus*), and finescale codling (*Antimora microlepis*) are some of the highly specialized species that survive in the extreme conditions of the deep sea. Vesicomyid clams (*Calypptogena* spp.) are the dominant species at cold seeps off central and northern California (Airamé, Gaines, and Caldow 2003).

Sensitive Species and Habitats

There are many sensitive or biologically significant habitats in the ROI. Sensitive habitat can consist of a diverse category of habitats but includes areas such as wetlands, marine habitats, sand dunes, sea cliffs, and other such habitats that support rare, endangered, threatened, or unique species. Biologically significant habitats are those identified as environments that support a high diversity of species or an abundance of individuals and that have some ecological significance. To assess the location and size of these areas, NOAA surveyed the ROI for the location and abundance of key species (Tables C-1 through C-3 in Appendix C). Figure 3-1 depicts the Areas of Special Biological Significance within the Sanctuaries.

In addition, this section identifies special status, or sensitive, species that may occur in the ROI. Sensitive species include those that the US Fish and Wildlife Service (USFWS), the NOAA-Fisheries, or the CDFG lists or has proposed for listing as endangered, threatened, or candidate species. Plants that the California Native Plant Society (CNPS) lists as rare or threatened are also considered sensitive. Federal and state regulatory agencies also consider species for which listing is not presently necessary but that have suffered noticeable and substantial declines in population or that have lost significant habitat that puts them at likely risk of a population decline. These are known as species of concern and are monitored and considered in planned actions in order to avoid future listing. There are many such species of concern found within the ROI, such as the common loon (*Gavia immer*) and Pacific lamprey (*Lamprreta tridentate*). In order to assess any potential impacts on sensitive species from project actions, including conservation actions, an ESA Section 7 consultation has taken place. This process started with the publication of the DEIS.

Potential sensitive species in the ROI were identified from the biogeographic assessment (NOAA 2003b) and the ecological linkages report (Airamé, Gaines, and Caldow 2003), as well as from the respective Sanctuary Web sites, other relevant literature, and personal communications with Sanctuary personnel. Lists of sensitive species and critical habitat found in the respective sanctuaries are provided in Appendix C. The federal designations of these species, as well as a comprehensive list of all special status species known to occur or likely to occur in the respective sanctuaries, are listed in Tables C-1 through C-3, in Appendix C.

The following discussion is meant to provide a broad overview and summary discussion of the majority of sensitive or special status species in the ROI; certain species are profiled in more detail.

Numerous endangered species are known to reside in or migrate through the sanctuaries. Federally listed endangered marine mammals include the blue whale, fin whale, humpback whale, North Pacific right whale, sei whale (*Balaenoptera borealis*), sperm whale, Steller sea lion, northern fur seal, Guadalupe fur seal, and southern sea otter.

Sperm whales frequent waters of the continental slope and in the vicinity of seamounts where subsurface topography is steep. Large baleen whales, including blue, gray (formerly a listed species), humpback, and fin whales, either migrate through the waters of coastal California or move into the area to feed during the summer and fall. Large numbers of blue and humpback whales feed in the vicinity of Cordell Bank, the Farallon Islands, and Monterey and Bodega canyons. During their nonbreeding season, northern fur seals are the most abundant pinnipeds over the continental slope off California. Several fishes listed as endangered are known to inhabit the ROI. They include the chinook salmon spring, fall/late fall, and winter run evolutionarily significant unit (ESUs), steelhead central and south-central California coast salmon (*Oncorhynchus mykiss irideus*), tidewater goby, white sturgeon (*Acipenser transmontanus*), and green sturgeon (*A. medirostris*).

Sanctuary waters are among the most productive and biologically diverse in the world as measured by the sheer number of seabirds supported year-round and the numerous marine mammal species found in the ROI. These waters are also important to several species of special concern because of their small world populations. In GFNMS alone, a total of 27 bird species that are federally listed as threatened, endangered, or a species of concern can be found. Federally listed endangered bird species known in the ROI include Short-tailed Albatross (*Phoebastria albatrus*), California Brown Pelican, California Clapper Rail (*Rallus longirostris obsoletus*), Western Snowy Plover, California Least Tern (*Sterna antillarum browni*), Marbled Murrelet, and Xantus's Murrelet.

Four federally threatened or endangered sea turtles are known to occur in the ROI. They are the green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), olive (Pacific) ridley sea turtle (*Lepidochelys olivacea*), and leatherback sea turtle (*Dermochelys coriacea*).

Sensitive terrestrial species found in the ROI are the state and federally endangered San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) and the state and federally endangered salt marsh harvest mouse (*Reithrodontomys megalotis distichlis*). The salt marsh harvest mouse is the one terrestrial mammal known to occur in habitat within the ROI; it is found in salt water marshlands near the coast.

Essential Fish Habitat (EFH) is defined by the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (Magnuson-Stevens Act, 16 USC § 1801 *et seq.*). EFH refers to those waters and substrate necessary to fishes for spawning, breeding, feeding, or maturing and includes coral. Certain EFH areas are known as habitat areas of particular concern (HAPC, a subset of EFH). EFH was designated by the MSA, which calls for direct action to “stop or reverse the continued loss of fish habitats.” EFH exists in the ROI. It is extensively covered in the most recent EIS published in December 2005 entitled Pacific Coast Groundfish Essential Fish Habitat Designation and Minimization of Adverse Impacts and is available on the Internet at <http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/NEPA-Documents/EFH-Final-EIS.cfm>. The final rule implementing the EFH designation and management

measures was published on December 29, 2006 (50 CFR Part 660). This EIS and rule amends the Pacific Coast Groundfish Fishery Management Plan (GFMP), pursuant to the MSA to describe and identify EFH for the fishery, to designate HAPCs, to minimize to the extent practicable the adverse effects of fishing on EFH, and to identify other actions to encourage the conservation and enhancement of EFH. The project area for this action extends from the seaward boundary of the Pacific Coast Exclusive Economic Zone shoreward to the inland extent of estuaries. This project area overlaps in many areas within the ROI. While the Proposed Action of this EIS does not specifically protect EFH, this EIS assumes that the Pacific Coast EFH will be adopted and all its recommendations incorporated.

As of June 2007, there are seven groundfish species declared overfished: bocaccio, Pacific Ocean perch, canary rockfish, darkblotched rockfish, widow rockfish, yelloweye rockfish, and cowcod. Each of these species has a rebuilding plan developed and tracked by the Pacific Fishery Management Council.

Davidson Seamount is an ecologically important area that provides habitat for rare fishes, old coldwater corals, and massive sponge communities. The surface habitat hosts a variety of seabirds, marine mammals, and surface fishes, including Albatross, Shearwaters, jaegers (*Stercorarius* spp.), sperm whales, killer whales, albacore tuna, and ocean sunfish. Rare organisms, such as swimming worms (an undescribed mollusk) and red jellyfish (*Tiburonia granrojo*), have been seen above Davidson Seamount.

Introduced Species

Introduced species (also known as nonnative, invasive, or exotic species) are present in the marine and estuarine environment and are a major environmental threat to living resources and habitats of all three sanctuaries. Introducing invasive species into waters where they are not already established is an issue that has received much attention in recent years. The introduction of invasive species, also sometimes called aquatic nuisance species (ANS) or fouling organisms, is considered a significant threat to water quality and is capable of disrupting native marine ecosystems. ANS are organisms “that invade ecosystems beyond their natural, historic range. Their presence may harm native ecosystems or commercial, agricultural, or recreational activities dependent on these ecosystems” (USFWS 2007). Introduced species (hereafter both “introduced species” and “ANS” are used to describe invasive species) are nonindigenous species, which threaten the diversity or abundance of native species (especially threatened and endangered species), alter native species composition, and interfere with the ecosystem’s function, often threatening the ecological stability of the infested waters. They may cause local extinction of native species either by preying on them directly or by out-competing them for prey. For example, the European green crab, now found in Elkhorn Slough, Tomales Bay, Bodega Bay, Bolinas Lagoon, Estero de San Antonio, and Estero Americano, preys on the young of valuable species (such as oysters and Dungeness crab) and competes with them for prey and suitable habitats. Introduced species may cause changes in physical habitat structure.

Once established, introduced species can be extremely difficult to control or to eradicate. Hundreds of federal programs, state organizations, international organizations and non-profit organizations have established databases, community outreach, monitoring, eradication, research and education programs. Additional information on the issues associated with introduced species is provided in Section 2.2.1.

3.3.4 Regulatory Environment

There are numerous federal and state laws and regulations providing protection of biological resources in the sanctuaries. An overview of some of the primary regulations and regulating agencies are summarized below (note that this list is not comprehensive).

Federal Clean Water Act, 33 USC §§ 1251-1387

The USACE and EPA have primary federal responsibility for administering regulations that concern waters and wetlands. The USACE acts according to the Rivers and Harbors Act (Sections 9 and 10), which regulates placement of structures or other work in addition to fill in “navigable waters,” and the CWA (Section 404), which governs fill in “waters of the United States,” including wetlands. A USACE permit is required if a project would place structures within navigable waters or if it would result in altering waters of the US below the ordinary high water mark in nontidal waters. The USACE does not issue these types of permits in cases where the USACE itself is the lead agency; instead it evaluates the project to determine compliance and acceptability. The primary criteria for evaluating the biological impacts of the USACE permit actions in wetlands is provided by the USEPA, but the mandates of other federal agencies apply as well. Those agencies include, but are not limited to, the USFWS and the National Marine Fisheries Service (NMFS). Additional enforcement of the CWA is provided by the State Water Quality Resources Control Board (SWQRCB), which must certify that a USACE permit action meets state water quality objectives (Section 401, CWA).

Endangered Species Act, 16 USC §§ 1531 – 1544

The ESA protects plant and animal species (and their habitats) that are listed as endangered or threatened. Species are listed as endangered if found to be in danger of extinction throughout all or a significant portion of their ranges; species are listed as threatened if they are likely to become endangered within the foreseeable future. The ESA also protects designated critical habitat for listed species, which are areas of physical or biological features essential to the conservation of the species and which may require special management considerations. The ESA requires federal agencies to consult with USFWS and/or NMFS, as applicable, before initiating any action that may affect a listed species.

Magnuson-Stevens Fishery Conservation and Management Act, 16 USC § 1801 et seq.

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the US claimed sovereign rights and exclusive fishery management authority over all fish, and all Continental Shelf fishery resources, within the EEZ (the area from the seaward boundary of each coastal state out to 200 nm). The MSA established a procedure for authorizing foreign fishing, and prohibited unauthorized foreign fishing within the EEZ.

The MSA also established national standards for fishery conservation and management within the EEZ, and created eight Regional Fishery Management Councils composed of state officials with fishery management responsibility, the regional administrators of NOAA Fisheries, and individuals appointed by the Secretary of Commerce who are knowledgeable regarding the conservation and management, or the commercial or recreational harvest, of the fishery resources of the geographical area concerned. The Councils are responsible for preparing and amending fishery management plans for each fishery under their authority that requires conservation and management.

Fishery management plans (FMPs) describe the fisheries and contain necessary and appropriate conservation and management measures, applicable to foreign vessels in US waters and fishing by US vessels. The plans are submitted to the Secretary of Commerce, who has delegated to NOAA approval of the plans. If approved, NOAA Fisheries promulgates implementing regulations. NOAA Fisheries may prepare Secretarial FMPs if the appropriate Council fails to develop such a plan.

Of particular relevance to this FEIS are recent changes to the Groundfish FMP. Amendment 19 has been prepared by NOAA Fisheries and the PFMC to comply with Section 303(a)(7) of the MSA by amending the Pacific Coast Groundfish FMP to:

- Describe and identify essential fish habitat (EFH) for the fishery;
- Designate Habitat Areas of Particular Concern (HAPC);
- Minimize to the extent practicable the adverse effects of fishing on EFH; and
- Identify other actions to encourage the conservation and enhancement of EFH.

The proposed rules and management measures are intended to minimize, to the extent practicable, adverse effects on Groundfish EFH from fishing. On May 11, 2006, NOAA Fisheries published a final rule to implement regulatory provisions of Amendment 19 to the Pacific Coast Groundfish FMP (71 FR 27408). This rule designated the areas within the 50-fathom isobath of Cordell Bank and the Davidson Seamount Management Area (as well as other areas in the ROI) as EFH, and implemented the following prohibitions as applicable within these EFH areas:

- Fishing with dredge gear anywhere in EFH;
- Fishing with beam trawl gear anywhere in EFH;
- Fishing with specified types of bottom trawl gear anywhere in EFH;
- Fishing with bottom contact gear within 50 fathoms of Cordell Bank; and
- Fishing with bottom contact gear or any other gear that is deployed deeper than 500 fathoms (3000 feet) within the Davidson Seamount.

Fish and Wildlife Coordination Act and Implementing Regulations, 16 USC §§ 661 – 666c

Any federal agency that proposes to control or modify any body of water must first consult with the USFWS or NMFS, as appropriate, and with the head of the appropriate state agency exercising administration over the wildlife resources of the affected state. The USACE has a memorandum of understanding with the USFWS to provide a coordination act report to assist in planning efforts.

Migratory Bird Treaty Act, 16 USC § 703 et. seq.

The MBTA is a federal statute that implements US treaties with several countries concerning the conservation and protection of migratory birds. The number of bird species covered by the MBTA is extensive and is listed at 50 CFR 10.13. Further, the regulatory definition of a migratory bird is broad and includes any mutation or hybrid of a listed species, as well as any part, egg, or nest of such bird (50 CFR 10.12). Migratory birds are not necessarily federally listed endangered or threatened under the ESA. The MBTA, which is enforced by the USFWS, makes it unlawful “by any means or manner, to pursue, hunt, take, capture [or] kill” any migratory bird except as permitted by regulation. The applicable regulations prohibit the take, possession, import, export, transport, sale purchase, barter, or the offering of these activities, except as permitted by the implementing regulations.

Marine Mammal Protection Act, 16 USC §§ 1361-1421h

The MMPA protects and conserves marine mammal species by placing a moratorium on harassing, hunting, capturing, or killing any marine mammal or attempting any of these. If a project proponent determines that

an action could incidentally harass (“take”) marine mammals, the proponent must consult with either the USFWS or NMFS to determine if a permit to take a marine mammal is required. A recent redefinition of “take” of an MMPA-protected species occurred under the FY 2004 Defense Authorization Act (House Bill 1588), where an animal is “taken” if it is harassed, and where harassment is defined as “(i) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered” (section 315(f) P.L. 107–314; 16 USC § 703 note).

Rivers and Harbors Appropriations Act of 1899, 33 USC §§ 401, 403

Section 10 of the Federal Rivers and Harbors Appropriations Act of 1899 (RHA) prohibits the unauthorized obstruction or alteration of any navigable water. Navigable waters under the RHA are those “subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce” (33 CFR 3294). Typical activities requiring Section 10 permits are construction of piers, wharves, bulkheads, marinas, ramps, floats, intake structures, cable or pipeline crossings, and dredging and excavation.

Coastal Zone Management Act, 16 USC §§ 1451-1466

The CZMA encourages states to preserve, protect, develop, and, where possible, restore or enhance valuable natural coastal resources, such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats. To encourage states to participate, the CZMA makes federal financial assistance available to any coastal state or territory that is willing to develop and implement a comprehensive coastal management program. Federal agencies are required to carry out activities that affect any land or water use or natural resource of a state’s coastal zone in a manner consistent with the enforceable policies of an approved state management plan.

National Aquatic Nuisance Prevention and Control Act (NANCPA) of 1990

At the federal level, the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANCPA 90) mandated ballast water management for vessels entering the Great Lakes. This law was amended by the National Invasive Species Act of 1996 (NISA 96), which required the development of voluntary ballast management guidelines for all other ships entering US waters. The law also requires all vessels that enter US territorial waters (with certain exemptions) to manage ballast water according to prescribed measures. NISA 96 also required the US Coast Guard (USCG) to evaluate the effectiveness of the voluntary ballast management program three years after implementation. In 2004, voluntary guidelines were determined to be ineffective, so the USCG initiated mandatory ballast management for all ships entering US waters from outside the Exclusive Economic Zone (EEZ) of the United States.

Current management strategies for preventing the introduction of invasive species via ballast water are limited to ballast water retention, open ocean exchange, or alternate environmentally sound methods of ballast water management approved by the USCG.

Executive Order 11990

Executive Order 11990, Protection of Wetlands (42 FR 26961, May 24, 1977), was signed by President Carter in 1977 to avoid the adverse impacts associated with destroying or modifying wetlands.

Executive Order 13112

Enacted in 1999, this order directs federal agencies to prevent the introduction of invasive species and provide for their control, establishes the Invasive Species Council and directs them to write an invasive species management plan within 18 months.

National Invasive Species Act, P.L. 104-332

The federal National Invasive Species Act (1996) strengthened the 1990 law requiring open water exchange (OWE) of ballast water and mandatory ballast management plans and reporting.

Ocean Dumping Act, 33 USC, §§ 1401-1402

The USEPA has regulatory responsibilities with regard to ocean water quality under both the Clean Water Act (see above) and Title 1 of the Marine Protection, Research, and Sanctuaries Act (Ocean Dumping Act). The Ocean Dumping Act prohibits the unpermitted dumping of “any material transported from a location outside the United States” into the territorial sea of the United States, or into the zone contiguous to the territorial sea, to the extent discharge into the contiguous zone would affect the territorial sea or the territory of the United States. This act supersedes any related Clean Water Act requirements.

California Coastal Act, California Public Resources Code § 30000

The California Coastal Act (CCA) defines the “coastal zone” as the area of the state that extends three miles seaward and generally about 1,000 yards (910 meters) inland. In particularly important and generally undeveloped areas, where there can be considerable impact on the coastline from inland development, the coastal zone extends to a maximum of five miles (8 km) inland from mean high tide line. In developed urban areas, the coastal zone extends substantially less than 1,000 yards (910 meters) inland. The Coastal Commission’s jurisdiction does not extend into or around San Francisco Bay, where development is regulated by the San Francisco Bay Conservation and Development Commission (Cal. Pub. Res. Code § 30103). Almost all development within the coastal zone, which contains many wetlands, requires a coastal development permit from either the Coastal Commission or a local government with a certified Local Coastal Program.

California Endangered Species Act, California Fish and Game Code §§ 2050-2111.5

The California Endangered Species Act (CESA) places the responsibility for maintaining a list of threatened and endangered species on the CDFG. The CDFG also maintains a list of candidate species that are under review for addition to either the list of endangered species or the list of threatened species. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any California-listed endangered or threatened species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project that may affect a candidate species.

Fish and Wildlife Protection and Conservation, California Fish and Game Code §§ 1600-1616

The state’s authority in regulating activities in wetlands resides primarily with the CDFG and the State Water Resources Control Board (SWRCB). The State of California regulates wetlands through the CDFG, which provides comment on USACE permit actions under the Fish and Wildlife Coordination Act. The CDFG may develop mitigation measures and require the preparation of a streambed alteration agreement if a proposed project would obstruct the flow or alter the bed, channel, or bank of a river or stream in which there are fish

or wildlife resources, including intermittent and ephemeral streams. The CDFG is authorized to do so by the State Fish and Game Code Sections 1600-1616.

The California legislature and Fish and Game Commission have established state marine reserves, state marine conservation areas, and state marine parks in multiple, small ocean, and estuarine areas of the ROI. Additional marine protected areas are considered for establishment by the Commission as a result of the Marine Life Protection Act. The Commission has the authority to prohibit or restrict activities that may harm resources, including fishing, collecting, swimming, boating, and public entry. The CDFG works closely with the sanctuaries in oil spill response, damage assessment, and restoration through its Office of Spill Prevention and Response.

California Code of Regulations, Title 14 Division 1

The Fish and Game Commission has broad authority under this legislation and may establish regulations that restrict both sport and commercial fishing and otherwise afford protection to marine organisms and habitats.

California Marine Invasive Species Act, AB 433

The California Marine Invasive Species Act of 2003 mandates the management of ballast water. The act reauthorized and improved upon the California Ballast Water Management and Control Act (AB 703). It requires mid-ocean exchange or retention of ballast water for vessels coming from outside the EEZ and requires vessels coming from other west coast ports to minimize ballast water discharge. Record-keeping and other compliance measures apply to all vessels entering California waters.

State Water Resources Control Board

The SWRCB adopts statewide water quality control plans and policies, such as the Ocean Plan, the Thermal Plan, and the State Implementation Policy. The SWRCB has established a system of 34 Areas of Special Biological Significance (ASBS). These areas are designated for special protection from undesirable alteration in natural water quality. Five ASBSs are located in GFNMS, including Duxbury Reef, Point Reyes Headland, Double Point, Bird Rock, and the Farallon Islands (see Figure 3-1).

California Coastal Ecosystems Protection Act, SB 497

The California Coastal Ecosystems Protection Act of 2006 was designed to control invasive species in the ballast water discharged by ships. Performance standards for ballast water discharge proposed by the California State Lands Commission took effect with the passage of this law. These standards were to be fully complied with on or before January 1, 2008.

California Code of Regulations, Title 2, Division 3, Chapter 1, Article 4.6

Article 4.6 was designed to move the state toward elimination of the discharge of nonindigenous species into the waters of the state or into waters that may impact the waters of the state, based on the best available technology economically achievable. The provisions of Article 4.6 apply to all vessels arriving at a California port or place from another port or place within the Pacific Coast Region. All such vessels (1) shall exchange ballast water in near-coastal waters (more than 50 nm [93 km, 58 miles] from land and in water at least 200 meters [656 feet, 109 fathoms] deep) before entering the waters of the state if that ballast water was taken on in a port or place within the Pacific Coast Region, (2) shall retain all ballast water on board, (3) shall discharge the ballast water to a reception facility approved by the California State Lands Commission (CSLC), or (4) shall use an alternative, environmentally sound method of ballast water management that has been approved by the CSLC or the USCG.

3.3.5 Significance Criteria and Impact Methodology

Criteria to determine the significance of impacts on biological resources are based on federal, state, and local standards and regulations.

Impacts on biological resources in the ROI were evaluated by determining the sensitivity, significance, or rarity of each resource that would be affected by the proposed or alternative regulations and by using thresholds of significance to determine if the impact constitutes a significant impact. The significance threshold may be different for each habitat or species. Impacts may be either direct or indirect.

Direct impacts on biological resources result when biological resources or critical habitats are altered, destroyed, or removed during the course of project implementation. Indirect impacts on biological resources may occur when project-related activities result in environmental changes that indirectly influence the survival, distribution, or abundance of native species (or increase the abundance of ANS, i.e., nonnative species). Examples of indirect impacts include effects of noise, presence of chemical contamination, or incidence of human activity that may disturb or harm wildlife. It is also possible to have beneficial impacts, directly or indirectly. Finally, impacts may be short term or long term. Short-term impacts are generally not considered significant, by definition.

For this analysis, assessing specific potential impacts on biological resources is based on looking at the physical implications of each proposed and alternative regulation considered in relation to the known presence and extent of biological resources in the relevant areas. Parameters for assessment include the following:

- Relative importance or value of the resource affected (e.g., its legal, commercial, recreational, ecological, or scientific value);
- The resource's relevant occurrence in the region;
- Sensitivity of the resource to the Proposed Action;
- Anticipated physical extent of the potential impact; and
- Anticipated duration of the ecological ramifications of the potential impact.

Where relevant, the importance or value of each biological resource is evaluated based on the following criteria (listed in order of importance):

- Designation of the resource by federal or state resource agencies (e.g., USACE and the USFWS) as a high value or sensitive resource;
- Any known or presumed regional sensitivity of the resource; and
- Any known or presumed local significance of the resource.

In sum, for this analysis a project alternative was considered to have a significant impact on the biological environment under any of the following circumstances:

- If a population of a threatened, endangered, regulated, or other sensitive species was adversely affected by reduction in numbers, by alteration in behavior, reproduction, or survival, or by loss or

disturbance of habitat. Any “take” (see Section 3.3.10 under Wildlife Disturbance for definition) of a listed or sensitive species is considered significant under the ESA or the MMPA;

- If it conflicted with Coastal Zone Management Program policies;
- If it resulted in a jeopardy biological opinion by the USFWS or NOAA Fisheries;
- If it had a substantial adverse effect on a species, natural community, or habitat that is specifically recognized as biologically significant in local, state, or federal policies, statutes, or regulations;
- If it had a substantial adverse effect on a species, natural community, or habitat that is recognized for scientific, recreational, ecological, or commercial importance;
- If any fishes or wildlife migration routes were impeded for a period that would significantly disrupt that migration;
- If it would alter or destroy habitat in such a way that would prevent biological communities that inhabited the area prior to the project from reestablishing themselves;
- If it would extensively alter or cause the loss of biological communities in high-quality habitat for longer than one year; or
- If it allows biological resources to be exploited in ways inconsistent with the plans and policies of the NMS program or would otherwise violate the NMS or NOAA program regulations.

The overall methodology, including data sources and assumptions, used to conduct the biological resources impact evaluation is consistent with the NOAA NEPA guidelines (NAO 216-6). Impacts on biological resources from the implementation of the JMPR and revised regulations are entirely beneficial.

The actions associated with the cross-cutting regulations that are most likely to affect biological resources are vessel discharge restrictions (including cruise ship discharges) and introduced species prohibitions, both of which are expected to have beneficial impacts on the biological environment in all three sanctuaries.

At CBNMS, the regulatory changes that are most likely to affect biological resources are changes in ecosystem protections (altering the seabed and benthic communities) and wildlife disturbance. At GFNMS, the actions that are most likely to affect biological resources are changes in introduced species regulations, changes in discharges, wildlife disturbance, impacts from deserted vessels, changes to white shark attraction and approach actions, and seagrass bed protections especially in Tomales Bay. Finally, at MBNMS, the actions that are most likely to affect biological resources are changes in vessel spills from deserted vessels, the addition of the biologically significant area known as the Davidson Seamount, and reductions in disturbances to marine mammals, seabirds, sea turtles, and other fauna and flora as a result of changes to MPWC uses.

3.3.6 Cross-Cutting Regulations—Environmental Consequences

The cross-cutting regulations identified in Table 2-1 include identical or similar changes to the regulations in the three sanctuaries.

The Proposed Action

Introduced Species

Implementing regulations to reduce the number of introduced species entering the sanctuaries would have a direct beneficial impact on biological resources. There is currently no language in the sanctuary regulations that addresses introduced species, though both state and federal laws require that steps be taken to prevent the introduction of nonnative species in US waters (see Section 3.3.4, Regulatory Environment). The proposed management measures would prohibit the release of introduced species into the three sanctuaries.

Introduced species (ANS) alter habitat, prey on native species, compete for resources, and carry diseases, all of which decrease the success of native species. This is particularly true in nearshore or brackish (estuarine) environments where resources are more concentrated than they are in open ocean environments. Any action that reduces or prevents the introduction or prevalence of ANS is expected to provide an overall beneficial impact on the native flora and fauna.

Introduced species have been shown in many cases to change species composition, to threaten the abundance and diversity of native marine species (especially threatened and endangered species), and to interfere with an ecosystem's overall healthy functioning. Introduced species may cause local native species to become extinct, either by preying on them directly or by out-competing them for prey or habitat area, or introduced species may cause changes in physical habitat structure. Natural biological communities and ecological processes in the sanctuaries, and any threatened or endangered species within the area, are at risk.

Discharge of ballast water from ocean-going vessels is a common source of introduced species. Large commercial ships pump water into their ballast tanks to make them more stable during ocean voyages. This water may contain pathogens, viruses and the larvae, ova or species of plants, invertebrates and fish from the "home port" or adjacent sea. Once the ship arrives at a new port, it may discharge its ballast water, including any invasive species, at sea prior to entering a port or harbor. Some species will not be able to survive the new conditions, but others may thrive if they can live in the new conditions, avoid predators, and out-compete native species. Other vessel pathways of introduced species may include hull fouling, anchor transport, sea chests, and any other means by which water or species may be transported or attached to a vessel. There are many other non-vessel pathways in which nonnative species may be introduced, purposefully or accidentally, into a new environment including: the transport of organisms or use of organisms for research, restoration, educational activities, aquarium activities, live bait, aquaculture, biological control, live seafood, fish processing, and even rehabilitated and released animals may also be vectors for introduced species in the sanctuaries. Even home aquarium activities, particularly when people deliberately release organisms into the wild, have been documented to cause invasive species introductions. Often live seafood itself (e.g., lobster, tilapia, crabs) and the materials in which some live seafood is shipped (e.g., seawater, moist algae) can cause problems if they are allowed to escape confinement or are disposed of improperly (USFWS 2004).

A potentially significant threat to native biological resources is the creation of genetically modified species, which, depending on the species and genetic makeup, could mate with native species and dilute or alter their genetic makeup. This can weaken the native genetic stock and eventually create a new subspecies that may be able to outcompete the native species. The proposed regulation would prohibit the introduction of genetically modified species and would help to reduce or eliminate such threats.

The three sanctuaries are all currently at risk from introduced species. Introduced species prohibitions specifically will help in some of the following areas: anywhere where kelp beds may be replaced by invasives (such as the seaweed *Undaria*), where wetland areas are eroded by burrowing species, and where large populations of mitten crabs (*Eriocheir sinensis*) affect food webs through their omnivorous and opportunistic feeding habits.

As a result of the proposed regulation prohibiting introduced species in the sanctuaries (except striped bass released during catch and release activities and (for GFNMS only) species cultivated by mariculture activities in Tomales Bay pursuant to a valid lease, permit, license or other authorization issued by the State of California and in effect on the effective date of the final regulation), there would be beneficial impacts on biological resources, including maintaining the natural habitats, species diversity, and ecosystem balance in the sanctuaries. Additional beneficial effects would include disease prevention and maintenance of native species genetic makeup.

Discharge Regulation Clarifications

There are several proposed regulatory modifications that would limit general vessel discharges within the sanctuaries. Amending the language of sanctuary discharge regulations so that discharge prohibitions are clearer and more consistent in sanctuary waters is likely to have an overall direct beneficial impact on biological resources in the sanctuaries. New regulatory language may decrease the likelihood of potentially harmful discharges, such as wastes associated with meals on board vessels (for example, food, plastics, and trash), from entering sanctuary waters and causing injury or death to living sanctuary resources. In addition to improvements in inshore and offshore marine habitats, pollutants and discharge changes may help improve water quality in inlets and bays. Pollutants and discharge in these habitats can have a significant localized negative impact on the environment, including increasing nitrogen and phosphorus concentrations in the water that can lead to algae blooms and reduce oxygen levels. Although the State of California regulates this activity in state waters, there is a need for a consistent regulation that applies to both federal and state waters in all three sanctuaries. The Proposed Action would amend and clarify the exceptions for existing discharge regulations, such as making it clear that discharging oily waste from bilges and ballast water is prohibited.

With the high level of diverse biological communities found in the sanctuaries, there is a high potential for impacts from discharges. As discussed earlier, the variety and size of habitats support a high diversity and abundance of species, including fish, seabirds and marine mammals, many of which are federally listed as endangered or threatened. Harmful discharges have the potential to impact sensitive species, degrade a variety of coastal and marine habitats, and potentially change the fragile ecological predator-prey relationships that evolved under clean water scenarios. Some of the species that could be impacted from spills that degrade habitat include blue and humpback whales, Marbled Murrelets, Ashy and Leach's Storm Petrels, Brandt's, Pelagic, and Double-crested Cormorants, Western Gulls, Common Murres, Pigeon Guillemots, Cassin's and Rhinoceros Auklets, Black Oystercatchers, coho and chinook salmon, and other lesser known species, such as tidewater goby and Short-tail Albatross.

The new regulations under the Proposed Action would provide greater protections to the sanctuaries' waters from vessel pollution and all associated impacts and would thus have direct beneficial impacts on biological resources. There would also be indirect impacts as a result of better water quality, which would in turn create better habitat and improve conditions for biological resources. In addition, this would benefit fish populations and other species that rely on fish for prey.

Other Discharges

Examples of other types of discharge releases discussed in the Proposed Action are discharges from MSDs or graywater. Large vessels would no longer be allowed to discharge sewage and, in MBNMS, graywater if they have sufficient holding tank capacity to hold their waste while in the Sanctuary. The primary purpose of regulating large-vessel discharges/deposits is to prevent adverse effects on biological resources as a result of potential pollutant discharges/deposits. Depending on what chemicals and pathogens are in these wastes, they can impair living resources and even cause death if the concentrations are sustained at high levels over a period of time. The impacts of changing these regulations would be beneficial because the regulations would become consistent with state law and uniform across the three sites. These regulations are intended to ultimately improve water quality and the health of marine biological organisms, which would be a beneficial biological effect.

For vessels under 300 gross tons, the Proposed Action requires use of Type I or Type II MSD, in order to discharge treated sewage, operated in a manner that prevents discharge of untreated sewage. The Proposed Action also requires that deck washdown be clean, i.e., free from harmful matter (as defined in the regulations), clarifies that ballast water and oil wastes from bilge pumping are prohibited, and prohibits discarding food overboard. NOAA proposes to clarify its regulations that already require the use of Type I or II MSD devices for any treated sewage discharge throughout the sanctuaries' waters. The clarification would make it understood that use of a Type III MSD (a holding tank of untreated sewage) is allowed but that a discharge from a Type III MSD would be prohibited in the sanctuaries. Additionally, the proposed regulation requires that the boat users lock (secure) the valves on such systems to prevent users from bypassing the storage of sewage and directly discharging the untreated sewage. This regulation is meant to facilitate enforcement by the Coast Guard to prevent accidental discharge and reduce the discharge of raw sewage into sanctuary waters. For a more in-depth discussion of these issues, please see Sections 3.5 and 3.6. MSD regulations address the discharge of raw sewage, which has a specific harmful biological impact.

The clarification of the existing regulations may increase compliance and enforceability and reduce unintentional violations relating to the use of MSDs in the sanctuaries. This is expected to result in a decrease in the discharge of raw sewage from vessels, which in turn is expected to benefit water quality by reducing fecal coliform bacteria and other associated viruses and pathogens in the marine environment. Since the Proposed Action has the potential to reduce the quantity of sewage discharge into the sanctuaries, it would have potential significant beneficial future impacts on biological resources, as a result of improved water quality and associated habitat benefits.

Ballast and bilge discharges are also pathways to introduce toxins and oil into the marine environment. Oil and other toxins are detrimental to most marine species, particularly birds and marine mammals. Birds and marine mammals are vulnerable because oily substances also interfere with their ability to thermoregulate. Such oily and hazardous waste discharges can have direct significant adverse impacts (e.g., death or illness) on individual wildlife or they can have indirect impacts from long-term habitat degradation and reductions in prey availability. Thus, any proposed measures that create a stricter regulatory environment with regard to discharges and that prevent marine vessels from discharging unallowable pollutants would directly improve habitat and water quality and would benefit biological resources by improving ecosystem conditions within the sanctuaries.

It should be noted that chumming will still be allowed, but a slight modification to the regulatory language would be made to clarify that chumming is limited to "lawful fishing activity." Fish, fish parts, or chumming

materials (bait) used in or resulting from lawful fishing activity within the Sanctuary and discharged or deposited while conducting lawful fishing would continue. This slight modification would not result in any impacts, as the sanctuaries are amending the regulatory language for purposes of clarification.

Cruise Ship Discharges

There is a new regulation that prohibits cruise ship discharges throughout all three sanctuaries. Proposed regulatory changes clarify what is prohibited or exempt in the different sanctuaries for both general ballast discharge and cruise ship discharge, the latter of which was not previously distinguished from other regulated vessel discharges in Sanctuary regulations. The proposed regulations would limit cruise ship discharges in the sanctuaries. Cruise ship regulations also address the discharge of raw sewage, which has a specific and harmful biological impact. Regulations would limit discharges to clean vessel engine cooling water, generator cooling water, and anchor wash to reflect that cruise ships may anchor overnight in Monterey Bay. Cruise ships only transit CBNMS and GFNMS to and from the port of San Francisco.

Cruise ships in the sanctuaries would no longer be permitted to discharge biodegradable effluents, deck wash, treated wastewater, or any other materials other than vessel engine cooling water, generator cooling water and anchor wash into the sanctuaries. This regulation would greatly reduce potential impacts from cruise ships on sanctuary resources, including impacts resulting from sewage, graywater, oily bilge water, and ballast water. Depending upon what chemicals, hazardous wastes, and pathogens are in these wastes, they can impair living resources and even cause death if the concentrations are sustained at high levels over a period of time.

The purpose of regulating cruise ship discharges is to minimize adverse effects on biological resources as a result of potential pollutant discharges. The main concern associated with cruise ships is the large volume of discharge. A wide array of pollutants (e.g., sewage, graywater, oily bilge water, hazardous waste, and solid wastes) may be discharged in large volumes from cruise ships due to their sheer size, passenger capacity, and environmental practices (see Section 3.5, Water Quality, for more details on cruise ship discharge volumes). These changes would affect how current activities within the sanctuaries are conducted and are expected to decrease the likelihood that marine vessels would discharge potentially harmful pollutants. Discharge impacts are also linked to those potential impacts discussed above under Introduced Species, since a major vector for the release of introduced species is through ballast discharge. Improving discharge protections would improve water quality and would have a beneficial impact on biological resources.

All of the sanctuaries already have some regulations in place regarding discharges, but these regulations are not consistent across the three areas. The cross-cutting impacts of changing these regulations would be beneficial, as the regulations would become more consistent and comprehensive across the three sites. These regulations are intended to ultimately improve water quality and the health of marine biological organisms, which would be a beneficial biological effect.

Alternative Regulatory Actions

There is one cross-cutting alternative, which addresses cruise ship discharges.

Cruise Ship Prohibition Alternative

This alternative provision would result in cruise ships being allowed to discharge wastewater that has been properly treated to a level not to exceed the standards set forth by the US Coast Guard in Alaska at 33 CFR 159, Subpart E (see discussion about cruise ship wastewater discharges in Section 3.5, Water Quality). Because the wastewater would be treated to reduce nutrients (nitrogen and phosphorus) and reduce or

eliminate the toxicity or hazardous properties of the wastes, the overall water quality would be improved and therefore have beneficial impacts on biological resources. Although the discharged wastewater would be treated, there is still the potential for the discharges to contain harmful effluent (i.e., oily wastes, toxic chemicals, nutrients, pathogens, viruses) which can impair, injure or even cause death to living resources. As discussed in Section 3.5.4, some MSDs do not achieve the effluent standards they are designed to meet. Therefore, the beneficial nature of the impact would be slightly less than under the Proposed Action because no discharge (treated or untreated) would be allowed under the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuaries as they are currently managed; the additional protections from introduced species and vessel discharges identified above would not be implemented. This would maintain the current inconsistencies between the sanctuaries with respect to discharge regulations and their exceptions.

Under No Action, the sanctuaries would be without the new regulatory changes to address threats from introduced species, cruise ship discharges (sewage, toxic and hazardous wastes) and other oily and toxic discharges from ballast water. However, all existing agencies would continue to regulate certain aspects of water quality. As discussed in Section 3.5.4, Water Quality, the No Action alternative would result in an ongoing less than significant adverse impact on water quality. This in turn could lead to direct and indirect adverse impacts on biological resources from the reduction in the overall health and successful propagation of biological resources (resulting in lower diversity), and a reduced overall state of health of the sanctuaries' ecosystems. Overall, some less than significant adverse impacts could be expected on biological resources under the No Action alternative.

3.3.7 Cordell Bank National Marine Sanctuary—Environmental Consequences

The Proposed Action

Seabed Protection

The proposed regulation would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure, material or matter on the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Additionally, the regulation would prohibit the same activities listed above in the remainder of the sanctuary outside the 50-fathom isobath, with the exception of anchoring. The proposed regulation would result in enhanced protections for habitat and species by reducing or eliminating physical impacts and associated habitat loss and would result in positive impacts on biological resources at all trophic levels (i.e., within all categories of organisms, including fish, invertebrates, seabirds, and marine mammals).

Implementing and clarifying regulations that address seabed protection within the Sanctuary would have a beneficial impact on biological resources, whether the protection is from preventing any type of future drilling (no drilling currently takes place or is proposed) or from reducing activities (such as placing structures or dredging) that could physically disturb, harm, or injure benthic communities. The prohibitions would safeguard the fragile high relief on the Bank, particularly the pinnacles and ridges, from the threat of permanent destruction. The relief and benthic cover on the Bank provide food and shelter for many species of fish. The proposed regulatory change would clearly eliminate or at least reduce the likelihood of detrimental activities from affecting the seafloor, particularly on Cordell Bank.

Stricter regulations prohibiting construction, drilling, and dredging inside the Sanctuary would preserve habitats and as such predator-prey relationships that have established along with undisturbed habitats. This prohibition would beneficially affect biological resources by directly minimizing physical disturbance to the species and their habitat. The prohibition would also provide indirect beneficial impacts on biological resources by reducing sediment-related disturbances. The proposed seafloor protection regulations would increase protection of the benthic environment and actually enhance the long-term health of the benthos and its associated fishes and invertebrate communities, which affect those species that depend on these resources (such as seabirds, marine mammals, and humans). This provision would result in beneficial impacts on biological resources.

Benthic Habitat Protection

There is an existing benthic habitat regulation that prohibits the removal, taking, or injuring benthic invertebrates or algae on or within the 50-fathom isobath surrounding Cordell Bank, except for “accidental removal, injury, or takings during normal fishing operations.” The prohibition is being revised and clarified to be consistent with the above seabed protection measure. As stated in the text of the proposed regulatory language, this prohibition would not apply to bottom contact gear used during fishing, which is prohibited under 50 CFR part 660 (fisheries off west coast states and in the western Pacific). The revision will have the same amount of protection as the existing regulation and would result in no adverse impacts on biological resources.

Wildlife Disturbance

Currently, there is no regulatory language regarding wildlife disturbance in CBMNS, though there are some federal regulations that address certain aspects of wildlife disturbance and harassment. The new regulation being proposed for CBNMS prohibits the taking (harassment) of protected wildlife (and is also being proposed for GFNMS) and would enhance existing protections and provide this Sanctuary with regulations consistent with MBNMS (and GFNMS). Implementing regulations in CBNMS relevant to controlling disturbance of marine mammals, sea turtles, and birds would have a beneficial impact on biological resources by reducing the impacts of human disturbance on their feeding, reproductive and resting activities. Numerous seabird and marine mammal species, as mentioned above, occur in CBNMS, and these added protections would be highly beneficial to these species. Regulations will improve the enforcement and outreach of existing protections for seabirds on and above the water, as well as for seals that are in the water. While, as a rule, this regulation applies to resources taken in or above the Sanctuary and not beyond the boundary, if a protected species were harassed or disturbed and then entered Sanctuary waters as a result of disturbance, then prohibitions from these regulations would apply.

Wildlife is federally protected under the MMPA, ESA, and the MBTA, plus any regulations promulgated thereunder. These acts regulate taking, harassing, or possessing any marine mammal (ESA and MMPA), any listed sea turtle (ESA), or any migratory bird species (MBTA). Taking under the ESA is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, collecting, or injuring, or attempting to engage in any such conduct. Under the MBTA, it is unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill, or attempt to take, capture, or kill any migratory bird (it does not restrict application to deliberate types of killing normally associated with poaching or hunting). Under the previous version of the MMPA, harassment was defined as “any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild” (Level A Harassment) or “has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering” (Level B

Harassment). Under the MMPA, as amended by the Fiscal Year 2004 Defense Authorization Act (Public Law [P.L.] No: 108-136), Level A Harassment is now changed so that “potential to injure” is modified to “probability of injuring,” and Level B Harassment is defined as “has the potential to disturb a marine mammal or marine mammal stock in the wild by causing meaningful disruption of biologically significant activities, including, but not limited to, migration, breeding, care of young, predator avoidance or defense, and feeding.”

Language would be added to CBNMS regulations that prohibits the taking of any marine mammal, sea turtle, or bird in or above the Sanctuary, with certain exceptions or as permitted by federal regulations (the MMPA, ESA, and the MBTA). The change would also prohibit possessing any marine mammal, sea turtle, or bird taken within the Sanctuary, except as authorized under the MMPA, ESA, or the MBTA. For the purpose of the sanctuaries, the definition of take includes any of the following activities: collecting any dead or injured sea turtle, marine mammal, or bird, or any part thereof; restraining or detaining any sea turtle, marine mammal, or bird, or any part thereof, no matter how temporarily; tagging any sea turtle, marine mammal, or bird; or operating a vessel or aircraft or engaging in any other act that disturbs or molests any sea turtle, marine mammal, or bird.

This prohibition would complement the MMPA, ESA, and MBTA by extending protection for Sanctuary resources across all three sanctuaries in federal and state waters and providing a greater deterrent with civil penalties up to \$130,000 per taking, enforceable under the NMSA. This comprehensive prohibition covers all marine mammals, sea turtles, and birds in and above the Sanctuary.

Adding this language to CBNMS regulations would benefit biological resources by reducing the likelihood of human disturbance and injury to marine mammals, birds and sea turtles, and by allowing them to engage in uninterrupted breeding, nursing, resting activities. Beneficial effects are expected for marine mammals, sea turtles, and birds due to the greater deterrence provided by the regulation and the civil penalty, which makes it less likely those individuals would violate the prohibition.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the differences detailed below.

Seabed Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within a line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath surrounding the Bank. Lawful use of fishing gear other than bottom-contact gear would be exempt from the regulation. This regulation would result in beneficial impacts on biological resources because in addition to prohibiting drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands it would prohibit the use of bottom-contact fishing gear, which can snag, entangle, break-off, injure and remove fragile bottom habitats on Cordell Bank. This regulatory alternative would have greater beneficial impacts for biological resources than described for the Proposed Action since it would regulate impacts on biological resources resulting from the use of bottom contact fishing gear on Cordell Bank. However, the beneficial impacts would be the same as the Proposed Action if the NOAA Fisheries regulations that prohibit bottom contact gear on Cordell Bank are considered.

Benthic Habitat Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, in addition to the minor corrections and clarifications, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath around the Bank. In addition, a new definition of bottom-contact fishing gear would be included in the sanctuary regulations. This regulatory alternative would have greater beneficial impacts for biological resources than described for the Proposed Action since it would regulate impacts on biological resources resulting from the use of bottom-contact fishing gear on Cordell Bank. However, the beneficial impacts would be the same as the Proposed Action if the NOAA Fisheries regulations that prohibit bottom contact gear on Cordell Bank are considered.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. Without the proposed wildlife disturbance regulation or limitations on dredging, drilling, or other activities that could disturb the seabed or benthic resources, less protection would be provided in the future for Sanctuary biological resources as compared to the Proposed Action.

3.3.8 Gulf of the Farallones National Marine Sanctuary—Environmental Consequences**The Proposed Action****Water Quality – Discharges From Outside the Sanctuary**

GFNMS is proposing a prohibition on discharges from outside the Sanctuary that enter and injure Sanctuary resources. This prohibition provides a mechanism for the Sanctuary to address potentially harmful sources of pollution such as gas, oil, sewage, and other hazardous and toxic wastes that originate outside the Sanctuary, but could enter and injure Sanctuary resources. Potential upland sources of pollution include municipal wastewater outfalls, industrial outfalls, surface runoff (nonpoint source pollution), and oil and hazardous materials spills. Some examples of marine based sources of pollution include discharges from transiting vessels and wrecked ships, and underwater pipelines. This regulation would have direct beneficial impacts on biological resources, by minimizing or reducing the likelihood of potentially harmful or toxic spills or discharges that could kill, injure or impair birds, marine mammals, sea turtles, fish and other Sanctuary resources.

Deserted Vessels

Prohibiting marine vessel owners from deserting vessels and from leaving harmful materials on deserted vessels is expected to have direct and indirect beneficial impacts on biological resources. When a vessel is deserted, the likelihood of a vessel going aground increases, as does the risk of sinking or spilling its contents, including fuel, oil, or any other harmful materials left on board (such as fishing gear, nets, cargo, etc.). These events could result in discharge of harmful toxins, chemicals, or oils into the marine environment, any of which would reduce the quality of the habitat both directly (through introduction of noxious materials) and indirectly (through reduction in available prey or other resources). The proposed requirement would provide greater protection of habitats, the ecosystem, and a wide range of organisms in the Sanctuary, because the possibility of incurring a NMSA civil penalty would be an incentive for owners to remove the vessel before it breaks apart, sinks, or spills its contents. This would help reduce the risk of discharges of harmful matter into surrounding waters. Therefore, the Proposed Action would have direct and indirect benefits on biological

resources. Preventing vessel owners from allowing their vessels to become threats to the marine environment prevents harm to biological resources.

White Shark Attraction and Approaching

There are no specific GFNMS regulations that address approaching or attracting white sharks (i.e., trying to bring the animals closer to adventure charters or to pleasure/recreational vessels). The proposed regulation would define “attracting,” which is an important step to clarifying which actions are legal or illegal in relation to interacting with the sharks. The proposed regulation would prohibit all white shark attraction activities within the Sanctuary and prohibit approaching within 50 meters (164 feet) of any sharks within 2 nm (2.3 miles; 3.7 km) of the Farallon Islands. This would greatly increase the protection of the white sharks known to make an annual migration to the Farallon Islands to feed and would prevent disturbances and/or alterations in their natural behaviors, including feeding, breeding, aggregating, and migrating. Elsewhere in GFNMS (outside of the 2 nm [2.3 miles, 3.7 km] radius around the Farallon Islands), the prohibition regarding “approaching” would not apply.

This regulation is expected to have a beneficial impact on this species since it would curtail existing attraction activities that may interfere or disrupt undisturbed shark behavior patterns, such as breeding, feeding, resting and socializing. This regulation would also reduce conflicts between shark researchers and shark wildlife viewing operators. Multiple pleasure boats and ecotour operators travel to the southeast Farallon Islands mainly from September through November to give paying participants a chance to view these animals. Some deploy surfboards to elicit strike/attack responses from the resident and potentially sensitive populations of white sharks located between Mirounga Bay and Fisherman’s Cove at the southeast Farallon Islands (Absolute Adventures 2003). Some of these groups engage in chumming with fish parts or oil (Absolute Adventures 2003).

To date, human harassment and disturbance of white sharks has resulted mainly from dive-with-shark programs and scientific researchers studying the sharks. Scientific researchers have long been studying white sharks off the Farallon Islands. When researchers need to get close to a shark to sample its blood or attach an instrument, they will use fish bait, chum, blood or even towed surfboards to attract sharks. While this activity certainly changes the behavior of the sharks, the knowledge that scientists gain significantly contributes to our understanding of white sharks and their role in the ecosystem at the Farallon Islands. Dive-with-shark operators use similar methods to attract sharks to provide their customers with a guaranteed “encounter” with a white shark. Ultimately, attracting white sharks alters their natural behavior and may distract them from conducting other activities, such as feeding or breeding.

Regulating attracting activities is especially important to the shark’s critical feeding behaviors, as interrupting the foraging of an individual can cause a series of problems related to their success both in terms of survival and reproduction. Indirectly, other human impacts associated with close proximity, such as sound, light, and humans in the water, may also alter a shark’s behavior. Implementing these regulations will help resolve user conflicts (such as current controversies involving shark researcher studies versus encounters related to adventure tourism) and will prevent intervention with the feeding behavior of white sharks. The additional protections for white sharks provided by the shark attraction and approach regulation will have a direct beneficial impact on this species and may have indirect beneficial impacts on other biological resources in which the white shark plays a key predator role by maintaining the health of the overall ecosystem. Further beneficial impacts are expected from the 50-meter (164-foot) approach prohibition around the Farallon Islands, where white sharks are known to occur with seasonal frequency. By not attracting a top food chain

predator, the possibility of sharks habituating to human activities would be reduced or eliminated. For reasons described above, reducing human interaction and preventing chumming would increase the likelihood that a shark would go about its natural feeding and daily activities and would prevent any unnatural dependency on a commercial recreational situation. This would result in a beneficial impact on biological resources.

Wildlife Disturbance

The proposed wildlife disturbance regulatory language for GFNMS is the same as that described above for CBNMS. As with CBNMS, there is no regulatory language regarding wildlife disturbance in GFNMS, though there are federal regulations that address wildlife disturbance. Implementing regulations in GFNMS relevant to controlling disturbance of wildlife (marine mammals, sea turtles, and birds) would have a beneficial impact on biological resources. GFNMS provides indispensable valuable habitat for many biological resources, especially seabirds and marine mammals. GFNMS is a significant area for many protected species, providing foraging, breeding, and other habitat for aquatic and migratory birds. There are also thirty-six species of marine mammals, including pinnipeds, whales, dolphins, porpoises, and otters. Adding this language to GFNMS regulations would benefit biological resources due to the greater protections provided by the regulation for marine mammals, sea turtles, and birds.

Oil and Gas Pipeline Clarification

The proposed regulation would modify the existing oil and gas regulation by limiting pipelines going through the Sanctuary to those associated with hydrocarbon operations outside but directly adjacent to the Sanctuary. The clarification does not limit exploration outside the Sanctuary, however, it does limit oil and gas pipelines within the Sanctuary to only those where there is an adjacent oil and gas development site and there is a geographic requirement to cross the Sanctuary. This regulation would have direct minor beneficial impacts on biological resources. While no such oil and gas pipelines exist in GFNMS—in fact a moratorium is in place on oil and gas development in federal waters outside the Sanctuary, as well as within the Sanctuary—this regulation would eliminate the potential for new oil and gas pipelines crossing the Sanctuary unless there is a hydrocarbon operation on a lease adjacent to the sanctuary. Reducing the potential for pipelines to cross the Sanctuary would reduce impacts on benthic habitats from the physical damage caused by installing the pipe and would reduce the risk of potential oil spills from a pipeline leak or rupture. This reduced risk of oil spills would be beneficial for all marine and coastal biological resources.

No-Anchoring Seagrass Protection Zones

Prohibiting vessels from anchoring in designated seagrass protection zones would result in both direct and indirect beneficial impacts on biological resources. As stated in the affected environment, seagrasses provide valuable habitat and support high biodiversity. Seagrasses are particularly important in the sustainability of commercial and recreational fisheries, primarily because of their roles in maintaining sediment stability and water quality and in providing shelter and food critical to the survival of a variety of aquatic biota. In order to understand the beneficial effects, background information on the importance and function of seagrass in the study area is presented below.

Seagrasses are limited to the photic zone and are usually attached to soft substratum. Seagrasses are commonly found in tidal and upper subtidal zones and are located throughout the GFNMS in estuaries, bays and lagoons, such as Tomales Bay and Bolinas Lagoon. Tomales Bay is one of the most ecologically significant estuarine areas in California. The bay provides critical habitat for numerous species listed under the Endangered Species Act and the Marine Mammal Protection Act. Seagrass and red algae (*Gracilaria* spp.)

cover approximately four square kilometers (1.5 square miles), or 13 percent of Tomales Bay. Other habitats found here include intertidal mudflats, subtidal channels, salt marsh, and upland marsh.

The seagrass species found in Tomales Bay is *Zostera marina*, commonly called eelgrass. It provides important habitat for bay pipefish, shiner perch, arrow goby, northern anchovy, California halibut, Pacific staghorn sculpin, coho salmon, steelhead trout, Pacific herring, and other fish in Tomales Bay. It has been designated as an Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation Management Act. There are ten to 100 times more animals in eelgrass beds compared to adjacent sandy or muddy habitats (Hemming and Duarte 2000). Food for fish, including plants, algae, invertebrate species, detritus, is abundant. Seagrasses also produce a large amount of organic material, which enters the estuarine food chain. Eelgrass provides protection from predation by bigger fish and birds. Some species of fish use eelgrass beds for their spawning grounds, including the commercially important Pacific herring, which relies on abundant eelgrass beds to support its roe. Eelgrass beds also serve as a nursery ground, providing a safer place for larvae and juvenile fish to feed and grow (Heck et al 1989).

Eelgrass beds help to support a huge population of birds. About 20,000 shorebirds and 25,000 waterfowl use the eelgrass beds and adjacent areas in Tomales Bay for their feeding ground. Some of these bird species include Black Brandts, Black Scoter, Greater Scaup, Great Blue Heron, Black Brant, Marbled Godwit, Western Sandpiper, Dunlin, and Willet. They feed on eelgrass, fishes, and invertebrates. Tomales Bay eelgrass beds provide migratory feeding and resting stops for Black Brant that travel between the Arctic tundra of Alaska, Russia and Canada in a 3000 mile range over the Pacific Ocean to wintering grounds in the estuaries and lagoons of Southern British Columbia, the United States and Mexico (Derksen et al 1998).

In addition to supporting fish and birds, eelgrass sustains other species that rely on detritus, algae and other food resources available in eelgrass beds. Invertebrate species such as clams, shrimp, snails, nudibranchs, amphipods, worms, and bryozoans consume tiny algae that grow on eelgrass blades, and filter detritus and phytoplankton from the water. In turn, these animals provide food for many other animals that live and/or feed in eelgrass beds. Approximately 20 species of commercially valuable species feed in eelgrass beds at some point in their lives, including Dungeness crabs, rockfish, salmon and Pacific herring (Sea Grant Fact Sheet).

Eelgrass provides many ecosystem services beyond providing habitat and food for animals. It improves water quality along the coast by trapping sediments and nutrients. An acre of healthy seagrass can absorb approximately six pounds of nutrients per year, the equivalent of treated effluent from 490 people. With less nutrients available in the water column, phytoplankton are less likely to multiply rapidly, thereby reducing algal blooms that can degrade water quality. Eelgrass helps to prevent shoreline erosion by reducing the impacts of wave energy and storms. Eelgrass also sequesters carbon; one acre of eelgrass sequesters 7,401 pounds of carbon per year, which equals the CO₂ emissions from an automobile that has traveled 3,860 miles (Duarte et al 2005).

Although healthy eelgrass can provide many ecosystem services, it is not immune to the increasing pressure from human activities. Because it needs sunlight to survive, eelgrass only occurs in shallow waters along the coast, and water clarity is essential for its survival. Unfortunately, coastal areas are subjected to increasing sediment and nutrient runoff from fertilized lawns and farms, sewage, and land development, as well as physical disturbances (dredging and damage from boating activities), invasive species, disease, and algal blooms (Orth et al 2006). In the 1930s, over 90 percent of the North Atlantic eelgrass meadows died off

when a combination of abnormally warm ocean currents and a fungal disease hit the coast. The death of the eelgrass led to the disappearance of many species of ducks and geese, and the stocks of crabs, clams, scallops, and lobsters severely declined. In addition, coastal erosion became a problem (Rasmussen 1977). This event demonstrated the importance of eelgrass for healthy marine ecosystems.

Studies in other parts of the world have found that vessel propellers, anchors and moorings can damage the underground root and rhizome system of eelgrass, which can have long-term impacts on the health of the eelgrass community (Milazzo, M., et al, 2002; Walker et al., 1989; Kentworthy et al, 2006). Anchoring can damage seagrass beds by interfering with the reproductive system (the Rhizome system). As vessels swing on their anchors, drag them in strong winds, or pull up their anchors, they can plow up seagrass beds, dislodging their stems and killing the plants. Recovery rates from vessel-related damage are not well-documented for seagrass. There have been efforts underway to restore several different species of seagrass in the Chesapeake Bay for several years with very poor results; less than 10 percent of the transplant sites have had long-term survival. A recent effort to restore eelgrass beds in San Francisco Bay has had little to no success, most likely due to deteriorating conditions in the Bay.

The shrinking of seagrass habitat worldwide poses a particular threat to many vulnerable species. Substantial losses of seagrass have occurred as a result of direct and indirect human impacts including mechanical damage (by dredging, fishing, and anchoring), eutrophication, conversion to aquaculture, siltation, effects of coastal construction, and food web alterations; and indirect human impacts, including negative effects of climate change (erosion by rising sea level), as well as from natural causes, such as storms and floods. Quantifying the effects from one specific activity is extremely difficult, as it is impossible to isolate individual effects.

Both recreational vessels (sailboats, pleasure boats, recreational fishing boats) and commercial vessels (commercial fishing or vessels used in mariculture operations) regularly anchor throughout Tomales Bay. Vessel anchors cast into seagrass beds can damage individual seagrass plants and disturb the substrate onto which the seagrass grows. Pulling an anchor can also suspend sediments in the water column, which reduces the amount of light available to the plants and may interfere with filter feeding organisms. By prohibiting vessel anchoring in designated zones in Tomales Bay, the seagrass in these areas would be protected from the physical disturbance caused by the vessel's anchor or dragging the anchor on the bottom. It would also help prevent sediments from being suspended into the water column. By maintaining healthy seagrass areas, this valuable habitat and the sensitive species it supports would be benefited as well.

This beneficial effect would occur only in the designated zones in Tomales Bay and not other areas of the Sanctuary, such as Bolinas Lagoon where seagrass may also be present. Although the seven zones encompass most of the seagrass beds in Tomales Bay, there are some small areas located near marinas and day-use recreational areas that were not included in the no-anchoring zone since they are high use areas and displacement of vessels near these areas is not practicable.

Alternative Regulatory Actions

The alternatives would have the same impacts as those identified in the Proposed Action, with the differences detailed below.

White Shark Approach Prohibition Alternative

This alternative would prohibit both attraction and approach activities throughout the Sanctuary, rather than allowing approaching outside 2 nm (2.3 miles; 3.7 km) of the Farallon Islands, as proposed. Therefore, this alternative is more restrictive than the Proposed Action. This would provide an even greater level of protection to the species, with beneficial effects on white sharks and an indirect benefit to other species that may also experience disturbance from humans.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would mean that the additional protections provided by the proposed regulations described above would not be implemented. At GFNMS, this would translate into continued disturbance of white sharks in the Sanctuary and lower levels of resource protection, compared to the Proposed Action.

3.3.9 Monterey Bay National Marine Sanctuary—Environmental Consequences**The Proposed Action****Deserted Vessels**

MBNMS is proposing regulations to prohibit marine vessel owners from deserting vessels. This regulation is the same as the GFNMS proposal regarding deserted vessels and removing harmful substances from abandoned or grounded vessels. The regulations introduced under the Proposed Action would have the same direct and indirect benefit on biological resources as described above for the GFNMS.

Davidson Seamount

The Proposed Action would incorporate the Davidson Seamount area into the boundaries of MBNMS. The Davidson Seamount is a biologically significant area and one of the largest known seamounts in US waters. Its inclusion into MBNMS would increase the size of the Sanctuary by approximately 15 percent (equivalent to approximately 585 square nm; 775 square miles; 2,000 square km) and would protect a greater number of benthic biological resources. Seamounts are known to offer unique biological environments and to contain unusual species and species assemblages. The Proposed Action would incorporate changes at MBNMS for this area, creating added protection for the benthic and surrounding communities of the Davidson Seamount.

Potential threats to the resources of the Davidson Seamount include bioprospecting, marine debris/dumping, and harvesting, which would affect endemic species. These species are known to have lower resilience, on the whole, to disturbance. These threats also would disturb the benthic habitat and seabed and their associated resources. In particular, protection from physical damage and collection is needed for the fragile and long-lived species, such as corals and sponges, that occur in this habitat.

The proposed regulation would protect Davidson Seamount from future disturbance or from resource exploitation. The standard MBNMS discharge regulations and seabed disturbance regulations relating to drilling, dredging, seabed alterations, construction, and anchoring would apply in the DSMZ (with certain exceptions). At depths greater than 3,000 feet (914 meters) below the sea surface, the NMSP would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or other wise injuring Sanctuary resources (or attempting to do those activities), except for fishing, which is prohibited pursuant to the MSA (50 CFR part 660). The Sanctuary would also prohibit the possession of Sanctuary resources taken from below 3,000 feet within the DSMZ, except for the possession of fish resulting from fishing, which is

prohibited pursuant to the MSA. The NMSP would rely upon the NOAA Fisheries regulatory amendments to the Groundfish FMP to regulate any fishing-related impacts below 3,000 feet. The specific amended regulation prohibits fishing with dredge gear, beam trawl, certain types of bottom trawl, and bottom-contact gear or any other gear that is deployed at depths greater than 500 fathoms (3000 feet) (71 FR 27408). Therefore, fishing would take place in the water column above 3,000 feet but not below it and as such fishing activities would not impact the seamount. By incorporating the seamount into MBNMS, its resources would be protected, and opportunities would be provided for a better understanding of the seamount. Therefore, the increased level of resource protection provided by this Proposed Action would have significant beneficial impacts on the biological resources of the Davidson Seamount by limiting disturbance or injury.

Motorized Personal Watercraft

A new definition is proposed for MPWC that would directly benefit biological resources by reducing disturbances to marine mammals, birds, sea turtles, and other fauna and flora. The proposed regulatory change would revise the definition of MPWC to meet the original intent of the regulation when the sanctuary was designated in 1992. Redefining MPWC would encompass all MPWCs and would make them all subject to the existing Sanctuary regulation, which restricts them to the four existing and one new seasonal MPWC zones (see Figure 2-5). This would minimize disturbances to marine wildlife caused by MPWC, enhance existing habitat, and reduce human disturbance in Sanctuary waters. MPWC are small, fast, and highly maneuverable craft. Their small size, shallow draft, instant thrust, and quick reflex enable them to operate at high speeds and close to shore areas that typically have a high number of biological resources. MPWC commonly accelerate and decelerate repeatedly and unpredictably and travel at rapid speeds directly toward shore (versus motorboats, which generally slow down as they approach shore). Current regulations restrict MPWC to four specific zones within MBNMS. However, the current definition of MPWC does not cover all types of these watercraft. Watercraft that are larger and can accommodate three or more persons are not currently included in the existing definition of MPWC and therefore are not subject to the regulations. These larger models are preferred in the high-energy ocean environment due to their increased power, range, and towing ability. Additionally, MPWC use is often multiplied since they are operated in pairs or larger groups. MPWC use is often sustained in a relatively confined area, potentially concentrating impacts over time in remote areas.

These watercraft are particularly disturbing to marine mammals and seabird colonies due to the high noise levels they can produce and the associated frequent speed changes that produce mechanical ratchets and whines underwater, sounds known to disturb marine mammals and birds. Numerous assessments of MPWC impacts indicate that unrestricted use by such craft poses a threat to wildlife. These craft are already restricted in MBNMS and GFNMS and have been restricted in waters off Maui during the Hawaiian humpback whale breeding season due to the high incidence of harassment of the animals that inhabit the coastal zones (Hurley 2004).

Data has shown that sounds from MPWC elicited stronger responses in wildlife than that from motorboats. Studies have also shown a broad range of impacts related to sounds MPWC produce (both in air and water), causing disturbance reactions in birds and mammals. Reactions include the following:

- Seabirds abandon their nests and have lower reproductive success (Burger 1998);
- Cetaceans and pinnipeds, especially mother/pup pinnipeds, are disrupted (Green et al. 2002); and

- Species exhibit such reactions as alarm, flight, avoidance, disturbance, changes in community structure, loss of habitat use, and in some cases, even mortality (National Park And Conservation Association 1999; Snow 1989).

The additional access MPWCs allow to remote and sensitive shoreline areas increases wildlife disturbance. Slow-moving or unaware animals can be injured or killed by direct impact with an MPWC. Proposed MPWC restrictions would protect important and sensitive biological areas, as well as the nearshore kelp beds and surf areas where sea otters, harbor seals, and sea lions congregate.

The proposed definition change would expand the current definition to cover all categories of MPWC and would eliminate the loophole for larger vehicles. Significant beneficial environmental impacts on biological resources are expected from the Proposed Action due to the reduction of disturbance to wildlife.

White Shark Attraction

Extending the prohibition on attracting white sharks anywhere in the sanctuary, rather than just within State waters, would have the potential to provide benefits for biological resources. As described in Section 3.3.8 (analysis of proposed white shark regulation in GFNMS), attraction activities alter natural feeding and breeding behavior of white sharks. Although there are no currently known white shark attraction activities that take place beyond State waters, the proposed prohibition would protect the species from potential threats in the future. This protection is considered a beneficial impact on biological resources.

Dredge Disposal—SF-12

The Proposed Action would relocate disposal site SF-12 to the head of Monterey Canyon. Disposal of dredged material in the ocean adversely affects the marine environment in numerous ways, including smothering benthic organisms, increasing water column turbidity, which affects foraging and predator/prey relationships, increasing sedimentation and decreasing water quality, and degrading adjacent habitats. Current impacts from dredge disposal in MBNMS would be shifted from the present location to the head of the canyon; the result of this move is a decrease in impacts on biological resources, since the new location is expected to reduce effects of dredge disposal on the shallow nearshore and dilute it over a deep water canyon. Placing the material as close to the head of the canyon as possible should increase the flow of sediment into the deep-sea fan. This would have several effects, including reducing environmental impacts on local beaches caused by disposal in the nearshore subtidal area. Disposal in this area has caused material to be washed onshore, resulting in adverse impacts on beach habitat. Moving the site would also reduce siltation, which would reduce cloudiness in the water and benefit biological resources. Moving the SF-12 dredge disposal site from its existing location to the new site would not result in any new impacts associated with dredge disposal. Moving the site is expected to reduce turbidity associated with dredged sediment washed into the surf zone at Moss Landing, which causes localized impacts. An increase in the percentage of volume of material that enters the Monterey Canyon would reduce sedimentation in the nearshore benthic areas north of the canyon, where much of the disposal occurs at this time. Disposal at the head of the Monterey Canyon may result in a turbidity current that would move the sediment to the deep-sea fan. No increase in the volume of dredge material volume is a part of this action. An overall beneficial impact is expected for biological resources.

Alternative Regulatory Actions

The alternatives would have the same impacts as those identified in the Proposed Action, with the differences detailed below.

Davidson Seamount Circular Boundary Alternative

Under this alternative, a larger (circular) area 707 square nm (937 square miles; 2,425 square km) versus 585 square nm (775 square miles; 2,007 square km) around the Davidson Seamount would be incorporated into MBNMS (see Figure 2-4). Compared to the Proposed Action, this alternative would provide a greater level of beneficial impacts on biological resources because it would increase the size of the area that would be protected and that would receive the advantages of all the prohibitions and restrictions described under the Proposed Action.

Davidson Seamount NMSA Alternative

Under this alternative, the same geographic area as identified in the Proposed Action would be incorporated into MBNMS as well as the same regulations. The only difference is that NMSP would issue a regulation, under the authority of the NMSA, prohibiting all fishing below 3,000 feet (914 meters) rather than allowing lawful fishing and relying on NOAA Fisheries to impose fishing restrictions. This alternative would be implemented if NOAA Fisheries did not impose restrictions on fishing in water depths greater than 3,000 feet (914 meters) below the surface that met the Sanctuary's goals and objectives for protecting the benthic habitats in this area. This regulatory alternative would have greater beneficial impacts for biological resources than described for the Proposed Action since, in addition to the benefits listed in the Proposed Action, it would directly regulate impacts on biological resources resulting from the use of bottom-contact fishing gear on Davidson Seamount. However, the beneficial impacts would be the same as the Proposed Action if the NOAA Fisheries regulations that prohibit bottom-contact gear on Davidson Seamount are considered.

Motorized Personal Watercraft Alternative

Under this alternative, the four designated MPWC zones would be eliminated, thereby prohibiting all MPWC use in the Sanctuary. This would provide a significantly greater beneficial impact on biological resources, as the protections described above under the Proposed Action would be realized throughout the Sanctuary. The elimination of any MPWC from MBNMS would reduce accidental user intrusions into restricted areas. Biological resources and habitats would suffer fewer intrusions from noise and sounds, fewer interactions or harassment from human disturbance, and no potential injurious or deadly collisions with these particular craft.

The No Action Alternative

Under the No Action alternative, the Sanctuary would continue to be managed as it is now. No additional protections, such as those regarding deserted vessels, dredge disposal, and MPWCs, would be implemented. The No Action alternative would maintain the status quo and would not provide the Sanctuary with enhanced protections benefiting habitat protection, water quality, and wildlife (biological resources). The Davidson Seamount would not be incorporated into MBNMS, and current MPWC use would be allowed to continue. The adverse impacts from ongoing MPWC use, which allow continued disturbance of wildlife, would be less than significant, as would the potential impacts on resources at Davidson Seamount if it is not incorporated into the Sanctuary.

3.3.10 Cumulative Impacts

The ROI for cumulative impacts includes the coastal, nearshore, and offshore areas of the three sanctuaries and Davidson Seamount. This section addresses the cumulative effects on biological resources from many sources and causes, including noise, fishing activities, decreased water quality, reduced or degraded habitat, reduction in prey availability, and increases in human disturbances.

Cumulative actions that may affect biological resources must take into account the amendments to or establishment of new fisheries management plans (FMPs) by the PFMC or the CDFG. The PFMC FMPs are intended to manage specific fisheries on a sustainable basis, minimize non-target catches, and conserve those habitats that are essential to commercially caught species. As such, the FMPs are intended to benefit or at least sustain managed fish populations and, thereby, may have an indirect beneficial impact on other species that prey on fish and benefit biological resources overall. The PFMC is required to amend these management plans on a regular basis. The NOAA Fisheries regulations amending the groundfish FMP closes a number of areas within the ROI to bottom trawling and certain areas to fishing that contacts the bottom, which will serve to protect and preserve groundfish and other bottom-dwelling species, as well as the benthic ecosystem as a whole. In addition, the California Fish and Game Commission proposes new or amended regulations regarding fishing gear, total allowable catch or specific restrictions for specific fisheries, marine protected areas, and trip limits (CDFG 2004). Other laws and regulations that relate to cumulative actions on biological resources include the state krill ban, and the Marine Life Protection Act Initiative. All these fishery regulations and actions will provide enhanced protections to the ecosystem and benefit biological resources.

In addition to the practices listed above, other cumulative actions affecting biological resources include implementing the FMPs for the three sanctuaries. These FMPs include numerous protections and additional guidance that, when incorporated, would benefit biological resources, although usually indirectly, through consultation, conditions on permits to protect resources, studies and surveys, and outreach programs. Beneficial impacts are expected from the Bolinas Lagoon Restoration Project, which is expected to restore or enhance ecological conditions and processes in the lagoon and increase tidal flow, and from the Big Lagoon Restoration Project, which would have similar beneficial effects from restoring natural ecological conditions and processes but adverse impacts on biological resources because of easier access for the public to the beach and the restored wetland area. Newly updated general plans being prepared by relevant counties are expected to provide a sound basis for making decisions about the amount and location of future growth in the respective counties. This would have beneficial impacts on water resources and quality, and therefore on the environment and habitat for biological resources. Finally, both GFNMS and MBNMS will continue to implement specific activities of their respective water quality action plans.

However, cumulative trends in the ROI are mixed. Some projects/programs (such as those listed above) are expected to increase the beneficial impacts on biological resources, while others may cause short-term or long-term adverse impacts. Adverse short-term impacts may result from the proposed installation of an advanced cabled observatory in Monterey Bay and longer-term impacts may occur from seawall and shore armoring projects along the shoreline of the ROI. Several ongoing or planned projects would increase development in the coastal zone, which would in turn increase beach use, recreational activity, noise, habitat disturbance, and garbage dispersal, all of which would have negative impacts on biological resources.

The Proposed Action

The Proposed Action would not contribute to any of the cumulative adverse trends in biological resources described above, so there would be no cumulative adverse impacts. Existing regulation and future management efforts, such as fisheries management plans and associated regulations implemented by the PFMC, NOAA Fisheries, and CDFG would continue to benefit and protect biological resources. The FMPs for the three sanctuaries include numerous protections and guidance which, when implemented, provide additional protection to biological resources. The Proposed Action would help mitigate ongoing adverse cumulative trends and would contribute to the cumulative beneficial trends because impacts on biological resources from the Proposed Action are expected to be beneficial.

Alternative Regulatory Actions

The contribution to cumulative trends would be the same as those described under the Proposed Action, with a small increase in the level of beneficial impacts due to the increased levels of protection afforded by these alternatives, such as the MPWC prohibition and the larger area of protection for Davidson Seamount under the circular boundary alternative.

The No Action Alternative

The No Action alternative would maintain the status quo of sanctuary management. No additional resource protections from proposed regulations would occur. Some ongoing adverse impacts would continue (such as wildlife disturbance from MPWC use); these would continue to be part of ongoing adverse cumulative trends within the ROI described above. There would also be cumulative beneficial trends on biological resources from existing regulation and future management efforts, including implementation of the FMPs and the NOAA Fisheries regulations.

3.4 OCEANOGRAPHY AND GEOLOGY

This section addresses the geologic and oceanographic resources of the three sanctuaries. The ROI includes the nearshore environment, the continental shelf, slope, canyons and deep-sea plains within the sanctuaries and the proposed Davidson Seamount addition to MBNMS, and the physical properties of the overlying marine environment.

3.4.1 Regional Overview of Affected Environment

Geology

Geologic features in the sanctuaries include rocky shores, sandy beaches, estuaries, bays, lagoons, islands, submerged islands, pinnacles, ridges, underwater canyons, the continental shelf, the slope, and the abyssal plain, which reaches depths of over 10,000 feet (3,000 meters). Bottom types on the continental shelf include the sand and mud sediments, rocky outcrops, reefs, and seamounts. Some of the unique features of the ROI include cold seeps, underwater canyons, tectonic features, and fossils. The project area is located on a plate boundary that separates the North American and Pacific Plates and is marked by the San Andreas Fault. This seismically active region experiences regular earthquakes, submarine landslides, turbidity currents, flood discharges, and coastal erosion.

Each of the sanctuaries has notable geological features. Cordell Bank is an offshore granite bank, about 4.5 miles (7 km) wide and 9.5 miles (15 km) long, located 50 miles (80 km) northwest of the Golden Gate Bridge and 20 miles (33 km) west of Point Reyes. This granite block was created as part of the southern Sierra Nevada range some 93 million years ago. The Bank is one of the few offshore areas where the granite block emerges from the newer sediments that make up most of the continental shelf. The bottom of the bank slopes gently from depths of 175 to 210 feet (53-64 meters). Jagged ridges and pinnacles rise abruptly from this plain and reach up to 140 to 120 feet (42-36 meters) below the sea surface. Cordell Bank is surrounded by the continental shelf and its soft sediments.

GFNMS has the widest continental shelf area (32 nm; 37 miles; 59 km) on the Pacific coast of the contiguous United States, and it also contains the most significant islands of the three sanctuaries. Shoreward of the Farallon Islands, the continental shelf is a relatively flat sandy to muddy plain, which slopes gently to the west and north from the mainland shoreline. The Farallon Islands lie along the outer edge of the continental shelf. The islands are located on part of a larger submarine ridge and extend for a distance of approximately 10 nm (11.5 miles; 18.5 km) near the shelf break. Several coastal embayments including Bolinas Lagoon, Bodega Bay, Drakes Bay, Estero Americano, Estero de San Antonio, and Tomales Bay, are located within GFNMS. Bolinas Lagoon, Drakes Bay, and Bodega Bay are open to the ocean, but are somewhat protected from southward moving coastal currents by Duxbury Point, Point Reyes Headlands, and Bodega Head, respectively. Tomales Bay and Bolinas Lagoon are actually submerged rift valleys formed by the San Andreas Fault. The shoreline along the mainland coast is comprised of sandy beaches and rocky cliffs.

MBNMS extends from the Rocky Point (7 miles [11 km] north of the Golden Gate Bridge) in the north to Cambria in the south, covering a shoreline length of approximately 276 miles (444 km). MBNMS is characterized by its deep underwater canyons, the largest of which is the Monterey Canyon. The deepest point of MBNMS lies within the Canyon and is approximately 10,660 feet (3,250 meters) deep, making it deeper than the Grand Canyon. MBNMS lies along the San Andreas fault system, consisting of the Hayward-Calaveras and San Andreas fault zones on land, and the Palo Colorado-San Gregorio fault zones offshore. The Monterey Canyon cuts across the north-south trending faults in Monterey Bay, and is the result of

tectonic activity occurring since subduction of the Pacific Plate ceased and transform motion began, about 21 million years ago. The Canyon has also been shaped by landslides and turbidity currents created by mass wasting events. These steepen the Canyon's walls, expose basement and bedrock, and erode the Canyon (NOAA 2002).

Near the southwest corner of MBNMS is Davidson Seamount. The Seamount is 26 miles (42 km) long and rises 7,870 feet (2,400 meters) from the ocean floor, and its summit is 4,120 feet (1,256 meters) below the sea surface. Seamounts are important geologic features and also have significant biological value for the habitat and feeding ground they provide to a number of species.

Oceanography

The oceanographic setting of the ROI is characteristic of temperate mid-latitude eastern boundary current. The cold California Current and comparatively warm Davidson Current dominate the circulation pattern.

The calendar year at CBNMS can be broken into three oceanographic seasons: upwelling season, relaxation season, and winter storm season. The upwelling season typically begins with the spring transition, characterized by strong persistent winds from the northwest. This usually occurs sometime in late February or early March, and is the start of the annual productivity cycle along northern and central California. During this season, upwelling driven by winds from the northwest alternates with periods of calm. These winds generally begin to subside by late July. August through mid-November is the relaxation season. During this time, winds are mostly light and variable, and the seas can be calm for one to two weeks at a time. This changes abruptly with the arrival of the first winter storms from the Gulf of Alaska. From late November through early February, winter storms create large waves and strong winds along the coast. Physical processes operating on different temporal and spatial scales drive hydrodynamics on and around the bank. Cordell Bank lies in the path of the California Current, one of four major eastern boundary currents in the world. Current-topography interactions on banks and seamounts include semi-stationary eddies (Taylor columns), internal wave reflection, tidally induced currents eddies, and trapped waves. The relief and position of Cordell Bank also drives localized upwelling as the wind driven south flowing current encounters the granitic relief of Cordell Bank. The prevailing California Current flows southward along the coast while the upwelling of nutrient-rich, deep ocean waters stimulates the growth of planktonic organisms.

Circulation in the Gulf of the Farallones is primarily composed of two major currents: the southward flowing California Current and the northward flowing Davidson Current. In addition, a number of local eddy current dynamics and the outflow from San Francisco Bay's estuarine ecosystem exert influence on regional water circulation patterns. The California Current is situated fairly close to the coast at most times, and brings water into the Gulf which is noticeably cooler and less saline than offshore waters. The oceanic period associated with the California Current typically lasts from late summer to early fall, approximately August-September to mid-November. Toward mid-November, the Davidson Current flows counter, e.g. northward, to the California Current, bringing warmer water at the surface. Like the oceanic period, nearshore eddies also characterize this phase in many places. Northward flowing waters function as the dominant inshore transporter of suspended nutrients. Southwest winds and the Coriolis effect drive Davidson Current waters shoreward so as to displace coastal waters and induce downwelling. In roughly mid-February, an upwelling period commences, lasting into September. This phase correlates with intermittent shifts in prevailing winds from south to northwest, thus diminishing or reversing the previously northward flow of surface water. In spring and summer, as the broad California Current streams southward, surface water is carried offshore. Deeper water, which is cold, dense, and nutrient-rich, rises up to take its place.

The oceanographic setting in MBNMS is similar to that described for CBNMS and GFNMS, in that it is shaped by the California Current and the Davidson Current, with seasonal upwelling in localized areas off Año Nuevo and Pt. Sur. When upwelling ceases at the end of summer (typically August or September), sea level along the coast and inside Monterey Bay rises and the California Current slows. Sea surface temperatures along the coast may rise markedly. Later in the year (typically November) when winter storms bring occasional strong southerly winds, transport is shoreward, and in places the surface current becomes northerly. Some authors refer to this northward-flowing current as the Davidson Current, and others recognize it as the surfacing of the California Undercurrent. This flow is a deep coastal boundary current with a core depth of about 250 meters during spring and summer, and speeds that can be as strong as the surface California Current. Though wind-driven upwelling does not normally occur within Monterey Bay due to the topographic break of the coastal mountains afforded by the Salinas Valley, some upwelled water may be transported into the Bay from areas to the south of Año Nuevo (NOAA 2002).

Longer-term oceanographic variations also occur in the ROI, including sporadic El Niño Southern Oscillation (ENSO) events, Pacific Decadal Oscillation, and global warming. These phenomena affect local physical and biological systems. In the central-north coast region of California, ENSO events are marked by the warming of nearshore waters due to equatorial Pacific trade winds relaxing. The onshore and northward flow increases, and coastal upwelling of deep, nutrient-rich water diminishes. Pacific Decadal Oscillation events are known to occur every 20 to 30 years (the most recent event occurred in 1998). These events occur when the surface waters of the central and northern Pacific Ocean shift several degrees from the mean water temperature. The waters off the California coast have warmed significantly over the last forty years, possibly a result of global warming or interdecadal climate shift (NOAA 2003b).

3.4.2 Regulatory Environment

CBNMS, GFNMS and MBNMS each have regulations that prohibit exploring for, or developing, or producing, oil, gas, or minerals in the Sanctuary (with an exception for jade in portions of MBNMS). In addition, GFNMS and MBNMS have regulations that prohibit drilling into, altering, or placing structures on the seabed.

California Coastal Sanctuary Act of 1994, Cal. Pub. Res. Code §§ 6240-6244

Since 1994, all new oil and gas exploration or drilling within California state waters has been permanently banned (to 3 nm [3.5 miles; 5.5 km] from the shore). This comprehensive ban on new oil and gas leasing in State waters was enacted through the California Coastal Sanctuary Act of 1994. The California Coastal Sanctuary Act created a comprehensive statewide coastal sanctuary that prohibits future oil and gas leasing in state waters, from Mexico to the Oregon border, in perpetuity. Existing oil and gas leases are added to the sanctuary as they are quitclaimed to the state.

Presidential Directive

Since 1982, there has been an annual moratorium placed by Congress on oil and gas leasing and development on the federal Outer Continental Shelf (OCS) adjacent to California. State tide and submerged lands include the area from the mean high tide line seaward to the 3 nm (3.5 miles; 5.5 km) boundary with the federal OCS. President Clinton issued a Presidential Directive under the OCS Lands Act in 1998 that blocked new leasing activity until at least 2012. President Bush rescinded this moratorium except in National Marine Sanctuaries. The Davidson Seamount area is located within the federal OCS and is currently subject to the following regulations.

Submerged Lands Act, 43 U.S.C. § 1301 et seq.

Under the Submerged Lands Act (SLA) the location of energy and mineral resources determines whether or not they fall under state control. The SLA granted states title to the natural resources located within three miles of their coastline. For purposes of the Submerged Lands Act, the term “natural resources” includes oil, gas and all other minerals.

Outer Continental Shelf Lands Act, 43 U.S.C. § 1331 et seq.

The Outer Continental Shelf Lands Act (OCSLA), established federal jurisdiction over submerged lands on the OCS seaward of state boundaries. Under the OCSLA, the Secretary of the Interior is responsible for the administration of mineral exploration and development of the OCS. The OCSLA provides guidelines for implementing an OCS oil and gas exploration and development program, and authorities for ensuring that such activities are safe and environmentally sound.

Deep Seabed Hard Mineral Resources Act, 30 U.S.C. § 1401 et seq.

The Deep Seabed Hard Mineral Resource Act provides regulations for developing deep seabed hard minerals, requires consideration of environmental impacts prior to issuance of mineral development permits, and requires monitoring of environmental impacts associated with any mineral development activities. With regard to minerals on the deep seabed, seabed nodules contain nickel, copper, cobalt and manganese - minerals important to many industrial uses. No commercial deep seabed mining is currently conducted, nor is such activity anticipated in the near future.

Ocean Thermal Energy Conversion Act, 42 U.S.C. § 9101 et seq.

With regard to alternative energy sources from the ocean, the Ocean Thermal Energy Conversion (OTEC) Act established a licensing program for facilities and plants that would convert thermal gradients in the ocean into electricity. The OTEC Act directed the Administrator of NOAA to establish a stable legal regime to foster commercial development of OTEC. In addition, the OTEC Act directed the Secretary of the department in which the USCG is operating to promote safety of life and property at sea for OTEC operations, prevent pollution of the marine environment, clean up any discharged pollutants, prevent or minimize any adverse impacts from construction and operation of OTEC plants, and ensure that the thermal plume of an OTEC plant does not unreasonably impinge on and thus degrade the thermal gradient used by any other OTEC plant or facility, or the territorial sea or area of national resource jurisdiction of any other nation unless the Secretary of State has approved such impingement after consultation with such nation. The OTEC Act also assigned responsibilities to the Secretary of State and the Secretary of Energy regarding OTEC plants.

Energy Policy Act of 2005, Pub.L. 109-58

The Energy Policy Act of 2005 addresses offshore renewable energy and alternative uses of outer continental shelf (OCS) oil and gas facilities. The Energy Policy Act amends the OCS Lands Act (OCSLA) to authorize the US Department of the Interior (DOI) to act as lead federal agency for certain alternative energy and marine-related uses on the OCS. DOI has delegated OCSLA authority to DOI's Minerals Management Service. The Energy Policy Act states that the Secretary of the Interior may grant a lease, easement, or right-of-way on the OCS for activities that: support production of energy from sources other than oil and gas; support exploration, production, storage, and transportation of oil and gas; or use for other purposes facilities currently or previously used for OCSLA-authorized activities. For oil and gas, the Energy Policy Act provides production incentives, resource assessments and inventories, and calls for the preservation of geological and geophysical data. It should be noted that this act does not apply in National Marine Sanctuaries.

3.4.3 Significance Criteria and Impact Methodology

Impacts on the geological and oceanographic resources are considered to be significant if the Proposed Action results in any of the following:

- Allows for exploitation of geologic resources inconsistent with the plans and policies of the NMSP;
- Degrades the physical structure of any geologic resource that is measurably different from pre-existing conditions;
- Alters any oceanographic process, such as sediment transport, that is measurably different from pre-existing conditions; or
- Otherwise violates the NMSP regulations.

The methodology used to conduct the geological and oceanographic impact evaluation was to consider each of the proposed actions individually and to assess any potential impacts on these resources. The overall methodology used is consistent with CEQ guidance and the NOAA NEPA guidelines (NAO 216-6).

3.4.4 Cross-Cutting Regulations – Environmental Consequences

None of the proposed or alternative cross-cutting regulations are expected to have impacts on oceanographic or geological resources within the three sanctuaries.

3.4.5 Cordell Bank National Marine Sanctuary – Environmental Consequences

The Proposed Action

Seabed Protection

The proposed regulation would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure, material or matter on or in the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Additionally, the regulation would prohibit the same activities listed above in the remainder of the sanctuary outside the 50-fathom isobath, with the exception of anchoring. Implementing and clarifying regulations that address seabed protection within the Sanctuary would have a beneficial impact on the geology, whether the protection is from preventing any type of future drilling (no drilling currently takes place or is proposed) or from reducing activities (such as placing structures or dredging) that could physically disturb, harm, or injure the seafloor structure. The prohibitions would safeguard the fragile high relief on the Bank, particularly the pinnacles and ridges, from the threat of permanent destruction. The proposed regulatory change would clearly eliminate or at least reduce the likelihood of detrimental activities from affecting the seafloor, particularly on Cordell Bank. Therefore, the regulation would result in enhanced protections for the benthic environment and their associated biological assemblages.

Concern remains about the fragile quality of the Bank, particularly the high relief pinnacles and ridges and benthic organisms covering the Bank. Unlike habitats such as kelp forests and coral reefs, once the granite pinnacles have been compromised, there is no opportunity for recovery; they can and will remain rubble. The pinnacles and ridges of the Bank provide a hard substrate for attachment resulting in the thick coverage on the Bank comprised of sponges, anemones, hydrocorals, hydroids, and tunicates, and scattered crabs, holothurians, and gastropods. This benthic coverage in turn provides important habitat and food for fishes and other living marine resources. This area is one of complexity, sensitivity and ecological importance.

As described in Chapter 2 (Project Description), there are several human use activities that would be considered a threat to the sensitive seabed within the 50-fathom isobath surrounding Cordell Bank. The proposed regulation would, in effect, prohibit the following potential activities such as, but not limited to: marine bioprospecting, cultural resource salvage, and seafloor cable installation. At this time none of these activities occur on the Bank nor are planned in the future. This proposed new prohibition would serve to protect the unique and fragile geologic integrity of the Cordell Bank and associated benthic resources and habitats. Therefore, the Proposed Action would have potential beneficial future impacts on the geologic resources of the Sanctuary.

Benthic Habitat Protection

Clarification to the existing benthic habitat regulation that prohibits the removal, taking, or injuring benthic invertebrates or algae on the Bank inside the 50-fathom isobath will have the same amount of protection as the existing regulation and would result in no adverse impacts on oceanography and geology.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following differences.

Seabed Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom contact fishing gear on or within a line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action, that met the Sanctuary's goals and objectives for protecting the benthic habitats in this area. Under this alternative, NOAA would issue a regulation under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath surrounding the Bank. While the lawful use of fishing gear during normal fishing operations would be exempt from the regulation, it would prevent bottom contact gear from use on the Bank. This regulation would result in beneficial impacts to geological resources because in addition to prohibiting drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands, it would prohibit the use of bottom contacting fishing gear, which can snag, entangle, break-off, injure and remove fragile bottom habitats on Cordell Bank. This regulatory alternative could have greater beneficial impacts for geological resources than described for the Proposed Action since it would reduce or eliminate potential impacts on biological resources resulting from the use of bottom contact fishing gear on Cordell Bank. However, the beneficial impacts would be the same as the Proposed Action if the NOAA Fisheries regulations that prohibit bottom contact gear on Cordell Bank are considered.

Benthic Habitat Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, in addition to the minor corrections and clarifications, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath around the Bank. In addition, a new definition of bottom-contact fishing gear would be included in the sanctuary regulations. This regulatory alternative would have greater beneficial impacts for geological resources than described for the Proposed Action since it would prohibit potentially harmful physical impacts on geological (and biological) resources resulting from the use of bottom contacting fishing gear on Cordell Bank. However, the beneficial impacts would be the same as the Proposed Action if the NOAA Fisheries regulations that prohibit bottom contact gear on Cordell Bank are considered.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed; this would result in no impact on geologic resources in the ROI. Beneficial effects of the proposed seabed and benthic habitat protection prohibitions would not occur under the No Action Alternative.

3.4.6 Gulf of the Farallones National Marine Sanctuary – Environmental Consequences***The Proposed Action*****Oil and Gas Pipeline Clarification**

The proposed regulation modifications limit the construction of oil and gas pipelines to those associated with facilities and activities *adjacent to*, rather than *anywhere outside* the Sanctuary. This could result in fewer potential pipelines, should the current oil and gas development moratorium in federal waters be lifted, however, NOAA does not contemplate this happening in the near future. Impacts on oceanography and geology would be negligible, but beneficial.

Alternative Regulatory Actions

There are no alternative actions for GFNMS that would affect oceanography or geology.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed, and no additional restrictions on oil and gas pipelines related to hydrocarbon exploration, development, and production beyond the Sanctuary boundaries would be implemented. The No Action alternative would maintain the status quo and would not provide the Sanctuary with enhanced protections for geologic resources.

3.4.7 Monterey Bay National Marine Sanctuary – Environmental Consequences***The Proposed Action*****Davidson Seamount**

The proposed regulation would incorporate an area of approximately 585 square nm (776 square miles; 2009 square km) containing the Davidson Seamount into the boundaries of MBNMS. The inclusion of the Davidson Seamount would increase the size of the Sanctuary by 14.6 percent and would afford protection to its significant geological resources.

Potential threats to the resources of the Davidson Seamount include bio-prospecting, extraction, and harvest activities that would disturb the seabed. The standard MBNMS discharge regulations and seabed disturbance regulations relating to drilling, dredging, seabed alterations, construction, and anchoring would apply in the DSMZ (with certain exceptions). At depths greater than 3,000 feet (914 meters) below the sea surface, the NMSP would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or other wise injuring Sanctuary resources (or attempting to do those activities), except for fishing, which is prohibited pursuant to the MSA (50 CFR part 660). The Sanctuary would also prohibit the possession of Sanctuary resources taken from below 3,000 feet within the DSMZ, except for the possession of fish resulting from fishing, which is prohibited pursuant to the MSA. The NMSP would rely upon the NOAA Fisheries regulatory amendments to the Groundfish FMP to regulate any fishing-related impacts below 3000 feet. By

incorporating the seamount into MBNMS, its geologic resources would be protected, and opportunities would be provided for a better understanding of the seamount. Therefore, the increased level of resource protection provided by this Proposed Action would have significant beneficial impacts on the geological resources of the Davidson Seamount by preventing any type of disturbance or injury.

Dredge Disposal—SF-12

The proposed regulation modification would adjust the location of the SF-12 Dredge Disposal Site to the head of the Monterey Canyon (see Figure 2-5). This will increase the flow of dredged material into Monterey Bay. The purpose of this proposal is to relocate the disposal site to its original intended destination approximately 900 feet farther offshore than its current location and in deeper waters, which would reduce impacts on local beaches caused by disposal in the nearshore subtidal area. Disposal in this area has caused material to be washed onshore, resulting in increased sedimentation.

No increase in the volume of dredge material is a part of this proposed action. Movement of the site farther offshore would reduce siltation in the nearshore environment. Placing the material close to the head of the canyon should increase the flow of sediment into the deep sea fan, as has been observed by USGS researchers. Movement of the SF-12 dredge disposal site from its existing location to the proposed site would have the potential to result in an increase in sedimentation at the new dredge disposal site. However, the material would likely be carried by turbidity currents farther down into the canyon and distributed in the deep water environment, rather than concentrated in the nearshore zone. Movement of the site would reduce impacts associated with dredged sediment being washed into the surf zone at Moss Landing. An increase in the percentage of volume of material that enters the Monterey Canyon will reduce sedimentation in the nearshore benthic areas north of the canyon, where much of the disposal occurs at this time.

The Proposed Action would have slightly adverse impacts for sedimentation processes at the new site location but would have beneficial future impacts on sedimentation process in the current location of the dredge site and along the adjacent shoreline. The US Army Corps of Engineers and USEPA issued a special public notice, in December 2005, announcing the correction of this dredge disposal location (US Army Corps and USEPA 2005). In their announcement, the agencies did not identify any adverse environmental effects and stated that “environmental benefits include reducing the likelihood that suspended sediments will enter the upper water column or affect the adjacent beach.” As the expected beneficial impacts on reduced sedimentation in the surf zone are greater than the expected adverse impacts at Monterey Canyon, the Proposed Action would have an overall beneficial future impact on geologic resources in the Sanctuary.

Dredge Disposal—Monterey and Santa Cruz

The Proposed Action would identify, codify, and recognize two dredge disposal sites that have been in use by the Monterey and Santa Cruz Harbor prior to MBNMS designation. Both dredge disposal sites are still in use today. See Section 3.5, Water Quality, for a discussion of these sites. The proposed regulation is considered a technical change with no environmental or socioeconomic impacts. Any modification to the volume or location of dredge material would require a separate permit process and environmental review. The Proposed Action would have no impacts on geological or oceanographic resources in the sanctuaries.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following minor differences:

Davidson Seamount Circular Boundary Alternative

This alternative would define the boundaries of the Davidson Seamount as a circle with a centerpoint at the summit of the Seamount and a radius of 15 nm (17 miles; 28 km). This alternative boundary would encompass 707 square nm (937 square miles; 2428 square km). The proposed regulations for this alternative would be the same as for the Proposed Action. This alternative has the potential to have significant beneficial future impacts on the geologic resources of the seamount and a slightly greater potential beneficial future impact than the Proposed Action, as it would include a larger area.

Davidson Seamount NMSA Alternative

Under this alternative, the same geographic area as identified in the Proposed Action would be incorporated into MBNMS as well as the same regulation that would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or other wise injuring Sanctuary resources (or attempting to do those activities). However, instead of relying on NOAA Fisheries to protect the benthic habitat from fishing activities on the Seamount, the NMSP would issue a regulation, under the authority of the NMSA, prohibiting all fishing below 3,000 feet (914 meters). This alternative would be implemented if NOAA Fisheries did not impose restrictions on fishing in water depths greater than 3,000 feet (914 meters) below the surface that met the Sanctuary's goals and objectives for protecting the benthic habitats in this area. This regulatory alternative would have greater beneficial impacts for biological resources than described for the Proposed Action since, in addition to the benefits listed in the Proposed Action, the alternative would also directly regulate impacts to biological resources resulting from the use of bottom contacting fishing gear on Davidson Seamount. However, the beneficial impacts would be the same as the Proposed Action if the NOAA Fisheries regulations that prohibit bottom contact gear on Davidson Seamount are considered.

The No Action Alternative

The No Action alternative would continue to manage the Sanctuary as it is currently managed; the Davidson Seamount would not be incorporated into MBNMS. The No Action alternative would maintain the status quo and would not provide the Sanctuary or Davidson Seamount with increased protections of significant geologic resources.

3.4.8 Cumulative Impacts

The ROI for cumulative impacts includes the geologic and oceanographic resources of the three sanctuaries and the proposed Davidson Seamount addition to the MBNMS. This section addresses the cumulative effects on geologic and oceanographic resources from such projects as submerged cables, pier construction, power plants, sewage treatment plants, and implementation of the FMPs.

Adverse impacts on geologic resources in the sanctuaries largely result from construction activities on the seabed or the shoreline of the sanctuaries. Coastal armoring projects are a significant type of development of concern. To prevent natural erosion and protect land developments, shorelines are often fortified with riprap, seawalls, and bluff protection structures. The impacts on geologic resources include modification to sedimentation processes, namely long-shore sediment transport, and can result in beach erosion. Laying submerged cables in the seabed is another type of project that has the potential to cause adverse impacts on geologic resources. Sanctuary regulations prohibit alteration to the seabed but may allow permits for certain cable installations. High voltage power cables, fiber optic cables, and cables for research purposes are types of cables that may be proposed for installation. There is one current proposal for a new marine cable, to be located in MBNMS. Construction of marinas, piers, ports, and related infrastructure is another area of development that can result in adverse impacts on geologic resources. Installing these improvements can

result in disturbance to the seafloor and nearshore sediments. (No new piers are currently proposed in the three sanctuaries.) In addition, the disposal of dredged and landslide materials in the sanctuaries are projects that may increase the rate of sedimentation on the seafloor or along the shoreline.

Projects that may pose adverse impacts on oceanographic processes and properties (namely currents, thermodynamic properties, and salinity) include development of water treatment plants, power plants and desalination plants. Power plants, such as Duke's Moss Landing power plant, input significantly warmer water into the discharge area, affecting the thermodynamics of the nearshore environment. There are no known proposed power plants or water treatment plants. There are some preliminary discussions about desalination plants at several locations in the ROI, but construction is not likely to begin within the next five years. With the increase in coastal population in the central California area, the quantity of water discharged by sewage treatment plants is increasing. In addition to the impacts on water quality discussed in Section 3.5, the large quantity of freshwater impacts the salinity of the water in the receiving environment.

Implementation of the FMPs will contribute to the ROI's regional ecosystem health, including oceanography and geology, by applying the various protective action plans in CBNMS, GFNMS, and MBNMS. Conservation science management contained in the CBNMS action plan could result in additional survey coverage of the Sanctuary, providing more detailed information relevant for managing CBNMS. Similar results could be seen through potential boundary modifications and research and monitoring management under the GFNMS action plan. Coastal development action plans in MBNMS would provide additional data on nearshore oceanography and geography. The NOAA Fisheries regulations have established zones within the ROI where bottom trawling and bottom-contact fishing is prohibited; these help protect geologic resources on the seafloor from disturbance or damage.

The Proposed Action

This project will not contribute to any of the cumulative adverse trends described above; therefore, there will be no cumulative adverse impacts. Impacts on geologic and oceanographic resources from the Proposed Action are expected to be beneficial; therefore the Proposed Action would contribute to an ongoing cumulative beneficial trend, and could mitigate for cumulative adverse trends.

Alternative Regulatory Actions

Under the alternatives, cumulative impacts would be the same as those described under the Proposed Action, with an increase in the level of beneficial impacts due to the increased levels of protection afforded by the alternatives.

The No Action Alternative

The No Action alternative would maintain the status quo of sanctuary management. No additional protections from proposed regulations would occur. Some ongoing adverse impacts would continue; these would continue to be part of ongoing adverse cumulative trends within the ROI. There would also be cumulative beneficial trends from existing regulation and management efforts, including implementation of the FMPs and the NOAA Fisheries regulations. The No Action alternative would not contribute to any cumulative impacts, either beneficial or adverse.

3.5 WATER QUALITY

This section addresses water quality issues related to the proposed actions. The water quality in the sanctuaries is described, and key threats to water quality are identified.

3.5.1 Regional Overview of Affected Environment

The ROI for water quality extends beyond the sanctuaries' boundaries due to the fluid nature of the marine environment and freshwater inputs from rivers and tributaries. Discharges into the marine environment in ocean areas adjacent to the sanctuaries intrude into sanctuary boundaries and impact water quality. The ROI comprises several major estuaries (Tomales Bay, San Francisco Bay, Drakes Estero, Bolinas Lagoon and Elkhorn Slough) and more than twenty coastal rivers that contribute to the nearshore chemical characteristics of the sanctuaries. The major freshwater sources are the Sacramento and San Joaquin rivers that enter the sanctuaries through the San Francisco Bay estuary. These waters are substantially affected by agricultural activities in the Sacramento and Central valleys and by various pollution sources from the San Francisco Bay. The freshwater inputs from the coastal range rivers are minor sources of chemical constituents to the sanctuaries. In total, the ROI includes oceanic waters within the sanctuaries, the marine areas adjacent to the sanctuaries, including the proposed Davidson Seamount addition to the MBNMS, and the watersheds contributing to the chemical composition in the sanctuaries.

In general, the marine water in the sanctuaries is considered to be of relatively good quality. This is primarily attributed to the rural nature of most of the northern/central coast of California (NOAA 2003d). However, there are nonetheless a number of persistent threats to water quality in the sanctuaries. The marine environment in offshore areas is more pristine than in nearshore areas, which are affected by land-based nonpoint source pollution. Coastal marine areas, including harbors, lagoons, estuaries, and tributaries, are known to have a number of problems, including elevated levels of nitrates, sediments, persistent pesticides, metals, bacteria, pathogens, detergents, and oils (NOAA 2003c, 2003d, 2003e). Other sources of marine water pollution include marinas and vessel pollution, spill incidents, illegal dumping, and residual dumping from historic dumping activities (NOAA 2003d). Key sources of pollution, especially as related to the Proposed Action, are described in greater detail below.

Land-based Pollution (Point Source and Nonpoint Source)

Livestock grazing, agriculture, and historic mining are primary sources of land-based nonpoint source pollution affecting the sanctuaries, particularly in the nearshore environment. While the threat is relatively minor for most of the coastal marine area of the sanctuaries due to distances from pollution sources and the strong circulation patterns of the Pacific, the discharge of the San Francisco Bay Estuary is a significant threat to the water quality of the sanctuaries. The San Francisco Bay Estuary carries a pollution load generated by the approximately 8 million people living in the San Francisco Bay Area as well as effluent from the agricultural Central Valley via the Sacramento and San Joaquin rivers. Numerous contaminants exiting the San Francisco Bay, including agricultural and livestock waste, wastewater, sewage outfalls, historic mining, and industrial wastes, produce a contamination plume termed the San Francisco Bay Plume. The San Francisco Bay Plume can, under certain conditions, extend outward to the offshore edge of the sanctuaries.

Other land-based pollution of nearshore waters, particularly in MBNMS, includes runoff from urban, suburban and rural areas, aging sewer infrastructure systems, flows from creeks and rivers, and other unknown or unidentified sources. Some sewer systems have been known to overflow into MBNMS during

storm events. Concentration of microbial contaminants in nearshore waters has resulted in numerous beach warnings and beach closures in MBNMS.

Vessel Discharges

During the course of normal operations, seagoing and coastal transiting vessels produce a multitude of wastes, which, when disposed of into the marine environment, can impact the water quality of the sanctuaries. Potential discharges from vessels include sewage, graywater, bilge water, ballast water, hazardous wastes, and solid wastes. These are discussed below.

Sewage

Sewage (also referred to as black water) includes vessel sewage and other wastewater (e.g., from medical facilities onboard cruise ships). Sewage from ships is generally more concentrated than sewage from land-based sources, as it is diluted with less water when flushed (three quarts versus three to five gallons). Sewage discharge may contain bacteria or viruses that cause disease in humans and other wildlife. High concentrations of nutrients in sewage, namely nitrogen and phosphorous, can lead to eutrophication, the process where an aquatic environment becomes rich in dissolved nutrients, causing excessive growth and decomposition of oxygen-depleting plant life, and resulting in injury or death to other organisms. Chemicals and deodorants often used in MSDs, including chlorine, ammonia, or formaldehyde, also impact water quality. Section 312 of the CWA (33 U.S.C. § 1322) requires the use of MSDs for all vessels within 3 nm (3.5 miles; 5.5 km) offshore; raw sewage can be legally discharged beyond 3 nm. Vessels over sixty-five feet in length must have a Type II or Type III MSD. In the sanctuaries, the discharge of raw sewage is prohibited, and it is required that properly functioning marine sanitation devices be used when discharging sewage waste (NOAA 2003c, 2003d, 2003e). Type I MSDs rely on maceration and disinfection for treatment of the waste prior to its discharge into the water. Type II MSDs provide an advanced form of the same type of treatment used by Type I devices and discharge wastes with lower fecal coliform counts and reduced suspended solids. A Type II MSD must meet a water quality standard of 200 fecal coliform per 100 ml of water, for sewage treatment. Type III MSDs, commonly called holding tanks, flush sewage from the marine head into a tank containing deodorizers and other chemicals. The contents of the holding tank are stored until the contents can be properly disposed of at a shore-side pump-out facility. Type III MSDs can be equipped with a discharge option, usually called a Y-valve, which allows the boater to direct the sewage from the head either into the holding tank or directly overboard.

Graywater

Graywater from vessels is commonly viewed to include wastewater from kitchens, showers, laundry facilities, and galleys. Under the Clean Water Act, graywater does not include wastewater from laundry facilities. Pollutants in graywater include suspended solids, oil, grease, ammonia, nitrogen, phosphates, copper, lead, mercury, nickel, silver and zinc, detergents, cleaners, oil and grease, metals, pesticides, and medical and dental wastes. Graywater discharge is currently prohibited in CBNMS and GFNMS .

Bilge Water

Bilge water includes fuel, oil, wastewater, other chemicals, and materials that collect at the bottom of the ship's hull with fresh and seawater. Under the Oil Pollution Act and the CWA, vessels are prohibited from releasing any discharge with an oil content of greater than fifteen parts of oil per one million parts water (ppm) within 22 km (12 nm; 14 miles) of the coastline. Beyond 22 km, discharges with oil content greater than 100 ppm are prohibited (NOAA 2003c, 2003d, 2003e). Existing MBNMS regulations prohibit any discharge of bilge water with any concentration of oil.

Ballast Water

Large vessels can take on millions of gallons of ballast water, often from coastal waters in one location, and discharged at another. Ballast operations have led to the introduction of invasive species, which are considered a threat to water quality and can disrupt marine ecosystems. Ballast water appropriation and discharge within state waters is regulated by the California Marine Invasive Species Act (AB 433, 2003), the California Coastal Ecosystems Protection Act (SB 497, 2005) and California Code of Regulations, Title 2, Division 3, Chapter 1, Article 4.6, “Ballast Water Regulations for Vessels Arriving at California Ports of Places after Departing from Ports or Places within the Pacific Coast Region” (2007).

The Marine Invasive Species Act (AB 433, 2003) and the California Code of Regulations Title 2, Division 3, Chapter 1, Article 4.6 contain specific ballast water discharge requirements applicable to all vessels weighing 300 gross registered tons or more. Article 4.6 requires all vessels arriving at a California port or place from another port or place within the Pacific Coast Region to (1) exchange ballast water in near-coastal waters before entering the waters of the State if that ballast water was taken on in a port or place within the Pacific Coast Region, (2) retain all ballast water on board, (3) discharge the ballast water to a reception facility approved by the CSLC or (4) use an alternative, environmentally sound method of ballast water management that has been approved by the CSLC or the USCG. “Near-coastal waters” are defined in Article 4.6 as those waters that are more than 50 nm from land and at least 200 meters (656 feet) deep. “Pacific Coast Region” is defined in Article 4.6 as all estuarine and ocean waters within 200 nm of land or less than 2,000 meters (6,560 feet, 1,093 fathoms) deep, and rivers, lakes or other water bodies navigably connected to the ocean on the Pacific Coast of North America east of 154 degrees west longitude and north of 25 degrees north latitude, exclusive of the Gulf of California.

The Coastal Ecosystem Protection Act (SB 497, 2006) required the state to adopt ballast water performance standards by January 2008 and sets specific deadlines for the removal of different types of species from ballast water applies to all commercial vessels.

In July 2004, the U.S. Coast Guard promulgated new regulations that establish a mandatory ballast water management program (33 CFR Part 151), which includes one of three acceptable ballast water management practices, for all vessels equipped with ballast water tanks that enter or operate within U.S. waters. These regulations also require vessels to maintain a ballast water management plan that is specific for that vessel.

Hazardous Materials

Various hazardous materials are used and hazardous wastes are generated during the course of vessel operations. For example, hazardous wastes generated on cruise ships include dry cleaning and photo processing chemicals, paints and solvents, batteries, and fluorescent light bulbs containing mercury. These substances can be toxic or carcinogenic to marine life. The Resource Conservation and Recovery Act (RCRA) requires that vessels that generate or transport hazardous waste offload these wastes at treatment or disposal facilities (NOAA 2003c, 2003d, 2003e). See Section 3.8 for further discussion on hazardous waste and treatment facilities.

Solid Wastes

Solid wastes generated by vessels include food waste, cans, glass, wood, cardboard, paper, and plastic. The discharge of solid wastes is regulated under Act to Prevent Pollution from Ships (APPS) and CWA. The Marine Plastic Pollution and Control Act regulates the disposal of plastics and garbage pursuant to Annex V of MARPOL. Under these regulations the disposal of plastics is prohibited in any waters, and floating

dunnage² and other materials are prohibited in navigable water within twenty-five nm from land. Other garbage, such as food waste, paper and metal, can be disposed of beyond 25 nm from shore. Garbage ground to pieces under an inch can be discharged beyond 3 nm from shore.

Cruise Ships

Cruise ships generate domestic wastewater and other by-products during the course of their daily operations. The most common domestic wastes are sewage, or “black water,” which is human waste from toilets and urinals, plus medical facility sink drainage, and “gray water,” which is typically galley, laundry, bath/shower, and sink drainage. The volume of discharges from large cruise ships is of particular concern in the sanctuaries. Cruise ships regularly transit sanctuary waters and embark at ports within the San Francisco and Monterey bays. Between 2002 and 2004, the number of cruise ships that made ports of call in California increased by 50 percent (Bluewater Network 2004). Currently 650,000 cruise ship passengers embark annually from California ports in San Francisco Bay, Los Angeles, and San Diego (SWRCB 2003). Approximately 90 cruise ship arrivals and departures are estimated at the San Francisco Passenger Terminal in 2006. Although partly constrained by the lack of local docking facilities, cruise ship visits to the area are likely to continue to grow as the fleet shifts from international to more domestic cruises, and due to a new cruise ship docking facility planned in San Francisco Bay.

Cruise ships generate large volumes of waste and may have significant impacts on the marine environments they transit through. Large cruise ships can generate as much as 41,640 cubic meters (eleven million gallons) of waste per day (NOAA 2003c, 2003d, 2003e). The typical storage capacities for cruise ships are as follows: gray water—500-2100 tons, black water—400-1,000 tons, and bilge water—60-300 tons.

While large cruise vessels are the equivalent of small cities in regard to waste production, they are not subject to the strict environmental regulations and monitoring requirements that land based facilities are required to comply with, such as obtaining discharge permits, meeting numerous permit conditions and conducting monitoring of discharges. Only recently have cruise ship discharges been prohibited in California state waters (water located within three miles of the California coastline). This legislation, however, does not afford protection to sanctuary waters outside of California state water boundaries. The main pollutants generated by a cruise ship include sewage, gray water, bilge water, ballast water, hazardous waste, and solid waste. Each of these pollutants is defined above in the vessel discharges discussion. Specific information regarding cruise ship discharges is summarized below.

Sewage

Volumes of sewage for a typical cruise ship have been estimated at between five to ten gallons per person per day, or up to 210,000 gallons per week (State of California Legislature, *Assembly Bill 906*). Sewage is classified as a pollutant under the CWA. However, cruise ships are not subject to the National Pollutant Discharge Elimination System (NPDES) Permitting Program, which requires land-based facilities to obtain a permit for discharges under the CWA. Black water from cruise ships is regulated under Section 312 of the CWA (33 U.S.C. § 1322), which requires vessels to possess a US Coast Guard certified MSD, as described above. Most cruise ships use Type II MSDs. It is important to note that although these systems were designed to meet CWA Section 312 standards; in reality monitoring has shown that the systems often do not operate properly. In fact, studies have shown that conventional MSDs often fail to meet federal standards for discharge. The results of a study conducted by the Alaska Department of Environmental Conservation in 2000 show that in

² Loose packing material used to protect a ship's cargo from damage during transport

approximately 55 percent of the cruise ships tested, the fecal coliform count in treated black water was not in compliance with the federal standard of 200 fecal coliform per 100 milliliter (State of Alaska Department of Environmental Conservation 2000). A recent California law, Assembly Bill (AB) 2672, prohibits the discharge of treated or untreated sewage from cruise ships into state waters (from the shoreline to 3 nm offshore).

Graywater

A typical cruise ship produces between 90,000 and 180,000 gallons of graywater per week (SWRCB 2003). Currently, federal regulations under the CWA do not prohibit the discharge of graywater in state or U.S. waters, with the exception of the Great Lakes and the state waters of Alaska. A recent California law, AB 2093, prohibits the discharge of graywater from cruise ships into state waters (from the shoreline to 3 nm [3.5 miles; 5.5 km] offshore).

Bilge Water

A typical cruise ship generates an estimated 25,000-35,000 gallons of bilge water per week (Ocean Conservancy 2002). Discharge of fuel or oil, including oily bilge water, is subject to stringent requirements of the Oil Pollution Act and Section 311 of the CWA (33 U.S.C. § 1321), as described above. Several cruise line companies require their vessels to have additional equipment that treats the oily bilge water to 5 ppm. Discharge of oily wastes is also addressed under the International Convention for the Prevention of Pollution from Ships (MARPOL), and under the APPS, which incorporates MARPOL provisions into federal law. They set requirements for the release of oil and noxious substances, set standards for reporting discharges, and establish monitoring and record keeping protocols.

In general, oil waste is generated during normal ship operations; oily water discharges exceeding specified limits are frequently the result of an improperly operating oil-water separator (OWS) or emergency bilge pumping, and inadvertent discharge of bilge water, but purposeful discharges of bilge water have occurred (US Department of Justice 2004). In addition, as a result of collisions, groundings, fueling spills, or bilge pumping required by flooding, significant quantities of oil may be discharged.

With regard to oil discharge, the MBNMS oil discharge prohibition has been interpreted to mean any detectable or trace discharge of oil is illegal, even if it meets the USCG standards of 15 ppm. Today's cruise ships have systems capable of treating bilge to meet these standards and can reach levels as low as 5 ppm (NOAA 2005a).

Ballast Water

Like other large vessels, cruise ships take in large volumes of ballast water, in order to stabilize the vessel for safe and efficient operation. During the process they take in thousands of species of marine organisms, including various types of larvae, fish eggs, and microorganisms. The water is often drawn in from coastal waters in one area, and discharged at another location. Unlike cargo vessels, cruise ships do not significantly change their loading while in port and are not likely to exchange ballast water there; however, they may pump ballast water when fueling. They do frequently travel near the coast and can be carrying hundreds of thousands of gallons of ballast water at a time.

In July 2004, the U.S. Coast Guard promulgated new regulations that establish a mandatory ballast water management program (33 CFR Part 151), which includes one of three acceptable ballast water management practices, for all vessels equipped with ballast water tanks that enter or operate within U.S. waters. These regulations also require vessels to maintain a ballast water management plan that is specific for that vessel.

California has several regulations regarding ballast water that are relevant to cruise ships. The Marine Invasive Species Act (AB 433, 2003) and the California Code of Regulations Title 2, Division 3, Chapter 1, Article 4.6 (2005) contain specific ballast water discharge requirements applicable to all vessels, including cruise ships, weighing 300 gross registered tons or more. The Coastal Ecosystem Protection Act (SB 497, 2006) requires the State to adopt ballast water performance standards by January 2008 and sets specific deadlines for the removal of different types of species from ballast water applies to all commercial vessels.

Hazardous Materials

Hazardous wastes produced on cruise ships include by-products of dry cleaning and photo processing operations, paints and solvents, batteries, fluorescent light bulbs containing mercury, and wastes from print shops. A typical ship produces an estimated 110 gallons of photo processing chemicals, five gallons of dry cleaning wastes, and ten gallons of used paints per week.

Solid Wastes

A typical cruise ship generates 50 tons of solid waste per week (Ocean Conservancy 2003). In some cases the wastes are incinerated on the vessel and the ash is discharged at sea; other wastes are disposed of on shore or recycled. Cruise ships from most countries do not dispose of plastics anywhere at sea. Guidelines from MARPOL ban the dumping of plastic. Solid waste discharges can cause environmental impacts, such as increased nutrients.

Cruise Ship Discharge Practices

The cruise line industry has a history of discharge violations, including violations for illegal discharges and for not meeting MSD performance standards identified in the CWA. At the same time, certain cruise line companies have taken voluntary pollution reduction measures, such as requiring their vessels to have equipment that treats the oily bilge water above regulatory requirements to 5 ppm (NOAA 2003c, 2003d, 2003e). Some cruise lines have even adopted a “no discharge in marine protected areas” policy where they hold all discharges until they are outside their boundaries. Within MBNMS, three cruise lines voluntarily adopted a no discharge policy. Subsequently, in 2004, prompted by a cruise ship discharge incident in October 2002 that released approximately 130 cubic meters (34,000 gallons) of graywater into MBNMS, the State of California passed legislation to limit the water and air pollution generated by cruise ships in California waters (AB 471, AB 2093, and AB 2672).

Because of the growing concerns associated with cruise ship discharges, in addition to the proposed regulatory action being considered in this EIS, actions have been taken on the national and regional levels to address the real or perceived threats from cruise ships. The following recent actions are relevant to the three-sanctuary study area.

- Two California state bills, AB 2093 and AB 2672 became effective in January 2005, that prohibit the discharge of graywater, hazardous materials, oily bilge water and black water (sewage) into state waters, and set up notification protocols for release of these substances into state waters or waters of a national marine sanctuary;
- Petitions from Bluewater Network (a coalition of environmental organizations) were submitted to USEPA and NOAA to examine the impacts of cruise ship discharges in U.S. waters or to prohibit them in NMSs, respectively;

- The City of Monterey now requires each vessel that anchors in Monterey to sign a written contract, in which the vessel agrees to withhold all discharges (except engine cooling water) while operating within the boundaries of the sanctuary. If this agreement is not abided by, the vessel will be banned, in perpetuity, from using the City's facilities to offload passengers, and the cruise line to which the vessel belongs will be banned for 15 years.
- Crystal Cruise Line was banned from Monterey Harbor in 2003 for 15 years, after one of its ships violated voluntary agreements with the Sanctuary and the City of Monterey by discharging sewage, graywater, and treated bilge water within the Sanctuary.

Motorized Personal Watercraft

Among the concerns regarding vessel impacts on water quality is the use of MPWC in limited nearshore areas. The majority of MPWC operated within the sanctuaries are compact water jet-propelled craft that shed water from the passenger spaces. Larger models are most commonly used in the ocean environment for their power, range, and towing ability. MPWC are used especially in the surf zone, including to tow surfers into large waves at Mavericks, a surf break off Pillar Point in San Mateo County. Based upon reports from harbor masters and NOAA enforcement personnel, the Sanctuary estimates that approximately 1200 MPWC trips were conducted in MBNMS in 2002. This number represents repeat trips by an estimated total of 150 MPWC. MPWC use has increased significantly in some areas since that time due to the growing popularity of tow-in surfing. NOAA estimates that 80-90 percent of MPWC operated in the Sanctuary seat three or more people.

Water quality concerns related to use of MPWC include the discharge of unburned fuel into the water while engines are running and the release of hydrocarbons from oil and gasoline tanks in flipping incidents. The contaminants of concern include methyl tertiary butyl ether (MTBE), an oxygenate added to gasoline, and polycyclic aromatic hydrocarbons (PAHs), by-products of the combustion process (Bluewater Network 2004; NPS 2000). Since MPWC within MBNMS are often operated in close proximity to nearshore reefs and exposed rocks, MPWC sometimes impact these formations and break up, scattering vessel debris into surrounding waters.

Spill Incidents

There is a persistent threat to water quality from an accidental spill from a vessel within or outside the sanctuaries' boundaries. Offshore spills, particularly near high-use shipping lanes, have the potential to severely impair water quality. In the event of an oil spill, the impact on the sanctuaries would depend on the spill location and the wind and sea conditions (NOAA 2003c, 2003d, 2003e).

Historic Dumping

Hundreds of millions of tons of hazardous and nonhazardous waste historically have been dumped on the continental shelf and slope in the sanctuaries, particularly outside of the San Francisco Bay. These wastes include dredged sediments; industrial wastes from oil refineries, steel production, and other sources; munitions and ships from World War II; unwanted and capsized vessels; and barrels of low-level radioactive waste. Many ships are scattered on the seafloor of the sanctuaries, although most are not sources of hazardous contamination. Notable exceptions to this include the USS *Independence*, a highly radioactive ship that was probably disposed of in the vicinity of the Gulf of the Farallones (exact location unspecified), and the SS *Puerto Rican*, part of which sank with a load of 8,500 containers of oil south of the Farallon Islands (Chin and Ota 2001). The latter vessel is reported to continue to leak oil into the marine environment.

Dredged sediments have been disposed of in the sanctuaries since at least 1959, much of this from dredging activities in the San Francisco Bay and its entrance, and some from specific projects, such as the excavation of the Trans-Bay Tube for Bay Area Rapid Transit. Between 1946 and 1970, nearly 50,000 containers of low-level radioactive waste were disposed of west and south of the Farallon Islands. All of these historic dumping practices may have impacted, and may continue to impact, water quality in the sanctuaries (Chin and Ota 2001).

Dredge Disposal

There are four dredge disposal sites in MBNMS (see Figure 2-5). None have been identified in either GFNMS (the interim dumpsite referenced in the GFNMS 1981 DEIS is no longer in service) or CBNMNS; however, the San Francisco Deep Ocean Disposal Site (SF-DODS) is located approximately 25 nm west of the Farallon Islands, and approximately 10 nm west of the western boundary of GFNMS. This site is used for the disposal of uncontaminated material generated during dredging activities in the San Francisco Bay. Annual dumping volumes at SF-DODS vary from year to year; volumes ranged from 50,000 cubic yards to 3,400,000 cubic yards between 1995 and 2001 (USACE 2002b).

There are four major harbors adjacent to MBNMS. Two of these harbors (Santa Cruz and Moss Landing) regularly dredge the bottom of the harbor and dispose of the bulk of their dredge sediments within MBNMS. Harbors dispose of their dredged material either in the ocean, on land at landfill sites, or at designated beach nourishment sites adjacent to the harbors. When MBNMS was designated in 1992, two existing offshore sites for dredge disposal were identified (SF-12 and SF-14), and the establishment of new sites was prohibited within its boundaries.

The SF-12 dredge material disposal site is located approximately 50 yards off the beach near Moss Landing Harbor at the head of the Monterey Canyon; material is generally piped from the dredge site inside the harbor out to the disposal site. Moss Landing Harbor has disposed of 38,000 to 115,000 cubic meters (50,000 to 150,000 cubic yards) of dredge material per year at SF-12 or at the Marina landfill, which is used for dredge material not suitable for aquatic disposal. The SF-14 dredge material disposal site is a deepwater site approximately 3.7 km (two nm; 2.3 miles) west of Moss Landing Harbor; this site is very rarely used due to the need for a barge and the associated expense of that disposal method.

There has been some confusion among agencies about the exact location of dredge material disposal site SF-12 near Moss Landing. Many of the stated locations for this site have not been consistent with the historical location of discharge due to changes in the pier terminus and the proximity of the head of the canyon from the shoreline.

MBNMS has recognized and authorized the use of two additional disposal sites at Santa Cruz and Monterey harbors since these sites were in use and permitted by other agencies prior to designation:

- **Twin Lakes State Beach (Santa Cruz Harbor).** In 1997, the Sanctuaries and Reserves Division of the Office of Ocean and Coastal Resource Management approved the recognition of the surf zone area off Twin Lakes State Beach as a legal disposal site for clean sandy material from the Santa Cruz Harbor. This site was in existence prior to the designation of MBNMS. Only material that complies with CWA Section 404(b)(1) may be disposed of at this site, and disposal activities must comply with all MBNMS regulations, including being conducted under a valid permit issued by USACE.

Use of the dredge disposal site at Santa Cruz has resulted in water column turbidity, which varies depending on oceanographic conditions. Disposal during high-energy oceanic conditions may result in increased nearshore turbidity, whereas disposal during low energy conditions can lead to sedimentation and mounding in the disposal area.

- **Monterey Harbor.** In 2000, the Sanctuaries Division of the Office of Ocean and Coastal Resource Management recognized a historical dredge material disposal site east of Municipal Wharf II next to Monterey Harbor. This site was in existence prior to the designation of MBNMS and is used on a very limited basis. Use of the dredged material disposal site is considered when sediments are tested and shown to be suitable for unconfined aquatic disposal according to Section 404 of the CWA.

Santa Cruz Harbor is permitted to dispose of 268,000 cubic meters (350,000 cubic yards) of clean, sandy material from the entrance channel on an annual basis. An additional 7,650 cubic meters (10,000 cubic yards) of material, of which 2,300 cubic meters (3,000 cubic yards) may consist of fine grain sand and silt, may be disposed. The harbor disposes of this dredged material in the subtidal area adjacent to Twin Lakes State Beach, above mean high water at Twin Lakes State Beach, and at the Marina landfill. The Monterey Harbor has dredged approximately 3,060 cubic meters (4,000 cubic yards) of material on a sporadic basis in recent years. Monterey Harbor has occasionally made use of the historic dredge disposal area adjacent to Wharf 2, the area above mean high tide for beach replenishment, and the Marina landfill. Pillar Point Harbor historically has had little need for dredging (Hall 2004).

Disposing of dredged material in the ocean adversely impacts the marine environment by increasing water column turbidity.

3.5.2 Regulatory Environment

The water quality of the sanctuaries is regulated by a number of statutes and government agencies. These serve to protect the marine environment from the various point and nonpoint sources of marine pollution. Regulations applicable to the various types of cruise ship discharges are described above in the affected environment discussion of cruise ship discharges.

Federal Water Pollution Control Act, commonly known as the Clean Water Act, 33 U.S.C. § 1251 et seq.

The CWA was passed in 1972 by Congress, and substantially amended in 1987. Under CWA Section 402 (33 U.S.C. § 1342), any discharge of a pollutant from a point source (e.g., a municipal or industrial facility) to the navigable waters of the United States or beyond must obtain an NPDES permit, which requires compliance with technology- and water quality-based treatment standards. Two sections of the CWA deal specifically with discharges to marine and ocean waters. Under CWA Section 403 (33 U.S.C. § 1343), any discharge to the territorial seas or beyond also must comply with the Ocean Discharge Criteria established under CWA Section 403.

CWA Section 312 (33 U.S.C. § 1322) contains regulations protecting human health and the aquatic environment from disease-causing microorganisms that may be present in sewage from boats. An MSD is equipment on board a vessel designed to receive, retain, treat, control, or discharge sewage, and any process to treat such sewage. Pursuant to Section 312 of the CWA, all recreational boats with installed toilet facilities must have an operable MSD on board. Vessels 20 meters (65 feet) and under may use a Type I, II, or III MSD. Vessels over 20 meters (65 feet) must install a Type II or III MSD. All installed MSDs must be Coast

Guard-certified. Coast Guard-certified devices are so labeled except for some holding tanks, which are certified by definition under Section 312 of the CWA (33 U.S.C. § 1322).

CWA Section 316 (33 U.S.C 1326) regulates thermal discharges from power plants. Section 316(a) limits thermal effluent in order to assure the protection and propagation of balanced, indigenous aquatic communities. Section 316(b) regulates cooling water intake structures in order to minimize adverse impacts to the aquatic environment.

Title I of the Marine Protection, Research, and Sanctuaries Act, also known as the Ocean Dumping Act, 33 U.S.C. §§ 1401-1445

The Marine Protection, Research, and Sanctuaries Act (MPRSA) regulates the dumping of wastes into marine waters. It is the primary federal environmental statute governing transportation of dredged material for the purpose of disposal into ocean waters, while CWA Section 404 governs the discharge of dredged or fill material into waters of the US. In 1983, a global ban on the dumping of radioactive wastes was implemented. The MPRSA and the CWA regulate materials that are disposed of into the marine environment, and only sediments determined to be nontoxic by USEPA standards may be disposed of into the marine environment. The USEPA and the USACE share responsibility for managing the disposal of dredged materials (Chin and Ota 2001).

Oil Pollution Control Act, 33 U.S.C. § 2701 et seq.

The Oil Pollution Control Act of 1990 requires extensive planning for oil spills from tank vessels and onshore and offshore facilities and places strict liability on parties responsible for oil spills.

Act to Prevent Pollution from Ships, 33 U.S.C. § 1901 et seq.

The discharge of solid wastes is regulated under the APPS, as amended by the Marine Plastic Pollution Research and Control Act of 1987, and the CWA. The APPS regulates the disposal of plastics and garbage for the United States Annex V of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78). Under these regulations the disposal of plastics is prohibited in all waters, and other garbage, including paper, glass, rags, metal, and similar materials, is prohibited within 22 km (twelve nm; 14 miles) from shore (unless macerated). Under the current regulations, disposal of much of the solid waste generated by vessels is allowed in areas within the marine sanctuaries beyond 22 km from the shore (NOAA 2003c, 2003d, 2003e).

Coastal Zone Management Act, 16 U.S.C. §§ 1451-1466

The Coastal Zone Management Act (CZMA) provides incentives for coastal states to develop and implement coastal area management programs. It is significant with regards to water pollution abatement, particularly concerning nonpoint source pollution.

Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601 - 9675

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) addresses cleanup of hazardous substances and mandates liability for environmental cleanup on those whose actions cause release into the environment. In conjunction with the CWA, it requires preparation of a National Contingency Plan for responding to oil or hazardous substances release.

Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901-6992k

The RCRA addresses hazardous waste management, establishing duties and responsibilities for hazardous waste generators, transporters, handlers, and disposers.

Porter-Cologne Water Quality Control Act, California Water Code §§ 13000-14958

The Porter-Cologne Water Quality Control Act contains provisions for enforcing water quality standards through issuance of Waste Discharge Requirements. Pursuant to the act, the SWRCB has the primary responsibility to protect California's coastal and ocean water quality. SWRCB has been given the authority by the USEPA to administer the NPDES program for California. The Regional Water Quality Control Boards, in coordination with the SWRCB, issue both state waste discharge requirements and NPDES permits to individual dischargers. Dischargers are required to establish self-monitoring programs for their discharges and to submit compliance reports to Regional Water Quality Control Boards. The SWRCB has established regulations to implement these measures through water quality control plans, including the California Ocean Plan (Ocean Plan), the Regional Water Quality Control Plans (Basin Plans), and the Thermal Water Quality Control Plan (California Ocean Resources Management Program 1995).

California Public Resources Code

California recently enacted legislation (Assembly Bills 2093 and 2672) to mandate stricter pollution prevention from cruise ships. One of the new laws (AB 2093) prohibits the discharge of graywater from cruise ships into state waters, and the other (AB 2672) prohibits the discharge of treated or untreated sewage from cruise ships into state waters. These amendments are significantly more stringent than federal regulation of cruise ships and also provide the strongest state protections from cruise ship pollution in the United States.

California Coastal Act, Cal. Pub. Res. Code § 30000 et seq.

The California Coastal Act of 1976 mandates protections for terrestrial and marine habitat through its policies on visual resources, land development, agriculture, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, power plants, ports, and public works. The Coastal Commission administers various programs, including Local Coastal Programs and the Water Quality Program, which facilitates the interagency Nonpoint Source Pollution Control Program.

California Marine Invasive Species Act, AB 433

The California Marine Invasive Species Act of 2003 mandates the management of ballast water. The act reauthorized and improved upon the California Ballast Water Management and Control Act (AB 703). It requires mid-ocean exchange or retention of ballast water for vessels coming from outside the EEZ and requires vessels coming from other west coast ports to minimize ballast water discharge. Record-keeping and other compliance measures apply to all vessels entering California waters. As of March 22, 2006, all vessels must exchange ballast water when traveling between one port or place and another in the Pacific Coast Region.

California Clean Coast Act

The California Clean Coast Act, which became effective on January 1, 2006, prohibits the release from large passenger vessels (cruise ships) and other oceangoing ships (300 gross tons or more) of hazardous waste, oily bilge water, other waste, and sewage sludge into the marine waters of the state and marine sanctuaries. The Clean Coast Act also prohibits the release of graywater from cruise ships and oceangoing ships with sufficient holding capacity into the marine waters of the state. Furthermore, the Clean Coast Act requires the State

Water Resources Control Board to request the appropriate federal agencies to prohibit the release of wastes from cruise ships and oceangoing ships into state marine waters and the four National Marine Sanctuaries offshore of California.

3.5.3 Significance Criteria and Impact Methodology

Criteria to determine the significance of water quality impacts are based on federal, state, and local water quality standards and regulations. Impacts are considered to be significant if a proposed action would:

- Alter the bacterial, physical, or chemical characteristics of near-shore ocean waters (not including enclosed bays or estuaries) so that they exceed effluent limitations established under the California Ocean Plan;
- Alter the bacterial, physical, or chemical characteristics of bay or estuary waters so that they violate requirements or exceed effluent limitations established by the Basin Plans for the North Coast and the San Francisco Bay Regional Water Quality Control Board;
- Result in ocean discharges not allowed for by a NPDES permit, or which do not meet discharge criteria established under the CWA
- Conflict with guidelines provided for by the Nonpoint Source Pollution Control Program's Management Measures; or
- Otherwise violate the CWA, the MPRSA, the Oil Pollution Control Act, the APPS, the CZMA, CERCLA, RCRA, the Nonindigenous Aquatic Nuisance Prevention and Control Act, the Porter-Cologne Water Quality Control Act, new state legislation on cruise ship dumping of graywater and sewage, the California Coastal Act, California Marine Invasive Species Act, or any National Marine Sanctuary program policies.

The methodology used to determine whether a proposed or alternative action would have a significant impact on water quality is as follows:

- Review and evaluate existing and past baseline activities to identify the action's potential to impact water quality;
- Review and evaluate each proposed action and alternative to identify the action's potential to increase marine pollution or otherwise impact water quality within the sanctuaries; and
- Assess the compliance of each proposed action with applicable federal, state, or local water quality regulations, guidelines, and pollution prevention measures.

The overall methodology, including data sources and assumptions, used to conduct the water quality impact evaluation is consistent with the NOAA NEPA guidelines (NOAA 216-6).

3.5.4 Cross-Cutting Regulations – Environmental Consequences

The cross-cutting regulations identified in Table 2-1 include nearly identical changes to the regulations in all of the three sanctuaries.

The Proposed Action

Introduced Species

The proposed regulation would prohibit the release of introduced species into the three sanctuaries. Introduced species have the potential to alter ecosystem composition and function, and their introduction can indirectly impact water quality. An example of a non-native species affecting water quality is the Asian clam (*Corbula amurensis*), in the San Francisco Bay Estuary. This species concentrates selenium at a much higher rate than any native species, negatively affecting higher trophic organisms that can bioconcentrate this contaminate. Oil refineries in the region have spent large sums of money extracting selenium from the ecosystem (SFBRWQCB 2000). Large scale invasions of introduced species, such as what has occurred in the Great Lakes with zebra mussels, have proven that introduced species can successfully displace indigenous species and significantly alter entire ecosystems. In that case, the proliferation of zebra mussels throughout the Great Lakes resulted in dramatic changes in water quality (and the chemical make-up of the water), which in turn affected invertebrate and fish species composition and overall population structures.

Diseases carried by introduced species can also affect water quality. Moreover, introduced species can arguably be treated as biological pollutants, consistent with the CWA (Section 502[6]). The USEPA regulates biological pollutants under various programs of the CWA, and biological control, the use of one organism to control the population size of another organism, is seen as one of the principles of water quality control. Pathogens are treated as biological pollutants for their deleterious impacts on aquatic wildlife, and introduced species may be viewed similarly for their ability to alter and disturb marine ecosystems (SFBRWQCB 2000).

Prohibiting the introduction of non-native species to the sanctuaries under the Proposed Action would provide future beneficial impacts on the water quality of the region. This regulation may prevent the future introduction of harmful species and would provide for a variety of water quality protections, by reducing the amount of biological pollutants entering the water column.

Discharge Regulation Clarifications

The proposed new and modified regulations would provide clarifications to the existing regulations and narrow the range of allowable discharges. The following are proposed for CBNMS, GFNMS and MBNMS sanctuaries: 1) clarify the discharges from within or into (emphasis added) the sanctuaries that are prohibited; 2) clarify that exceptions to discharge rules for fish parts, chumming materials, or bait are allowed only as a result of “lawful fishing activity”; 3) remove the discharge/deposit exception for wastes resulting from meals onboard vessels, and 4) clarify that only “clean” material or other matter resulting from deck wash down, vessel engine and generator cooling water and anchor wash are allowable. All sanctuaries will continue to interpret their existing discharge/deposit regulations as prohibiting the discharge ballast water and oily wastes from bilge pumping.

Each of the proposed new and modified prohibitions under the Proposed Action would provide greater protections to the sanctuaries’ waters by reducing the volume of a variety of pollutant discharges identified in Section 3.5.1. Therefore, these proposed regulatory changes would have potential beneficial future impacts on the water quality of the sanctuaries.

Discharge – Exceptions - Marine Sanitation Devices and Graywater

Large vessels (300 gross tons) would no longer be permitted to discharge or deposit treated sewage, and graywater in the MBNMS, into the sanctuaries. These regulations would reduce potential impacts from these

vessels on the marine environment. The prohibition would reduce the quantity of anthropogenic discharges, most of which contain some amount of harmful pollutants, into the sanctuaries. By reducing harmful discharges, the Proposed Action would have potential beneficial future impacts on water quality in the sanctuaries.

For smaller vessels (less than 300 gross tons), NOAA proposes to clarify its regulations requiring the use of Type I or II MSD devices throughout the sanctuaries' waters. The clarification would make it understood that use of a Type III MSD is allowed but that discharge from a Type III MSD (a holding tank of untreated sewage) is prohibited in the sanctuaries. Additionally, the proposed regulation of requiring locks on valves preventing bypass and direct discharge of untreated sewage is meant to facilitate enforcement of this regulation by the Coast Guard to prevent accidental discharge.

The clarification of the existing regulations regarding MSDs may increase compliance and enforceability and reduce unintentional violations relating to the use of marine sanitation devices in the sanctuaries. This may result in a decrease in the discharge of raw sewage from vessels, which would benefit water quality by reducing fecal coliform bacteria, pathogens, viruses, and other pollutants in the marine environment. Since the Proposed Action has the potential to reduce the quantity of sewage discharge into the sanctuaries, it would have potential significant beneficial future impacts on water quality in the sanctuaries.

Cruise Ship Discharges and Definitions

The proposed regulations would limit cruise ship discharges in the sanctuaries to clean vessel engine cooling water, generator cooling water, and anchor wash. Cruise ships in the sanctuaries would no longer be permitted to discharge biodegradable effluents, deck wash, treated wastewater, or any other materials other than those waters named above into the sanctuaries. This regulation would greatly reduce potential impacts from cruise ships on the marine environment, including impacts resulting from sewage, graywater, oily bilge water, and ballast water. Monterey had 21 large cruise ship visits in 2004 (NOAA 2005a) and San Francisco was port to approximately 83 cruise ships in 2005. Given that large cruise ships can generate as much as eleven million gallons of waste per day, the Proposed Action has the potential to greatly reduce the quantity of anthropogenic discharges, most of which contain some amount of harmful pollutants, into the sanctuaries. By reducing harmful discharges, the Proposed Action would have potential significant beneficial future impacts on water quality in the sanctuaries.

Alternative Regulatory Actions

Cruise Ship Prohibition Alternative

This alternative would reduce (compared to existing conditions) the amount of harmful discharge that could pollute the marine environment and result in beneficial impacts on water quality. However, it would not achieve the same beneficial effects as described for the Proposed Action. This provision would allow cruise ships to discharge properly treated effluent so long as it can be shown to be in compliance with water quality standards established by the US Coast Guard and USEPA in Alaska (33 CFR 159, Subpart E). Such proof would comprise a discharge plan with associated maintenance logs, approved by NMSP prior to entry into the sanctuaries. This alternative is intended to have similar impacts on water quality as the Proposed Action; however as noted above, some MSDs do not achieve the effluent standards they are designed to meet (State of Alaska Department of Environmental Conservation 2000). Furthermore, there are concerns that the 33

CFR 159 regulations have inadequate provisions regarding monitoring and enforcement.³ Therefore, it is likely that discharge of cruise ship wastewater into the sanctuaries under this alternative could result in fewer beneficial impacts on water quality than the Proposed Action, despite being conducted under an approved discharge plan. In addition, this alternative would require more staff time, from both NOAA and the industry, to implement, monitor, and enforce compliance with the discharge standards. Given additional administrative costs of implementing this alternative, this alternative may not be feasible and is not environmentally preferred from a water quality perspective.

The No Action Alternative

Under the No Action alternative, the additional protections from introduced species and vessel discharges identified above would not be implemented. Continued discharge into the sanctuaries would likely result in an ongoing less than significant adverse impact on water quality.

3.5.5 Cordell Bank National Marine Sanctuary – Environmental Consequences

There are no proposed regulations unique to CBNMS that would have substantive impacts on water quality. Proposed regulations regarding seabed and benthic habitat protection may have negligible benefits on water quality, by preventing future activities that could disturb the seabed and cause localized turbidity. However, there are no such activities taking place now and any beneficial effect would be extremely minor.

3.5.6 Gulf of the Farallones National Marine Sanctuary – Environmental Consequences

The Proposed Action

Deserted Vessels

The proposed regulation would prohibit vessels from being deserted in the Sanctuary. Additionally, a related proposed regulation would prohibit leaving harmful matter (hazardous materials or wastes) aboard either a grounded or a deserted vessel. These two regulations would help reduce future impacts on water quality from vessel stranding or grounding incidents and minimize the potential for harmful matter, such as oil, gasoline, and marine debris, to spill into waters from deserted vessels. As such, these regulations would have potential beneficial future impacts on water quality in the sanctuaries.

Water Quality – Discharges From Outside the Sanctuary

The proposed regulation would prohibit discharging or depositing any material or other matter from beyond the boundary of the Sanctuary that subsequently enters the Sanctuary and injures a Sanctuary resource or quality. This regulation proposes the same exceptions as the cross-cutting “discharge within or into the Sanctuary” regulation and would have similar benefits to water quality as those described in section 3.5.4 for the cross-cutting discharge regulation clarifications. In addition, the Proposed Action would help reduce or eliminate potentially harmful pollutants such as oil, sewage and other hazardous chemicals from entering the sanctuaries and causing injury to Sanctuary resources or qualities. Potential upland sources of pollution include municipal wastewater outfalls, industrial outfalls, surface runoff (nonpoint source pollution), and oil and hazardous materials spills. Some examples of marine based sources of pollution include discharges from transiting and wrecked ships, and underwater pipelines). This regulation would result in potential direct

³ Rather than relying solely on the provisions of 33 CFR 159, the state of Alaska passed a ballot initiative in 2006, which established additional more restrictive discharge conditions under a new Commercial Passenger Vessel Environmental Compliance Program. The program includes a broad range of compliance measures. The costs to the state of administering the new program are covered by a berth tax that was part of the ballot initiative.

beneficial impacts on water quality, by minimizing or reducing the likelihood of potentially harmful or toxic spills or discharges that could impair and degrade Sanctuary water quality.

Oil and Gas Pipeline Clarification

The proposed regulation would limit pipelines going through the Sanctuary to those associated with facilities located adjacent to the Sanctuary rather than from any offshore oil and gas facility located outside the Sanctuary. This change would reduce the potential for water quality impacts from pipeline construction, and reduce risk of oil or gas spills or other materials being deposited into Sanctuary waters. Reducing the risk of discharge of harmful matter into the marine environment would result in a beneficial impact on water quality in the Sanctuary.

No-Anchoring Seagrass Protection Zones

Seagrass beds serve as natural buffer zones in protecting against coastal erosion caused by storms and wave action, thereby maintaining sediment stability and water quality. Seagrass also serves as a filter for pollutants carried downstream through the watershed by trapping sediments and nutrients. This filtering effect contributes to improved water quality in the nearshore environment, particularly in sensitive estuarine environments and embayments.

Vessel anchoring in seagrass can have both direct and indirect effects on water quality. The physical act of anchoring in soft sediment can cause localized turbidity, which decreases water quality in the immediate vicinity of the seagrass. This direct effect on water quality is usually short term and localized, however seagrass is very sensitive to changes in water quality and could be impacted by continued turbidity caused by anchoring. Turbidity clouds the photic zone, thus limiting the growth of seagrass. Long term impacts can result when anchoring disturbs the seabed, creating a scar that can be deepened by wave action and associated erosion. This scarring can reduce the size of seagrass beds, thus reducing the ability of the seagrass to function as a sediment stabilizer and water column filter.

By prohibiting anchoring a vessel in a designed seagrass protection zone in Tomales Bay, the potential for adverse anchoring effects described above would be reduced or eliminated in the zones. Therefore, the proposed regulation would result in both short- and long-term beneficial effects on nearshore water quality.

Alternative Regulatory Actions

There are no regulatory alternatives for GFNMS that would have any discernable impacts on water quality.

The No Action Alternative

The No Action alternative would continue to manage the Sanctuary as it is currently managed, and no additional protections from deserted vessels and discharges from beyond the Sanctuary boundaries would be provided. The No Action alternative would maintain the status quo and would not provide the Sanctuary with enhanced protections for water quality.

3.5.7 Monterey Bay National Marine Sanctuary – Environmental Consequences

The Proposed Action

Deserted Vessels

As in GFNMS, the proposed regulation would prohibit vessels from being deserted in the Sanctuary and would prohibit leaving harmful matter (hazardous materials or wastes) aboard a deserted vessel. These proposed prohibitions would have the same potential beneficial impacts on water quality, as described for GFNMS.

Davidson Seamount

Incorporating Davidson Seamount into the boundaries of MBNMS would increase protection of water quality around the seamount by applying both existing sanctuary discharge regulations and proposed discharge prohibitions analyzed in other sections of this FEIS. Although current discharge practices are not a known concern in the seamount area, the inclusion of the seamount in the sanctuary would ensure that any future uses would not contribute to water quality degradation. Limiting the types of discharge in the seamount area would result in a minor beneficial effect on water quality.

Motorized Personal Watercraft

The proposed regulation would redefine “motorized personal watercraft” such that the definition would be more inclusive, so that all MPWC, regardless of carrying capacity, would be restricted from use in the Sanctuary, with the exception of the four existing and one new designated zones. This Proposed Action would reduce the number of MPWC used in the Sanctuary and limit the remaining MPWC use to the zones. This would have minor beneficial future impacts on water quality, particularly in the near-shore area where MPWCs are predominately used. Moving the use of MPWC out of the surf zone would also reduce the incidences of groundings that sometimes result in the discharge of oil and gas into the intertidal or beach areas.

As described in Section 3.5.1, water quality concerns related to use of MPWC include the discharge of unburned fuel into the water while engines are running and the release of hydrocarbons from oil and gasoline tanks in flipping incidents. Contaminants include methyl tertiary butyl ether (MTBE), an oxygenate added to gasoline, and polycyclic aromatic hydrocarbons (PAHs), by-products of the combustion process. Reduced use of MPWC would reduce the amount of potential contaminated discharges, thus providing a minor beneficial impact on marine water quality.

Dredge Disposal—SF-12

The proposed regulation modification would adjust the location of the SF-12 Dredge Disposal Site to the head of the Monterey Canyon (see Figure 2-5). No increase in the volume of dredge material is part of this proposed action. The purpose of this proposal is to relocate the disposal site to its original intended destination approximately 900 feet farther offshore than its current location and in deeper waters, which would reduce impacts on local beaches and nearby harbors and estuaries caused by current disposal in the nearshore subtidal area.

Movement of the site would reduce siltation and increase the quality of seawater entering the Moss Landing Marine Laboratories seawater intake system. Placement of the material close to the head of the canyon should increase the flow of sediment into the deep sea fan, as has been observed by USGS researchers.

Movement of the SF-12 dredge disposal site from its existing location to the proposed site would result in an increase in the turbidity of the water column in the area associated with the new dredge disposal. However, the material would likely be carried by turbidity currents farther down into the canyon and distributed in the deep water environment, rather than concentrated in the nearshore zone. Movement of the site would reduce existing impacts associated with dredged sediment being washed into the surf zone at Moss Landing and deposited in the beach, harbor and estuary areas. An increase in the percentage of material that enters the Monterey Canyon will reduce sedimentation in the nearshore benthic areas north of the canyon, where much of the disposal occurs at this time. Reduced sedimentation would improve local water quality conditions.

The Proposed Action would have slightly adverse impacts for the water quality at the new site location, but it would have beneficial future impacts on water quality in the current location of the dredge site. The US Army Corps of Engineers and USEPA issued a special public notice, in December 2005, announcing the correction of this dredge disposal location (US Army Corps and USEPA 2005). In their announcement, the agencies concurred that environmental benefits would result from the relocation, including a reduced likelihood that suspended sediments will enter the upper water column. As the expected beneficial impacts on water quality in the surf zone are greater than the expected minor adverse impacts at Monterey Canyon, the Proposed Action would have an overall beneficial future impact on water quality in the Sanctuary.

Dredge Disposal—Monterey and Santa Cruz

The proposed regulation modification would also identify, codify, and recognize the two dredge disposal sites at Twin Lakes State Beach (Santa Cruz Harbor) and Monterey Harbor. These sites have not been consistently identified by coordinate location or have been identified by different descriptions. The use of these two dredge disposal sites predates the designation of the Sanctuary, and the two sites have been recognized as sites approved for dredge disposal subject to the conditions set forth in permits approved by USACE and USEPA subject to MBNMS authorization. Both sites are currently being used for dredge disposal.

The Proposed Action is considered a technical change with no environmental or socioeconomic impact. Any modification to the volume or location of dredge material would require a separate permit process and environmental review. The Proposed Action would have no impacts on water quality in the Sanctuary.

Alternative Regulatory Actions

The alternative would have the same impacts on water quality as identified in the Proposed Action, with the following minor differences:

Davidson Seamount Alternatives

The two alternatives for inclusion of the Davidson Seamount into the boundaries of MBNMS would result in the same beneficial impacts on water quality as described for the Proposed Action. The circular boundary alternative would provide a slightly larger area for inclusion than the Proposed Action and therefore result in a slightly larger area subject to discharge limitations. Limiting discharge over a larger area would provide slightly increased protection of water quality compared to the Proposed Action. The NMSA alternative would provide the same sized area for inclusion the Proposed Action, but would propose that the NMSA regulate bottom contact gear under the NMSA. This regulation would prevent physical disturbance to the benthic environment, but would only be expected to have negligible benefits beyond the Proposed Action. Therefore, these alternatives would both result in the same beneficial impacts on water quality as described for the Proposed Action.

Motorized Personal Watercraft Alternative

The alternative action would eliminate the four designated MPWC-permitted use zones, thereby eliminating use of MPWC in the entire Sanctuary. This would result in a reduction in hydrocarbon releases in the surf zone (in both the air and water) in the areas where MPWC are currently used as well as in the rest of the Sanctuary. By further reducing the potential for releases, this alternative would have a slightly greater beneficial impact on water quality than the Proposed Action.

The No Action Alternative

The No Action alternative would continue to manage the Sanctuary as it is currently managed, and no additional protections from deserted vessels and MPWC discharges and spills would be implemented. The No Action alternative would maintain the status quo and would not provide the Sanctuary with enhanced protections for water quality.

3.5.8 Cumulative Impacts

The ROI for cumulative impacts is the same as the ROI described above. This section addresses the cumulative effects on water quality in the sanctuaries from land-based pollution sources, such as coastal development, storm water and sewage, agriculture, and industrial activities, and marine-based pollution, such as vessel discharges, ports and marinas, and oil spills.

Adverse impacts on water quality in the sanctuaries are largely a consequence of increasing coastal populations and developments. Coastal population increases mean increasing levels of sewage and contaminated effluent are discharged by point and nonpoint sources into the marine environment. Sewage treatment plants can release low levels of heavy metals, pesticides, and nutrients, as well as fresh water, into receiving water. During storms, San Francisco, which has a combined sewer overflow system, may discharge raw sewage into the ocean due to lack of sufficient treatment capacity. Stormwater discharge is becoming more of a concern with population pressures because the existing sewage treatment infrastructure is becoming more overloaded and subject to more frequent discharges. For example, roadway development results in increased levels of hydrocarbon-contaminated stormwater runoff. Construction of new desalination plants, which impact salt concentrations (brine discharge), turbidity, temperature, oxygen levels, and chemical make-up (chlorine, metals, and other chemicals are used in the treatment process) of the receiving environment, have significant water quality impacts (California Coastal Commission 1993). There are several water desalination plants proposed in the ROI, including adjacent to Monterey Bay and in coastal Marin County, however none have received all the needed approvals and permits to actually begin construction.

Nonpoint pollution sources include agriculture and industrial activities. Agricultural runoff contains high levels of nutrients and pesticides. Much of the coastal area adjacent to the ROI is developed for agriculture, particularly in the Salinas Valley, near Watsonville, coastal San Mateo County, and the area around Tomales Bay. As agriculture intensifies in the watersheds adjacent to the sanctuaries, adverse impacts on the water quality may increase.

Development of marinas, piers, and ports also contributes to increases in water pollution, as recreational boats and vessels have localized releases in these areas. Pollutants may include oil, fuel, detergents, paint, and sewage (McCoy and Johnson 1995). The disposal of dredged and landslide materials in the sanctuaries have water quality impacts associated with suspended sediments and contaminated sediments. Increasing vessel traffic, including recreational boats, MPWC, cargo vessels, and cruise ships, may have increased impacts on water quality, including the increased risk of oil spills, as discussed earlier. Finally, the potential development

of submerged cables in the sanctuaries would have water quality impacts, including turbidity issues during the laying and removal stages, and release of drilling lubricants.

Implementation of the FMPs will contribute to the ROI's regional ecosystem health, including water quality, by applying the various protective action plans in CBNMS, GFNMS, and MBNMS. Cross-cutting management associated with ecosystem monitoring will provide a better understanding of water quality along coastal northern/central California and what, if any, improvements could be made. GFNMS and MBNMS action plans specific to water quality would have similar beneficial impacts on water quality. Such action plans would include the Estuarine and Nearshore Environments, Open Coastal Environment, and Additional Areas action plans in GFNMS and the Beach Closures and Microbial Contamination, Cruise Ship Discharges, and Water Quality Protection Program Implementation action plans in MBNMS. The Vessel Spill action plan would also have a beneficial impact on water quality within GFNMS by managing the likelihood of such spills and the effectiveness of spill responses. The MBNMS Desalination, Harbors and Dredge Disposal, and Cruise Ship Discharges action plans would provide beneficial impacts on water quality by imposing restrictions on discharges.

The Proposed Action

The Proposed Action would not contribute to any of the cumulative adverse trends because the Proposed Action would result in only beneficial impacts on water quality by establishing additional restrictions on harmful discharges. The Proposed Action would contribute to cumulative beneficial impacts, and would help mitigate any ongoing adverse cumulative trends on water quality resulting from ongoing development, sewage discharge, and runoff.

Alternative Regulatory Actions

The only alternative regulatory actions that would affect water quality would be the cruise ship discharge prohibition and prohibition of MPWC use in MBNMS. Although beneficial effects would occur, cumulative discharges would be greater and water quality benefits slightly lower with the cruise ship discharge alternative, compared to the Proposed Action, because cruise ships would be allowed to discharge treated wastewater. Cumulative water quality impacts associated with the alternative MPWC prohibition would be similar to those described under the Proposed Action, with an increase in the level of beneficial impacts due to the decreased use of MPWC afforded by this alternative.

The No Action Alternative

The No Action alternative would maintain the status quo of sanctuary management. No additional water quality protections from proposed regulations would occur. There would be cumulative adverse impacts on water quality from development, sewage discharge, and various forms of runoff, among other things. There would also be beneficial impacts on water quality from existing regulation and management efforts, including implementation of the FMPs. Because the No Action alternative would maintain sanctuary management as status quo, the No Action alternative would not achieve the same level of beneficial effects as described for the Proposed Action.

3.6 COMMERCIAL FISHERIES

This section addresses both commercial fishing resources and socioeconomic effects on the commercial fishing industry. The ROI for commercial fisheries consists of the commercial fish resources in the sanctuaries and the proposed Davidson Seamount addition to the MBNMS, the commercial fishery vessels operating in the sanctuaries, and the ports where those vessels land their fish.

Primary information sources include a report prepared by Ecotrust (Scholz et al. 2005) for the JMPR, *Socioeconomic Profile of Fishing Activities and Communities Associated with the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries* (Scholz et al. 2005), a report prepared by California Sea Grant, *Fishery Resources of the Monterey Bay National Marine Sanctuary* (Starr, Cope and Kerr 2002), and various CDFG databases that the reports draws on—notably the commercial fisheries landings data.

3.6.1 Regional Overview of Affected Environment

This section presents information for the three-sanctuary area, which was derived from the reported landings that occurred in the ports adjacent to the three sanctuaries. Due to the lack of specificity and accuracy of the spatial information in the CDFG landing receipts and logbook datasets, which contain information on fishing locations for only a fraction of the fleet, it is impossible to infer what proportion of fishing vessels operates in the waters of each sanctuary. Because the proportion of the fleet cannot be identified from these datasets, the landings values are in many cases an overestimation of the values associated with the sanctuary waters. They are, however, an accurate descriptor of the pounds landed and ex-vessel revenues (the payment received at the point of landing for the catch) generated in the ports (Bodega Bay to Morro Bay) adjacent to the sanctuary waters. These ports have been classified into four groups: Bodega Bay, San Francisco, Monterey, and Morro Bay area ports (Table 3-5). It should be noted that many of the cities listed in Table 3-5 are not points of initial landing but rather ultimate destinations for the landed product; fishermen are required to complete transportation receipts to move harvested resources from the point of initial landing to remote sites.

Table 3-5
Listing of Individual Ports by Port Group

For each port group, the top ports in terms of ex-vessel revenue are bolded. The number within the parentheses indicates the average percent of ex-vessel revenue per port group (1999-2003)

Bodega Bay Area	San Francisco Area	Monterey Area	Morro Bay Area
Bodega Bay (90%)	Alameda	Newark	Aptos
Bolinas	Alamo	Oakland	Big Creek
Corte Madera	Albany	Oakley	Big Sur
Dillon Beach	Alviso	Pacifica	Capitola
Drakes Bay	Antioch	Palo Alto	Carmel
Forrest Knolls	Benicia	Pescadero	Freedom
Greenbrae	Berkeley	Pigeon Point	Gilroy
Hamlet	Brentwood	Pinole	Marina
Healdsburg	Burlingame	Pittsburg	Mill Creek
Inverness	Campbell	Pleasanton	Monterey (22%)
Jenner	China Camp	Point Montara	Monterey Area
Kentfield	Concord	Point San Pedro	Moss Landing (70%)
			Arroyo Grande
			Atascadero
			Avila (30%)
			Baywood Park
			Cambria
			Cayucos
			Grover City
			Morro Bay (69%)
			Nipomo
			Oceano
			Pismo Beach
			San Luis Obispo

Table 3-5
Listing of Individual Ports by Port Group (*continued*)

For each port group, the top ports in terms of ex-vessel revenue are bolded. The number within the parentheses indicates the average percent of ex-vessel revenue per port group (1999-2003)

Bodega Bay Area	San Francisco Area	Monterey Area	Morro Bay Area
Marconi	Crockett	Princeton (31%)	Pacific Grove
Marshall	Daly City	Redwood City	Pebble Beach
Mill Valley	Danville	Richmond	Salinas
Muir Beach	El Sobrante	Rio Vista	Santa Cruz (7%)
Nicasio	Emeryville	Rockaway Beach	Seaside
Novato	Fairfield	Rodeo	Soquel
Occidental	Farallon Is	San Bruno	Watsonville
Petaluma	Foster City	San Francisco (54%)	Willow Creek
Point Reyes	Fremont	San Jose	
San Quentin	Glen Cove	San Leandro	
San Rafael	Hayward	San Mateo	
Santa Rosa	Lafayette	Sausalito (10%)	
Sebastopol	Livermore	South San Francisco	
Sonoma	Los Altos	Suisun City	
Stewarts Point	Martinez	Sunnyvale	
Stinson Beach	Martins Beach	Vacaville	
Tiburon	Mcneers Point	Vallejo	
Timber Cove	Moss Beach	Yountville	
Tomales Bay	Mountain View		
Windsor	Napa		

Source: Scholz et al. 2005

Fishing Vessels

Table 3-6 shows the number of commercial fishing vessels that reported catches in each of the major port groups that are adjacent to the sanctuaries (Bodega Bay area, San Francisco Bay area, Monterey area and Morro Bay). Data from 1981-2003 show that an average of 2,100 commercial fishing vessels made landings in the ports adjacent to the three sanctuaries on an annual basis. These are unique vessels, spanning all gear types. In 2003 only about half of that average, 1,114 made landings in the three-sanctuary area (Scholz et al. 2005).

Due to intensive fishing of deep-water species (particularly groundfish) in the 1980s, many fish populations declined between 1990 and 2000. In response, fisheries management became more restrictive, and the number of fishing vessels in the three-sanctuary area decreased significantly between 1996 and 2003. For example, the five major ports near MBNMS (Monterey, Moss Landing, Santa Cruz, Avila and Morro Bay) experienced an overall 40 percent decline in the number of operational commercial vessels from 1980 to 2000 (Starr, Cope and Kerr 2002), a trend that is mirrored in ports associated with all three sanctuaries (Ecotrust 2004). Figure 3-2 illustrates the trends in ports adjacent to the three-sanctuary area over time, compared to the statewide trends (Scholz et al. 2005 and Starr et al. 2002).

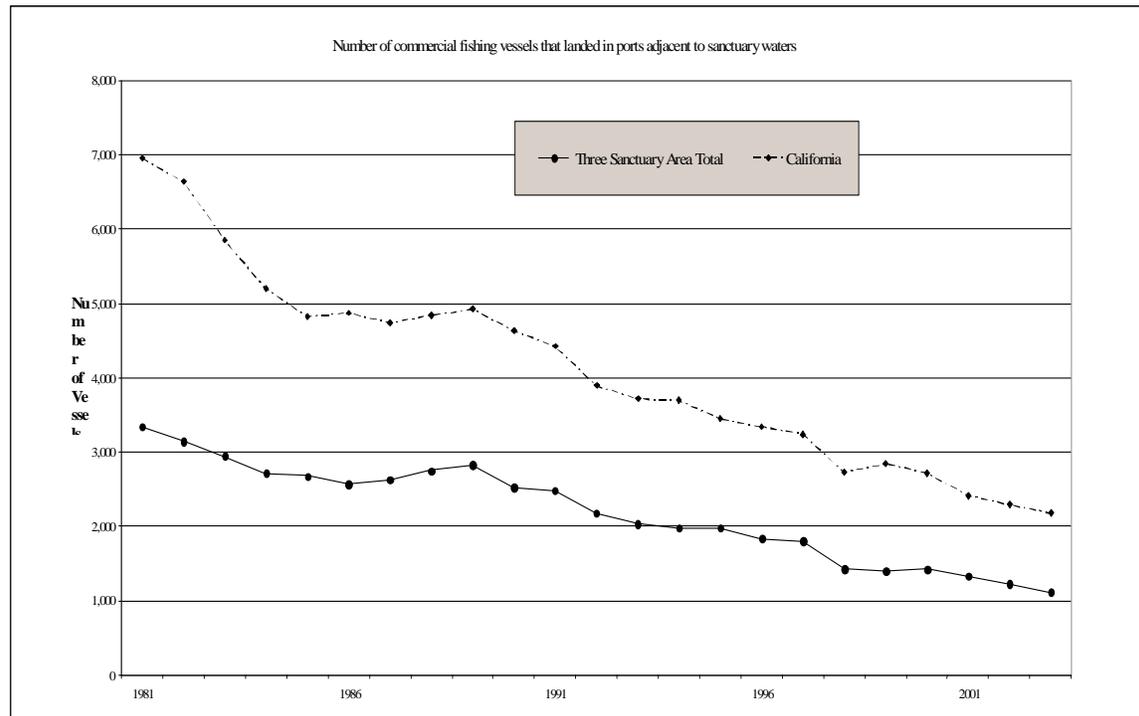
Table 3-6
Number of Commercial Fishing Vessels Reporting
Catches per Major Port Group adjacent to the Three-Sanctuary Area

Year	Bodega Bay Area	San Francisco Area	Monterey Area	Morro Bay Area	Total
1981	1,048	1,511	1,164	551	3,340
1982	1,081	1,506	1,042	508	3,146
1983	673	1,397	1,172	485	2,949
1984	788	1,448	983	430	2,720
1985	888	1,418	910	405	2,678
1986	810	1,270	834	456	2,566
1987	1,024	1,320	807	435	2,630
1988	1,082	1,422	785	445	2,749
1989	957	1,523	843	440	2,831
1990	798	1,216	836	490	2,521
1991	785	1,197	776	493	2,485
1992	634	1,064	688	514	2,184
1993	575	997	719	494	2,033
1994	601	973	549	498	1,982
1995	570	942	662	491	1,979
1996	401	844	668	452	1,838
1997	385	885	661	431	1,800
1998	339	706	454	352	1,424
1999	357	699	446	295	1,394
2000	361	697	540	332	1,421
2001	338	631	456	314	1,331
2002	297	585	384	254	1,222
2003	308	479	343	232	1,114

Source: Scholz et al. 2005.

Notes: The total column is the unique number of vessels that reported catch in the three-sanctuary area. There are many cases where vessels make landings in multiple port group areas during a given year, hence the reason the total is less when adding the four port group totals.

Figure 3-2 Number of Commercial Fishing Vessels Landing Catches Adjacent to the Three-Sanctuary Area Compared to All of California



Source: Scholz et al. 2005.

Ports

Fishing vessels catching fish in the three sanctuaries come from all over California, including Morro Bay, Dillon Beach, Santa Barbara, San Diego, Monterey, Moss Landing, Santa Cruz, Princeton Harbor/Half Moon Bay, San Francisco Bay ports, Tomales Bay, Bodega Bay, and Fort Bragg. Most fish harvested in the sanctuaries are landed at San Francisco Bay ports, Princeton/Half Moon Bay, Fort Bragg, and those in Monterey Bay (Santa Cruz, Moss Landing and Monterey) (Scholz et al. 2005; Starr, Cope and Kerr 2002).

Gear

CDFG identifies 64 different fixed and mobile gear types; many of these are subtle variations of the basic gear types, the latter of which account for the majority of fishing revenues. The following basic gear types are also the most frequently used gear types used in the three sanctuaries (Scholz et al. 2005; Starr, Cope and Kerr 2002):

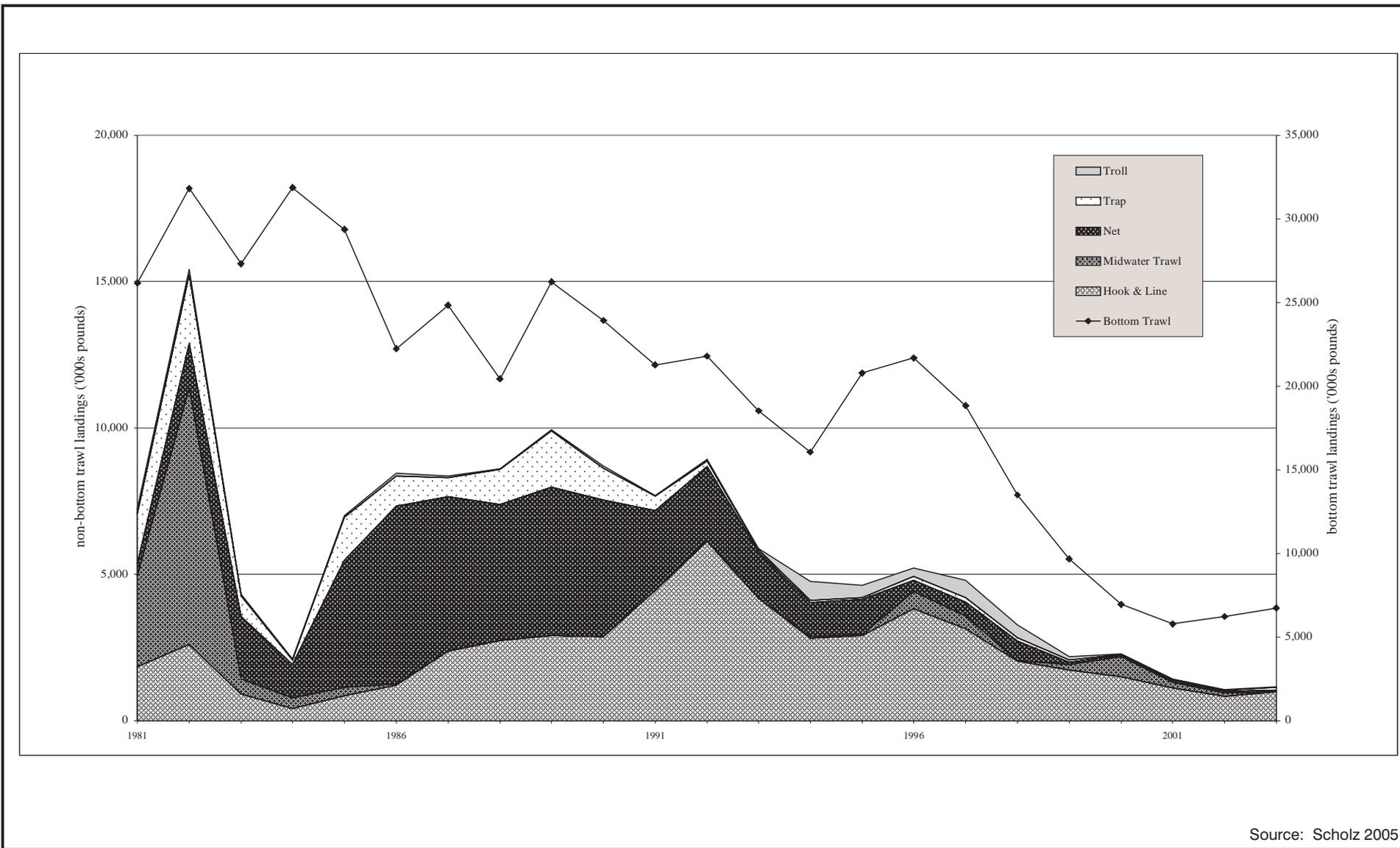
- Trolling for salmon, groundfish, or tuna;
- Crab traps;
- Purse seines;
- Set longlines;
- Other hook-and-line;

- Trawl nets;
- Fish traps;
- Set gill nets; and
- Jigs.

It should be noted that these gear types have undergone considerable fluctuations in the extent to which they have been used over time. As Figure 3-3 illustrates, in the groundfish fishery both mobile (trawl) and fixed (hook-and-line, jig) gear has been used, but the prevalence of the former has declined considerably over the last 23 years. Other types of gear—notably hook-and-line gear—peaked in the mid-1990s. It should be noted that declines are not entirely due to decline in fish populations; declines are also linked to restrictions placed on the fisheries by federal regulations.

One fishery that is particularly pertinent to the regulatory measures considered in this EIS is the groundfish trawl fishery. Using the set and haul points recorded in CDFG logbooks, it is possible to summarize the cumulative tow intensity for the six-year period from 1997-2002 in terms of number of tows per unit area, as shown in Figures 3-4 and 3-5. As should be apparent, there are distinct areas of higher trawl intensity in all three sanctuaries.¹

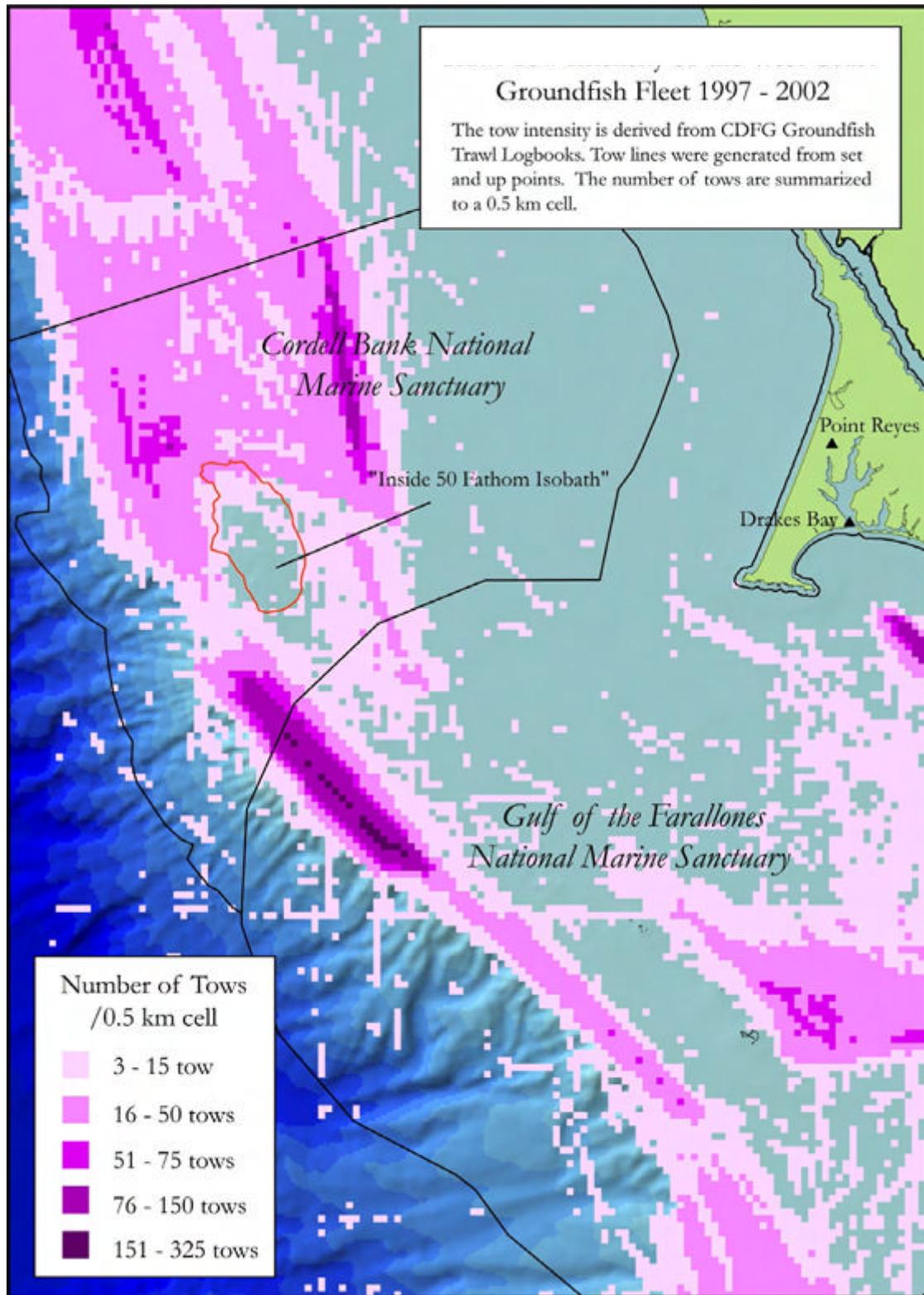
¹ It should be noted in reviewing the trawl data in Figures 3-4 and 3-5 that tows generally follow fathom contours rather than straight lines connecting the set and up points. Also, it is common occurrence for vessels to start at one location, reach a half way point and turn around to return near the starting point for the end of the tow. Therefore, tows that appear to be short (due to the proximity of the set and up points) may not necessarily be that short.



Source: Scholz 2005

Groundfish Gear Evolution, 1981-2003

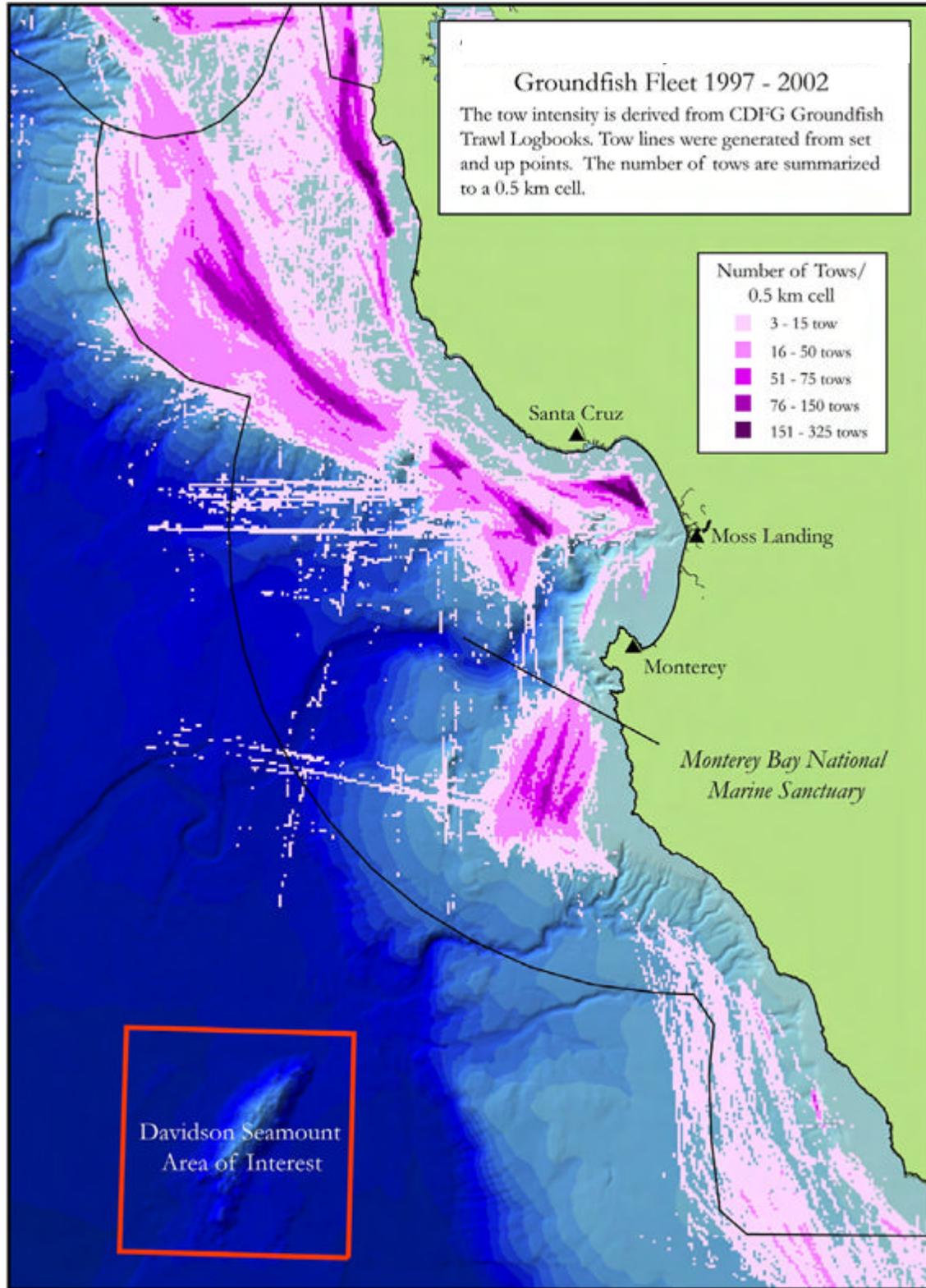
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Source: Scholz 2005

Trawl Intensity in Cordell Bank National Marine Sanctuary & Gulf of the Farallones National Marine Sanctuary

Northern/Central California



Source: Scholz 2005

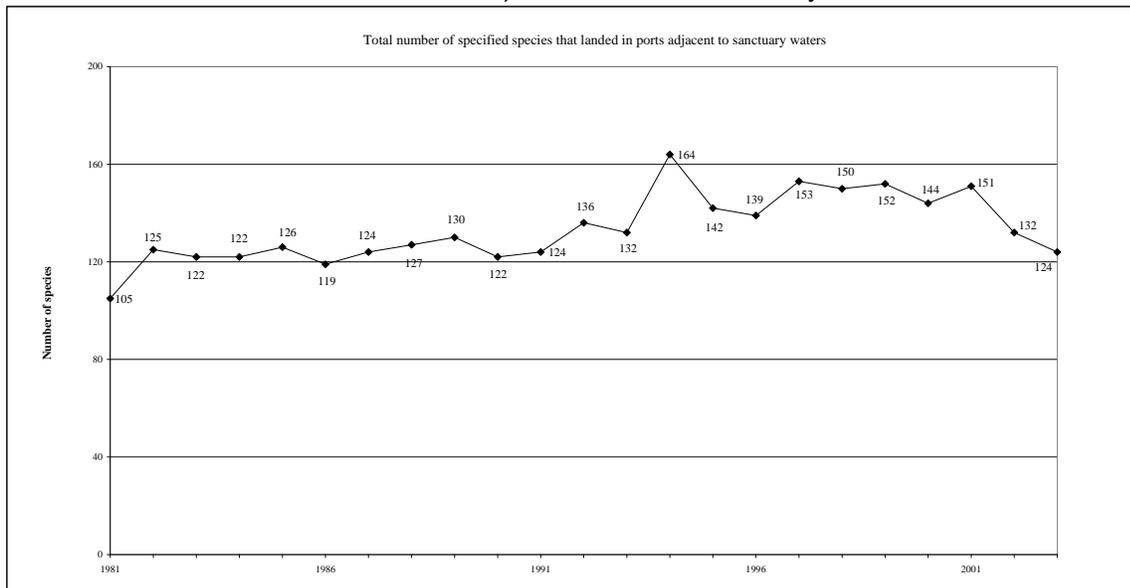
Trawl Intensity in Monterey Bay National Marine Sanctuary

Northern/Central California

Species Harvested

An estimated total of 300 different fish species have been harvested and landed in the three-sanctuary study area over the last 23 years, and these species can be grouped into the following five categories: invertebrates (crab, shrimp, prawn, abalone, octopus, squid, sea urchin), groundfish (rockfish, flatfish, roundfish, shark, skate), small coastal pelagic species (anchovy, squid, bonito, sardine, saury, and mackerel), highly migratory species (tuna, shark, billfish/swordfish, dorado), and salmon (chinook and coho) (Scholz et al. 2005). As presented in Figure 3-6, the annual number of species harvested in the three-sanctuary area averaged 130 species over the last 23 years, the fewest being harvested in the 1980s, peaking in 1994 at 164.

**Figure 3-6 Total Annual Number of Species Landed
In Ports Adjacent to Three-Sanctuary Area**



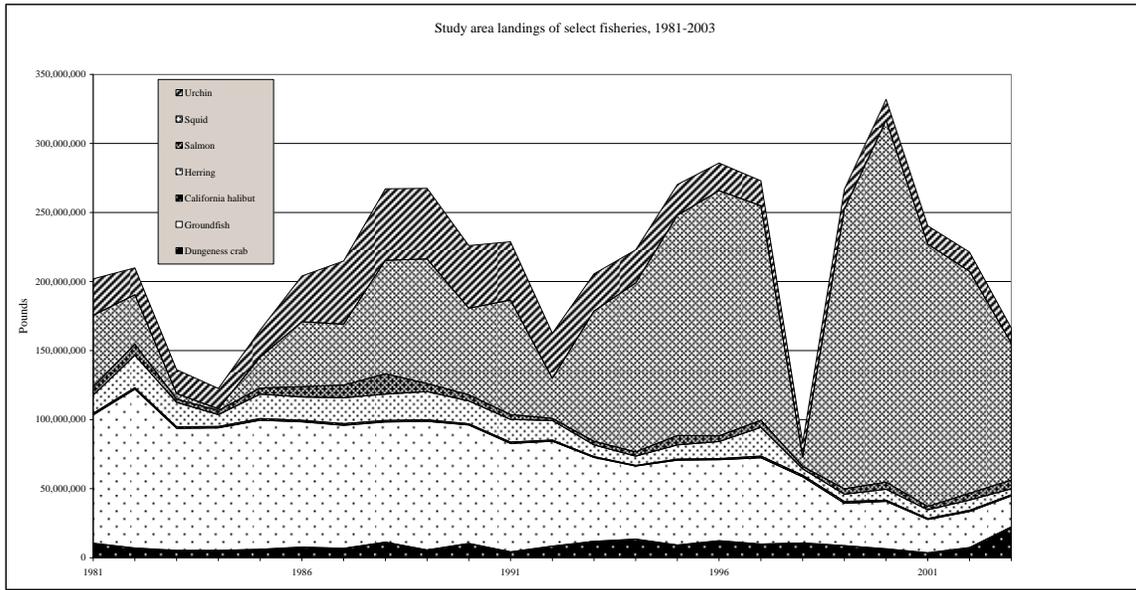
Source: Scholz et al. 2005.

Finer scale data on recent trends in target species were available for CBNMS and GFNMS, the combined study area of the 2005 Ecotrust report (Scholz et al., 2005), as illustrated in Figure 3-7. Groundfish and herring historically dominated landings from Bodega Bay to Half Moon Bay (although the majority of herring landings came from San Francisco Bay, which is not within marine sanctuary boundaries). In more recent years squid, salmon and Dungeness crab have accounted for the greatest quantity of fish landed. These variations are a result of market fluctuations, environmental factors, and regulatory conditions (Scholz et al. 2005).

Catch Values and Quantities

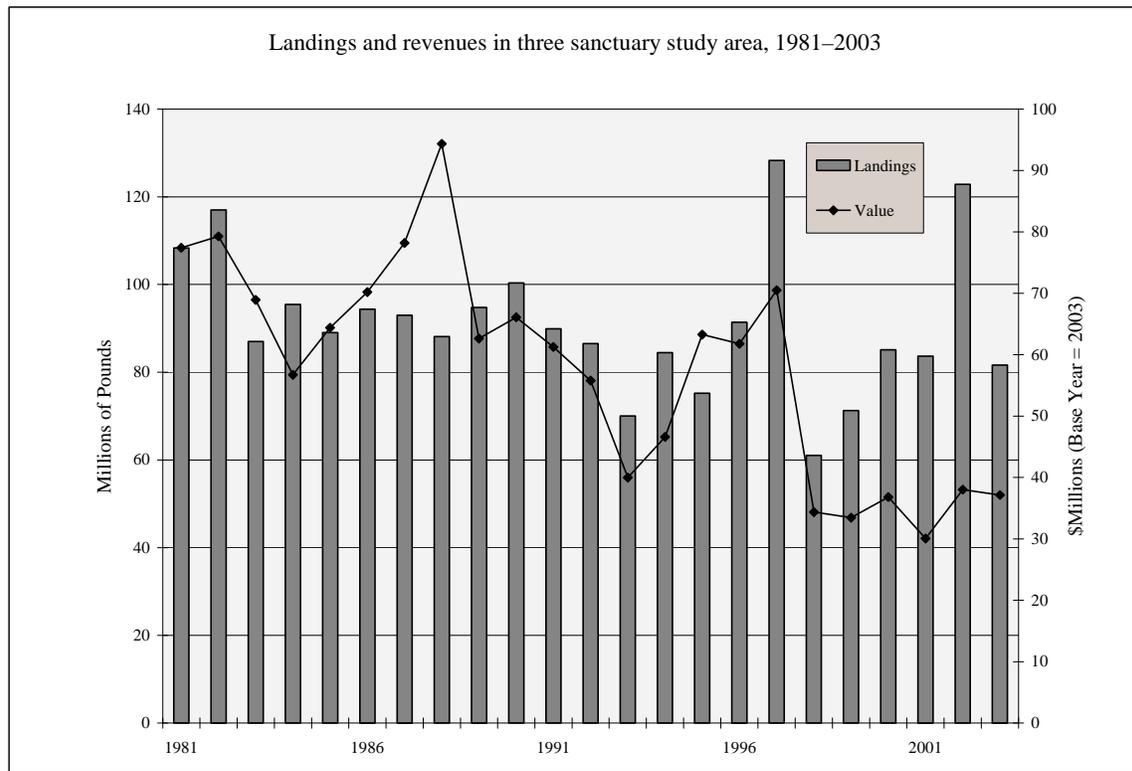
Figure 3-8 presents total catch amount and ex-vessel values for the ports adjacent to the three sanctuaries. The commercial fishing industry derived most economic value from the three-sanctuary area in 1988, with 88 million pounds caught and combined ex-vessel revenues of \$94.3 million. After 1997, there was a precipitous drop in ex-vessel revenue, which over the next six years averaged around \$35 million a year and bottomed out at \$30 million in 2001. Over that same time period, the total catch experienced a steep decline in 1998, with a 50 percent reduction from 128 million pounds in 1997 to 61 million pounds, but rebounded to roughly the same totals in the mid-1990s and then peaked again in 2002 at 123 million pounds. The large contrast between the ex-vessel revenue and total catch landed indicates a probable shift to relatively higher volume, but lower value fisheries, or a decrease in the average value (per pound) of fish caught in California.

Figure 3-7 GF & CB Sanctuary Area Landings of Select Fisheries, 1981-2003



Source: Scholz et al. 2005.

Figure 3-8 Total Landings and Ex-vessel Revenue Reported to the Ports Adjacent to the Three-Sanctuary Area, 1990-2003



Source: Scholz et al. 2005.

Table 3-7 summarizes CDFG data for all landings and value by species group for the three-sanctuary area for 1990 and 2000. The table is sorted according to the highest value fisheries and captures the top ten species or species groups for each of the years. There were large shifts in the landed pounds and value of many species over this 10-year time period. Most notably, groundfish, salmon, and Pacific herring values declined sharply, even though they were in the top four in both years. In any year, total landings and ex-vessel value of a fishery depend on stock abundance and availability, market factors, and existing management regulations.

Table 3-7
Top Ten Ex-Vessel Revenue Producing Species\Species Groups Reported to the
Ports Adjacent to the Three-Sanctuary Area, Pounds and Ex-vessel Value, 1990 and 2000

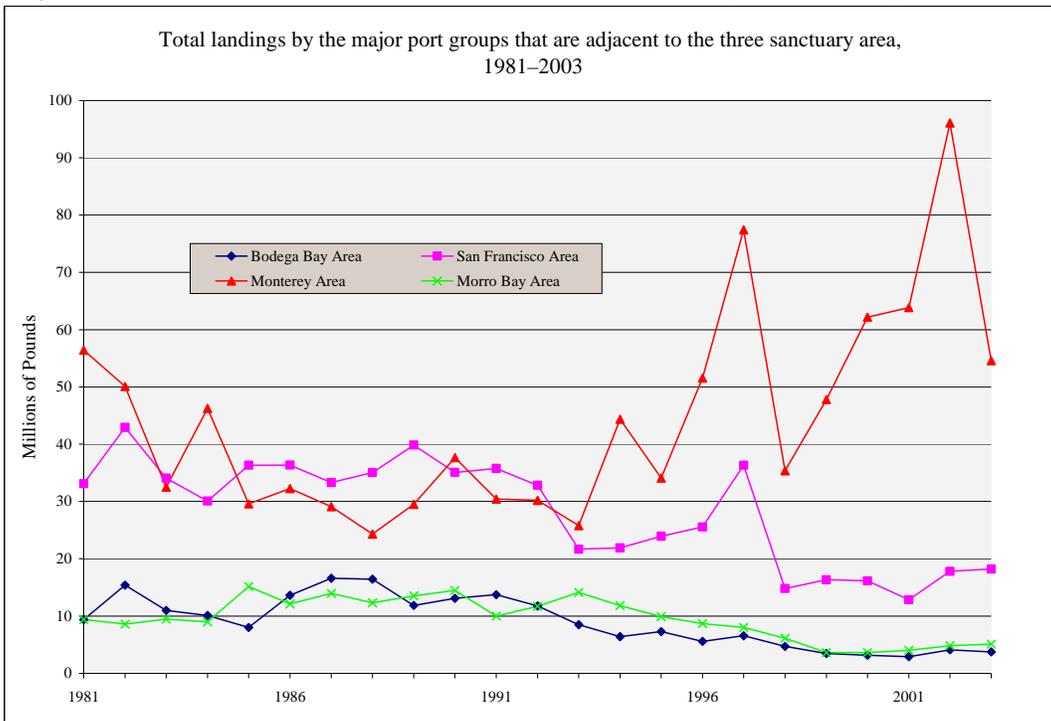
<i>Species Group</i>	2000		<i>Species Group</i>	1990	
	<i>Pounds</i>	<i>Value</i>		<i>Pounds</i>	<i>Value</i>
Salmon	4,689,438	\$9,973,648	Groundfish	36,225,744	\$19,140,530
Groundfish	9,250,615	\$7,570,581	Salmon	3,456,503	\$13,388,248
Dungeness Crab	1,329,700	\$3,742,241	Herring	16,381,958	\$12,176,023
Herring	7,843,709	\$3,113,885	Swordfish	918,690	\$4,492,836
Squid	15,708,714	\$2,051,354	Urchin	5,573,484	\$3,839,533
Prawn	220,261	\$1,969,220	Dungeness Crab	1,121,663	\$3,268,920
Tuna	1,862,491	\$1,882,763	Squid	17,739,081	\$2,077,458
Halibut	392,512	\$1,089,681	Halibut	410,674	\$1,372,716
Sardine	25,060,727	\$1,037,103	Tuna	737,540	\$922,628

Source: Scholz et al. 2005.

Figure 3-9 shows the total pounds of fish caught in each of the major port groups adjacent to the three sanctuaries from 1981 to 2004. Over the last ten years the total catch landed in the Monterey area ports has risen to double the catch being reported in San Francisco area ports, and peaked twice, once in 1997 (77 million lbs.), and again in 2002 (96 million lbs.). The increase in catch in the Monterey area was due to the harvest of pelagic species, including Pacific sardine and market squid. While the catch of small pelagic fishes and squid increased, the catch for all other species combined decreased nearly fifty percent (Starr, Cope and Kerr 2002).

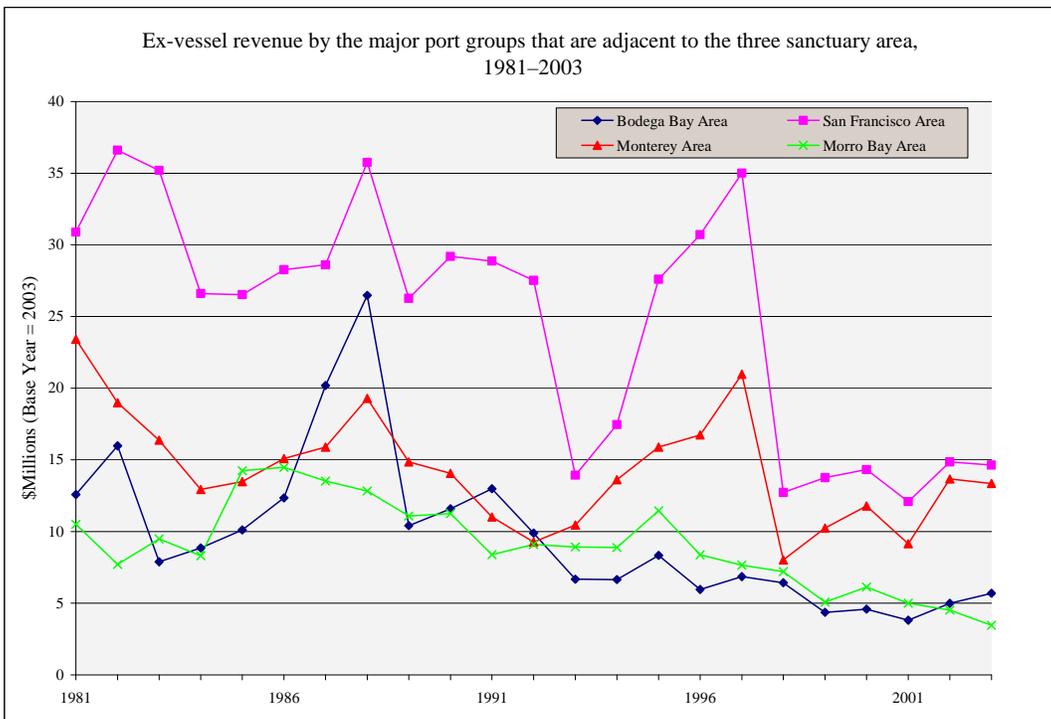
Figure 3-10 presents trends in ex-vessel revenues associated with fish catches. Since 1981, catch values were greatest during the early 1980s and the mid-1990s. The San Francisco area ports have consistently had the highest commercial fishing value of the four port groups. In 1997, the San Francisco area ports had ex-vessel revenues of \$35 million. In that same year, the ex-vessel revenues of the catch landed in the other three port groups, Bodega Bay, Monterey, and Morro Bay combined, equaled the ex-vessel value of the catch landed in the San Francisco area ports (Ecotrust 2004). The increase in catch in the San Francisco area just prior to 1997 and the sharp decline afterwards was largely due to the harvest of Pacific herring from San Francisco Bay. By contrast, the peak in 1988 is attributable to the salmon boom, which produced roughly \$15 million in ex-vessel revenue, and accounted for 40 percent of the total value of fish landed in the San Francisco area that year.

Figure 3-9 Total Pounds of Fish Landed in Each of the Major Port Groups, 1981–2003



Source: Scholz et al. 2005.

Figure 3-10 Ex-vessel Revenue from Fish Landed in Each of the Major Port Groups, 1981–2003



Source: Scholz et al. 2005.

Notes: The figures for 1983 are not reliable and likely underestimate actual revenues, since even after estimating revenues for landing receipts where no price information was available, about 25 percent of records show no revenues at all.

Environmental Factors

As discussed in Section 3.4, Oceanography and Geology, the oceanic waters off the coast of California experience environmental fluctuations, including the California Current fluctuations and ENSO events. These natural variations result in changes in ecological relationships and can alter the primary species or species groups that are harvested. For example, the position and intensity of the Aleutian Low Current determines the influence of primary production in the California Current, which in turn affects zooplankton abundance, which in turn affects fish production in the Alaska Current. During years when a more intense Aleutian Current is present, the Alaska Current is productive, and the California Current is not as productive. During ENSO events, California waters experience increased water temperatures and decreased salinity, and due to these factors, there are often year-class failures for many species, particularly squid, rockfish, and halibut populations (Starr, Cope and Kerr 2002).

Aquaculture/Mariculture

NOAA defines aquaculture as “the propagation and rearing of aquatic organisms in controlled or selected aquatic environments” (NOAA 2006). Aquaculture can be for commercial, recreational, or public purposes. It includes such activities as: fish, plant or invertebrate culture for zoos and aquaria, bait production, wild stock enhancement, rebuilding of populations of threatened and endangered species, and food production for human and/or animal consumption.

Commercial aquaculture has existed in the State of California since the 1850s and in Tomales Bay since the 1890s. Most marine aquaculture is currently conducted in sheltered bays such as Arcata Bay, Drakes Estero, Tomales Bay, Morro Bay and Agua Hedionda (Conte and Moore 2001). In total about 1,952 acres of bottom lands are leased by individuals from the state for marine aquaculture, and about 80% of this area is located in Drakes Estero and Tomales Bay (Moore 2006).

Aquaculture activities in Tomales Bay are conducted within the GFNMS. There are currently 12 individual leases (6 companies) encompassing 513 acres of state bottomlands in Tomales Bay (Moore 2006). This area represents about 26% of the state’s marine aquaculture area. Some of the cultivated species include: Pacific oyster (*Crassostrea gigas*), Kumamoto oyster (*C. sikamea*), Sumino oyster (*C. rivularis*), Eastern oyster (*C. virginica*), european flat oyster (*Ostrea edulis*), native oyster (*O. conchaphila*), Manila clam (*Tapes japonica*), Pacific littleneck clam (*Protothaca staminea*), rock scallop (*Hinnites giganteus*), California sea mussel (*Mytilus californianus*), and bay mussel (*M. edulis*) (CDFG 2004b). The most cultured species is the Pacific oyster, followed by the Kumamoto oyster. The only indigenous cultured oyster species is the “native” oyster (*O. conchaphila*); the remainder have been introduced for purposes of aquaculture.

The largest aquaculture operation in the State is located in Drakes Estero (not included in the boundary of the GFNMS), where one individual has two leases that encompass 1,060 acres. This one area represents 54% of the total area currently leased by the State for aquaculture. Some of the species cultivated include: Pacific oyster, rock scallop, manila clam and Pacific littleneck clam.

In addition to bottom culture methods, oysters are now cultured using methods that suspend the oysters above the substrate. This change in the industry was done to protect and enhance productive and sensitive habitat such as eelgrass. Examples include longline culture with clusters strung between short poles, and rack culture with stringers suspended from rails and bag culture. The industry is centered in Humboldt, Tomales and Morro Bays, and Drakes Estero. The industry harvests about one million pounds of shell weight that

corresponds to a value of about \$6.8 million; most is consumed regionally, while some is processed in Washington and then sold in California (Conte 2005).

Mussel culturists capture wild mussel seed on net-like structures, and then grow them out to adult size in mesh bags suspended from submerged long lines, racks or off-shore platforms. The mussel industry is centered in Tomales Bay, the Santa Barbara Channel, and Agua Hedionda. Manila clams are grown in Humboldt Bay and occasionally in Tomales Bay. They are grown in mesh bags that are placed on the benthic substrate in the intertidal zone. Mussels and clams together totaled 1.5 million pounds with a value of about \$8.5 million dollars (Conte 2005).

There are also three aquaculture facilities in the Monterey Bay area: one cultures abalone in an onshore facility in Davenport; one is located in Half Moon Bay harbor, using cages in a floating raft; and the other cultures abalone under the commercial wharf in Monterey Harbor, which is not in the boundary of the MBNMS. The red abalone (*Haliotis rufescens*) is the only species currently cultivated in MBNMS (CDFG 2006). Abalone are grown in land-based tanks or in cages suspended in the water column (from a raft or wharf). Aquaculturists that operate inwater systems typically obtain small seed abalone from land-based hatcheries for grow-out. Abalone are fed algae when first hatched, and later fed harvested kelp. In 2003, production of live abalone in shell and steaks was 575,000 pounds with a value of about \$7.4 million; an additional \$1.0 million came from seed sales (Conte 2005).

3.6.2 Regulatory Environment

Commercial fisheries in the sanctuaries are regulated by the PFMC, NOAA Fisheries, the California State Legislature and the California Fish and Game Commission. Coastal fisheries in state waters (up to 3 nm [3.5 miles, 5.5 km] from the shoreline) are generally managed by the CDFG. NOAA Fisheries and the PFMC regulate and manage ocean fisheries beyond state waters (from 3 nm offshore to the extent of the EEZ, 200 nm [230 miles; 370 km] offshore).

Marine Life Management Act, AB 1241

California's Marine Life Management Act (MLMA), which became law on January 1, 1999 (codified in scattered sections of the Cal. Fish and Game Code), regulates the harvest of California's marine living resources, including commercial fisheries. The fishery management system established by the MLMA applies to four groups of fisheries:

1. Nearshore finfish fishery and the white seabass fishery;
2. Emerging fisheries (new and growing fisheries that are not currently subject to specific regulation);
3. Fisheries managed by the Fish and Game Commission before January 1, 1999; and
4. Commercial fisheries for which there is no statutory delegation of authority to the Fish and Game Commission and Department (CDFG 2004a).

Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801-1882

The MSA established the PFMC, one of eight regional councils established by the act. The PFMC has responsibility for establishing and updating management plans for key commercial fish species. Management plans include a *Groundfish Management Plan*, which covers 82 species of rockfish, flatfish, roundfish, sharks, skates, and others. Chinook (*Oncorhynchus tshawytscha*) and coho (*Oncorhynchus kisutch*) are the primary salmon species managed by the PFMC. Five coastal pelagic species are managed by the PFMC, including Northern

anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific (chub) mackerel (*Scomber japonicus*), jack mackerel (*Trachurus symmetricus*) and market squid (*Loligo opalescens*). In conjunction with the International Pacific Halibut Commission, the PFMC manages the Pacific halibut (*Hippoglossus stenolepis*), a large flatfish that migrates between US and Canadian waters, in determining a total allowable catch (TAC) (PFMC 2000).

Highly Migratory Species Management

In 2004, NOAA Fisheries partially approved an FMP for West Coast highly migratory species (HMS) fisheries, species that are currently managed by individual states. The FMP for highly migratory species manages the following species:

- Tunas: north Pacific albacore, yellowfin, bigeye, skipjack, northern bluefin;
- Sharks: common thresher, pelagic thresher, bigeye thresher, shortfin mako, blue;
- Billfish/swordfish: striped marlin, Pacific swordfish; and
- Other: dorado (also known as dolphinfish and mahi-mahi).

The HMS FMP:

- Allows the PFMC to provide advice to NOAA Fisheries and the Department of State, so that West Coast interests are represented in international negotiations and decision-making;
- Increases public awareness about West Coast HMS fishery issues;
- Facilitates greater public involvement in managing HMS fisheries; and
- Helps garner congressional support to the PFMC and NOAA Fisheries for the study and management of HMS fisheries.

The HMS FMP is a “framework” plan, which means it includes some fixed elements as well as a process for creating or changing regulations without amending the plan. In biggest short-term change for fishers stemming from the HMS FMP are new monitoring requirements, which went into effect in 2005. Commercial fishers must obtain a permit from NOAA Fisheries to fish for HMS and maintain logbooks documenting their catch. (Current state-mandated logbooks meet this requirement.) Recreational charter vessels must also keep logbooks. If requested by NOAA Fisheries, a vessel must carry a fishery observer. These measures are intended to improve data collection about HMS catches.

Groundfish Management

The PFMC develops and recommends groundfish harvest specifications and management measures to NOAA Fisheries. It approved a biennial management cycle that went into effect in 2003, where management measures are implemented for a two-year period rather than just for one year. If approved by NOAA Fisheries, these specifications and management measures typically become effective on January 1 at the beginning of the two-year management cycle. Federal groundfish regulations include groundfish harvest levels and fishing restrictions (trip limits, area closures, season lengths, etc.), which are known as the "harvest specifications and management measures (NOAA 2006).

Since 2003, several groundfish conservation areas have been implemented through regulation by NOAA Fisheries Service to reduce overfishing on various groundfish species (NOAA 2006). A groundfish

conservation area is defined by NOAA Fisheries as “any closed area intended to protect a particular groundfish species or species group or species complex.” Groundfish conservation areas in the ROI include: rockfish conservation areas, Farallon Islands groundfish closure, and Cordell Bank groundfish closure. The closures have been in existence in the ROI since 2003 and will remain closed until depleted groundfish species are “recovered” under the MSA.

The Rockfish Conservation Areas (RCAs) are large area closures intended to protect a complex of species, such as the overfished shelf rockfish species. The RCAs differ between gear types (e.g., there are a trawl RCA, a non-trawl RCA, and a recreational RCA), vary throughout the year with cumulative limit period, and have boundaries defined by specific latitude and longitude coordinates that approximate depth contours.

Of particular relevance to this FEIS are recent changes to the Groundfish FMP. Amendment 19 has been prepared by NOAA Fisheries and the PFMC to comply with Section 303(a)(7) of the MSA by amending the Pacific Coast Groundfish FMP to:

- Describe and identify essential fish habitat (EFH) for the fishery;
- Designate Habitat Areas of Particular Concern (HAPC);
- Minimize to the extent practicable the adverse effects of fishing on EFH; and
- Identify other actions to encourage the conservation and enhancement of EFH.

The proposed rules and management measures are intended to minimize, to the extent practicable, adverse effects on Groundfish EFH from fishing. On May 11, 2006, NOAA Fisheries published a final rule to implement regulatory provisions of Amendment 19 to the Pacific Coast Groundfish FMP (71 FR 27408). This rule designated the areas within the 50-fathom isobath of Cordell Bank and the Davidson Seamount Management Area (as well as other areas in the ROI) as EFH, and implemented the following prohibitions as applicable within these EFH areas:

- Fishing with dredge gear anywhere in EFH;
- Fishing with beam trawl gear anywhere in EFH;
- Fishing with specified types of bottom trawl gear anywhere in EFH;
- Fishing with bottom contact gear within 50 fathoms of Cordell Bank; and
- Fishing with bottom contact gear or any other gear that is deployed deeper than 500 fathoms (3000 feet) within the Davidson Seamount.

Sustainable Fisheries Act, P.L. 104-297

The Sustainable Fisheries Act (SFA), which became law on October 11, 1996, amended the Magnuson Act, renamed the Magnuson-Stevens Fishery Conservation and Management Act (the Magnuson-Stevens Act). NOAA has responsibilities under the Magnuson-Stevens Act for scientific data collection, fisheries management, and enforcement.

National Aquaculture Act of 1980

The National Aquaculture Act of 1980, Public Law 96-362, as amended, is intended to promote and support the development of both public and private aquaculture and to ensure coordination among the various

federal agencies that have aquaculture programs and policies. It states a national aquaculture policy, establishes a national aquaculture development plan, and requires federal coordination of aquaculture activities.

The California Aquaculture Development Act

The California Aquaculture Development Act of 1979 established the California Department of Fish and Game (CDFG) as the lead agency for aquaculture in the state. In 1982, legislation was passed that provided guidelines and authority for aquaculture regulations developed by the Fish and Game Commission. These guidelines and authority for aquaculture regulations are in California Code of Regulations, Title 14, Natural Resources: Division 1. Fish and Game Commission - Department of Fish and Game. These regulations are referred to as Title 14. CDFG is responsible for issuing leases and permits for specific aquaculture activities and coordinating with two committees, the Aquaculture Development Committee and the Aquaculture Disease Committee, which exist for the purpose of interaction among sectors of the aquaculture industry and government regulatory agencies.

There are several other state agencies that have regulatory authority over certain aspects aquaculture. They include the California Departments of Health Service and Food and Agriculture (disease and health), the State Lands Commission (leased lands), the Coastal Commission (coastal uses and public recreation and access), and the State Water Resources Control Board (water quality).

In federal waters NOAA, US Army Corps of Engineers, EPA, DOI, USDA and the US Department of Health and Human Services all have various jurisdictional oversight over aquaculture facilities and operations. There is also pending legislation relating to aquaculture in offshore waters.

3.6.3 Significance Criteria and Impact Methodology

The criteria used to determine the significance of commercial fisheries impacts are based on social and economic factors and fisheries population dynamics. Impacts are considered to be significant if proposed actions would result in the following:

- Reduced the number of fishing vessels allowed to fish in the area;
- Reduced the size of the allowable catch of a fishery;
- Resulted in a substantial positive or negative population trend in one or more of the harvested species;
- Resulted in significant economic gain or loss to commercial fisheries; or
- Conflicted with the policies and regulations established by the Magnuson Act.

The impact analysis for the commercial fisheries resources area considered the potential impacts of each of the proposed actions on population dynamics of commercial fish species and any operational, social, or economic impacts on the commercial fishery. Any potential impacts were compared to the significance criteria outlined above to determine if adverse impacts are expected from the proposed actions. The overall methodology is consistent with CEQ guidance and NOAA NEPA guidelines (NAO 216-6).

3.6.4 Cross-Cutting Regulations – Environmental Consequences

The Proposed Action

Introduced Species

Controlling the number of introduced species could have both beneficial and adverse effects on fisheries. The Proposed Action could benefit fisheries by limiting the competition between introduced and native species, thus improving the ongoing stability of the native species populations, improving stability in the numbers of native species available for catch, and helping to stabilize the potential for future revenues derived from commercial catch within the sanctuaries. In this regard, the Proposed Action would have a beneficial impact on commercial fisheries.

One of the pathways for the introduction of species into the sanctuaries is through commercial fishing operations, specifically, baiting and processing. The Proposed Action would potentially require commercial fisheries to alter their baiting and processing methods so as to reduce the likelihood for the introduction of species into the sanctuaries. These alterations may increase the burden on the fisheries. This requirement may have minor adverse impacts on commercial fisheries.

The proposed regulation is not expected to negatively impact existing mariculture operations in the ROI. The only mariculture operations within the boundaries of the 3 sanctuaries are twelve existing mariculture lease holders in Tomales Bay. The exception to the introduced species prohibition would grandfather in these current State of California lease agreements that are in effect on the effective date of the final regulation, provided that the renewal by the State of any authorization does not increase the type of introduced species being cultivated or the size of the area under cultivation with introduced species.² However, any new lease agreements executed after this date would be subject to this prohibition. Operations conducted under new lease agreements could cultivate native species but would be subject to the prohibition regarding introduced species. NOAA is not aware of any pending lease applications for future mariculture operations in Tomales Bay.

Due to the potential for both beneficial and adverse impacts, the Proposed Action is expected to have no net impact on commercial fisheries (mariculture). The proposed prohibition on introduced species would include an exception for existing mariculture activities in Tomales Bay, thus no impacts would occur on existing mariculture operations in Tomales Bay.

Discharge Regulations Clarifications, MSDs and Graywater

There are several proposed regulatory modifications that would limit general vessel discharges and clarify requirements for use of MSDs within the sanctuaries. These regulations, which are discussed in depth in Section 3.5, Water Quality, are expected to have beneficial impacts on the water quality of the marine sanctuaries. The beneficial water quality impacts would likely in turn have minor benefits for commercial fish species. Fish species would be exposed to fewer contaminants and bacteria and would therefore potentially have a reduced risk of health problems. Better water quality would also create better habitat, which would benefit fish populations and potentially result in increased reproductive success and increases in population sizes.

² This provision is intended to limit mariculture to existing leases, not necessarily existing footprints of active lease areas; if an existing mariculture activity takes place within a footprint smaller than the area allowed by the existing lease, the footprint could be expanded up to the limits of the lease area.

Complying with the proposed discharge amendments could result in slight adverse socioeconomic effects on fishermen within the sanctuaries. Fishing vessels would no longer be able to dispose of waste from meals into the sanctuary, which may require some vessels to upgrade their on-vessel disposal facilities so that they could store their waste onboard until they could dispose of it dockside. Fishing vessels would only be allowed to use “clean” (free of harmful matter) materials in deck washing if they wish to allow the washings to drain into the sanctuaries. The potential change in waste disposal facilities and cleaning products may result in minor, increased costs to fishing operations. It should be noted that discharge regulations provide exceptions for fish, fish parts or bait/chumming materials resulting from lawful fishing activity.

The proposed discharge regulations would require fishing vessels that are less than 300 gross tons to discharge other wastewaters (graywater and black water) using a Type I or Type II MSD, or, if they are using a Type III MSD, to hold the waste until they are either out of the sanctuaries or pump out the waste at a harbor pump-out facility. The Coast Guard already requires fishing vessels to have operable Type I, II or III MSDs aboard their vessels, so this is not a new requirement. This regulation essentially clarifies expectations to boaters about the type of discharges that are allowed and does not add any significant burden beyond what is already required by sanctuary or Coast Guard regulations. Existing sanctuary discharge regulations prohibit discharge of raw sewage, which is equivalent to waste that would be discharged from a Type III MSD. A Type III MSD provides no treatment of wastes and serves essentially as a holding tank. The only new requirement in the proposed regulations is that fishermen may have to upgrade their MSD equipment, so that it could not discharge untreated sewage. This requirement may pose a minor burden on boat owners who have not purchased a lock or clasp to ensure the effective operation of the MSD. However, the impact of this addition is negligible. The benefits of doing such activity would actually improve fishing habitat in the long term.

The large-vessel (300 gross tons) discharge/deposit prohibition would result in a minor indirect beneficial impact on commercial fish species through an increase in water quality. Eliminating the potential for discharges/deposits of treated sewage and graywater would have a direct beneficial effect on water quality in the sanctuaries. Improved water quality would have indirect beneficial effects on fish habitat and fishing activities.

In summary, the proposed regulations would have minor beneficial impacts on commercial fish species but may have some minor adverse impacts on some fishing vessels. The proposed regulatory change would not cause a substantive economic loss to the commercial fishery industry; therefore, it is not considered to create a significant adverse impact.

Cruise Ship Discharge Prohibition

By preventing almost all cruise ship discharge into the sanctuaries, this provision would result in a minor indirect beneficial impact on commercial fish species through an increase in water quality. As discussed in Section 3.5, Water Quality, eliminating the potential for substantial discharges of treated wastewater, graywater, oily bilge water, and ballast water would have a direct beneficial effect on water quality in the sanctuaries. Improved water quality would have indirect beneficial effects on fish habitat and fishing activities.

Alternative Regulatory Actions

Cruise Ship Discharge Prohibition Alternative

This provision would result in similar impacts on commercial fisheries as the Proposed Action. Instead of preventing all cruise ship wastewater discharge into the sanctuaries, this provision would allow cruise ships to discharge properly treated effluent so long as it can be shown to be in compliance with water quality standards established by the USEPA and the US Coast Guard in Alaskan waters. Such proof would comprise a discharge plan with associated maintenance logs, approved by NMSP, prior to entry into the Sanctuary. As discussed in Section 3.5, Water Quality, it is possible that ongoing discharge of cruise ship wastewater into the sanctuaries could have minor impacts on water quality, despite being conducted under an approved discharge plan. This alternative could therefore result in a minor beneficial impact on commercial fish species through an improvement in water quality, but slightly less beneficial than the Cruise Ship Discharge Prohibition under the Proposed Action.

The No Action Alternative

The No Action alternative would maintain the status quo. There would be no added water quality benefits to commercial fish species, nor would there be any adverse economic or operational impacts on fishing vessels.

3.6.5 Cordell Bank National Marine Sanctuary – Environmental Consequences

The Proposed Action

Seabed Protection

The proposed regulation would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Additionally, the regulation would prohibit seabed disturbance in the remainder of the sanctuary outside the 50-fathom isobath, with the exception of anchoring. The proposed regulation would result in enhanced protections for habitat and species by reducing or eliminating certain physical impacts and associated habitat loss. This in turn would result in beneficial impacts on fisheries resources. This proposed regulation would not create an adverse impact on commercial fishing operations, since the prohibition does not apply to bottom contact gear used during fishing activities. Other lawful fishing activities that do not contact the bottom would be unaffected by this prohibition. Fishing is otherwise regulated by NOAA Fisheries amendments to the Groundfish FMP that prohibit bottom-contact fishing gear on and within the 50-fathom isobath surrounding Cordell Bank.

The NMSP regulation to protect the seabed in the Sanctuary is complementary to recent NOAA Fisheries actions to protect groundfish habitats in the ROI and along the West Coast. On May 11, 2006, NOAA Fisheries published final regulations to implement Amendment 19 to the Groundfish FMP that restricts bottom-contact fishing gear on and within the 50-fathom isobath surrounding Cordell Bank (71 FR 27408)(see Section 2.2.2 for additional details). This regulatory action by NOAA Fisheries protects the benthic habitat on Cordell Bank from impacts associated with bottom contact fishing gear. Prior to that action, in 2003, the PFMC and NOAA Fisheries closed an area of the California coast known as the Rockfish Conservation Area, which included all of CBNMS, to the groundfish fishery and established fishing areas further inshore and offshore. This closure affected both groundfish trawling and longline operations (such as rockfish hook-and-line using set longlines). This restriction is likely to be in place for the foreseeable future to allow recovery of the species complex.

The CBNMS regulations issued under the Proposed Action would provide added and complementary protection to the benthic habitats in this core area and would prevent a further loss and degradation of habitats on the Bank used as core nursery and spawning areas. As a result, the proposed CBNMS Seabed Protection regulation implemented under the Proposed Action would cause an indirect minor beneficial impact on commercial fishing from habitat enhancement. The prohibition of bottom-contact fishing gear is defined and established by the NOAA Fisheries regulations, and is not attributable to any action taken by NMSP. Therefore the Proposed Action would result in a minor beneficial impact on commercial fisheries.

Benthic Habitat Protection

There is an existing benthic habitat regulation that prohibits the removal of, taking, or injuring benthic invertebrates or algae on or within the 50-fathom isobath surrounding Cordell Bank, except for “accidental removal, injury, or takings during normal fishing operations.” The proposed regulatory change would clarify that the prohibition does not apply to bottom-contact fishing gear, with language identical to the proposed seabed protection regulation. Fishing related impacts on the benthic resources on Cordell Bank are being addressed by NOAA Fisheries regulations that limit bottom-contact fishing gear on and within the 50-fathom isobath on Cordell Bank. Therefore, the NMSP clarifications to the Cordell Bank benthic habitat regulation will have the same amount of protection as the existing regulation and would result in negligible impacts on fisheries.

Alternative Regulatory Actions

Seabed Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, in addition to the minor corrections and clarifications, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath around the Bank. Lawful use of fishing gear other than bottom-contact gear would be exempt from the regulation. This regulation would result in beneficial impacts to the fish habitat and fisheries because in addition to prohibiting drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands it would prohibit the use of bottom contacting fishing gear, which can snag, entangle, break-off, injure and remove fragile bottom habitats on Cordell Bank.

Since this alternative would prohibit bottom-contact fishing gear, it is important to present information on existing and potential commercial fishing activities and restrictions in this area, as it provides the basis for determining the type and extent of impacts. In 2003, the PFMC and NOAA Fisheries closed an area of the California coast known as the Rockfish Conservation Area, which included all of CBNMS, to the groundfish fishery and established fishing areas further inshore and offshore. This closure affects both groundfish trawling and longline operations (such as rockfish hook-and-line using set longlines), so there are no current fishing operations of this type within the 50-fathom isobath of the Bank that would be affected by this alternative. As noted above, this restriction is likely to be in place for the foreseeable future to allow recovery for the very slow reproducing and long-lived groundfish species.

Most benthic or trawl fisheries avoid Cordell Bank since they can easily snag and lose their gear on the Bank’s complex benthic structures. Although there has historically been a groundfish trawl fishery in the general area, no trawling has taken place on the Bank due to the high relief of the Bank. There is one known commercial

fishery (rockfish hook-and-line, which includes set longlines) that has historically fished with benthic gear within the 50-fathom isobath of Cordell Bank. Gillnets were also historically fished within the 50-fathom isobath on the Bank, but are no longer allowed, and were prohibited prior to the Rockfish Conservation Area closure.

This discussion considers the level of commercial fishing activity prior to 2003 in order to fully document the historic fishing operations within the 50-fathom isobath of Cordell Bank. Although it is not possible to assess the number of vessels that fished within this particular part of the Sanctuary prior to the 2003 closure, estimates of fishing revenue are available. An average of 153 unique vessels made rockfish landings using hook-and-line gear within ports adjacent to the 50-fathom isobath of Cordell Bank between 1997 and 2002. During that period, the entire rockfish hook-and-line fishery had an average ex-vessel revenue of approximately \$655,828 for the entire study area, of which \$191,922 came from inside CBNMS, with an average of \$38,347 (20 percent) coming from inside the 50-fathom isobath (Scholz et al. 2005). The importance of this area of interest declined drastically in 2001 and 2002, the first years of what became long-term area- and depth-based closures by NOAA Fisheries that resulted in closures of the bank and much of the Sanctuary. In the unlikely event that the groundfish fishery were to be re-instated, vessels would not be allowed to operate within the 50-fathom isobath of the Bank due to this alternative's prohibition on bottom-contact fishing gear.

Table 3-8 shows the ex-vessel revenues attributed to inside the 50-fathom isobath, as a percentage of total ex-vessel revenues from inside CBNMS waters and from the entire area between Bodega Bay and Pillar Point, respectively. The albacore and salmon fisheries were not affected by the groundfish closure and would not be impacted by this alternative prohibition, since they do not use bottom-contact gear. As is apparent from Table 3-8, neither the squid nor the halibut hook-and-line fisheries operate within the potentially affected area.

Table 3-8
Percent Economic Value of the 50-Fathom Isobath Compared to the Total Value of CBNMS and the Area from Bodega Bay to Pillar Point

Fishery	Cordell Bank	Bodega Bay to Pillar Point
Albacore	5%	0.38%
Crab	1%	0.03%
Salmon	3%	0.28%
Squid	0%	0%
Halibut Hook and Line	0%	0%
Rockfish Hook and Line	20%	6%

Source: Scholz et al. 2005

The crab industry was not affected by the groundfish closures by the PFMC in 2003. While the commercial Dungeness Crab fishery is one of the most important fisheries in central/northern California, very little, if any, crab harvest occurs on Cordell Bank (Scholz et al. 2005). Most commercially harvested crab species require soft bottom habitats -- such as the shelf areas located outside of the 50-fathom isobath in CBNMS. When compared to the study area total, less than 1 percent of the total ex-vessel revenue for the crab fishery originates inside the 50-fathom isobath, whereas 6 percent of the ex-vessel revenue from the rockfish hook-and-line fishery originates inside the 50-fathom isobath (see Table 3-8). When compared to the total ex-vessel revenue inside CBNMS, 5 or less percent of the total ex-vessel revenue for the albacore, crab, salmon

fisheries occur inside the 50-fathom isobath, whereas 20 percent of the ex-vessel revenue from the rockfish hook-and-line fishery comes from inside the 50-fathom isobath.

As described above, the alternative regulation would only apply to a limited type of fishing activity inside the 50-fathom isobath on and around Cordell Bank. While the regulation would restrict using a specific type of gear (and thus a type of fishery) from operating inside the 50-fathom isobath around Cordell Bank, the only existing fishery that is open and that would be potentially affected by this alternative is crab. Because of the very limited use of Cordell Bank and the availability of other suitable fishing grounds for crabbing, the potential adverse impact on the crab fishery would be minor.

The CBNMS regulations issued under this alternative (prohibiting drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands) would provide added protection to the benthic habitats in this core area, would prevent a further loss and degradation of habitats, and could reduce some of the potential future spatial displacement inside the 50-fathom isobath around the Bank (in the event that the groundfish closure is lifted) by improving the overall health of the ecosystem of the Sanctuary, including the important habitats on the Bank used as core nursery and spawning areas.

The CBNMS Seabed Protection regulation implemented under this alternative would cause a minor beneficial impact on commercial fishing from habitat enhancement. The prohibition of bottom-contact fishing gear would have very slight adverse effects on existing fishing activities.

Benthic Habitat Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action, that met the Sanctuary's goals and objectives for protecting the benthic habitats in this area. Under this alternative, in addition to the minor corrections and clarifications, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath around the Bank. In addition, a new definition of bottom-contact fishing gear would be included in the sanctuary regulations. This regulatory alternative would have greater beneficial impacts for fish habitat. In addition, similar to the discussion above regarding the Seabed Protection alternative, the prohibition of bottom-contact fishing gear within the 50-fathom isobath around the Bank would have very slight adverse effects on existing fishing activities.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed; there would be no new impacts on commercial fisheries within the ROI.

3.6.6 Gulf of the Farallones National Marine Sanctuary – Environmental Consequences

The majority of GFNMS regulatory changes in this Sanctuary would not impact commercial fisheries.

The Proposed Action

White Shark Attraction and Approaching

The proposed regulation would prohibit attracting any white shark in the Sanctuary, and approaching any white shark within 2 nm of the Farallon Islands. This proposed change is geared towards eliminating potential impacts from commercial shark viewing enterprises and is not intended to affect commercial fishing activities.

There would be a slight potential for adverse effects on commercial fishing if chumming activities associated with fishing resulted in the accidental attraction of white sharks.

Water Quality – Discharges from Outside the Sanctuary

The proposed regulation would prohibit discharging or depositing any material or other matter from beyond the boundary of the Sanctuary that subsequently enters the Sanctuary and injures a Sanctuary resource or quality. There are some exceptions to this proposed regulation, including discharges for fish, fish parts and chumming. Similar to the general discussion on proposed cross-cutting discharge regulations in Section 3.6.4, this proposed change would have minor beneficial impacts on fish species populations and their respective commercial and recreational fisheries from a decrease in pollution entering and impacting sanctuary resources, including fish. There may be some instances when fishing vessels may need to store wastes that contain harmful matter (as defined in the proposed regulations) and dispose of them onshore or further from the sanctuary, if they could enter the sanctuary and cause injury to sanctuary resources. However, these requirements would have minimal impacts on the fishing industry. Overall, the improvements in water quality and associated benefits to fisheries would have minor beneficial impacts to fisheries.

Deserted Vessels

The proposed regulation would prohibit vessels from being deserted in the Sanctuary, and prohibit leaving harmful matter (hazardous materials or wastes) aboard grounded or deserted vessels in the Sanctuary. This regulation may have some minor adverse impacts on the commercial fishing industry, as it would place an additional economic burden on vessel owners to ensure that a capsized or otherwise incapacitated vessel be salvaged and not abandoned and to ensure that any hazardous substances are removed from an abandoned vessel. However, the intent of this regulation is to ensure that vessel owners take responsibility for their vessels before additional damage can be done to Sanctuary resources. It is far less expensive to a vessel owner to salvage their incapacitated vessel than to pay fines, fees, costs associated with response, damage assessment, and restoration activities should the vessel ground on shore and cause damage to Sanctuary resources. While this may be an immediate burden for the vessel owner, the overall risk of an individual boat being abandoned is relatively small, and the impact on the commercial fishing industry as a whole is considered minor. Reducing the risks of hazards posed by abandoned vessels would have beneficial effects on fisheries and fishing operations and activities.

No-Anchoring Seagrass Protection Zones

As described in Section 3.3 (Biological Resources), seagrasses are particularly important in the sustainability of commercial and recreational fisheries because of their roles in maintaining sediment stability and water quality, and in providing shelter and food critical to their survival. Many species of juvenile fish and crustaceans use seagrasses as nursery areas before moving to other habitats. Seagrass provides spawning substrate for Pacific herring, which hosts a commercial fishery that has an annual spawning biomass average of 3,887 tons (average is based on seasons since the fishery re-opened in 1992). It is also estimated that about 18 percent of the commercial fish and shellfish harvested in California are dependent on estuaries and the wetlands. In 1990, the total value of California wetlands to commercial fisheries production was more than \$90 million (Allen et al. 1992). Therefore, protection of this habitat in the designated zones from physical damage caused by anchoring would provide long-term beneficial effects to commercial fish species that use seagrass beds during a portion of their life cycle.

Commercial fishing operations are extremely limited in shallow areas where seagrass is present. The Pacific herring fishery is the only fishery that focuses its operations near or occasionally in seagrass habitat in

Tomales Bay. In late fall, adult herring gradually enter the bay, and build up into large aggregations for several weeks before spawning in seagrass; later spawning adults move into the Bay just before they spawn. The commercial fishery targets female herring for their eggs, which is used in the Asian and American sushi market. Currently the State of California issues 34 limited entry commercial herring gillnet permits in Tomales Bay, which in 2005 had a quota of 400 tons (California Department of Fish and Game, 2006). Fishermen deploy gillnets usually in the channels near seagrass beds when the fish are in the Bay; occasionally they will deploy them in seagrass beds. Gillnets may be anchored to the bottom to keep them from moving with the tide. After a period of time, the fishermen will go over to the net in their vessel, reel in the net, and pick out the caught fish. The proposed prohibition would apply only to the physical act of anchoring a vessel and would not prohibit commercial fishing activities related to the gillnet fishery. While fishermen may anchor their vessel while waiting to retrieve a net, they could conduct this activity in the remaining 78% of the bay that is not included in the no-anchoring zone. They are not required to anchor their vessel to actually engage in the fishery (Mello, 2006). Therefore, the proposed prohibition against anchoring in seagrass would have a negligible adverse effect on the commercial herring fishing.

The only other commercial fishery-related operations in shallow water areas that may include seagrass habitat is mariculture. There are twelve existing mariculture lease holders in Tomales Bay. As part of their operations, it may be required not only to anchor the cages to the seafloor, but also to anchor a vessel when conducting work to seed, maintain, and harvest the shellfish. The proposed regulation to prohibit anchoring a vessel in designated seagrass protection zones specifically excepts existing mariculture operations conducted pursuant to a valid lease, permit, or license. As such, the proposed regulation is not expected to negatively impact existing mariculture operations in the ROI. Overall, this prohibition would result in a net beneficial effect on commercial fishing since it would improve habitats that support many fish species, and not impact existing fishery operations.

Alternative Regulatory Actions

The GFNMS Alternative Regulatory Action regarding white sharks would have the same potential impact on commercial fishing as described for the Proposed Action.

The No Action Alternative

The No Action alternative would maintain the status quo and would not provide any additional restrictions to vessel discharge or create any additional requirements for vessel salvage. However, the No Action alternative would not achieve any of the beneficial effects described for the Proposed Action.

3.6.7 Monterey Bay National Marine Sanctuary—Environmental Consequences

The majority of regulatory changes in this Sanctuary will not have impacts on commercial fisheries.

The Proposed Action

Deserted Vessels

As in GFNMS, the proposed regulation would prohibit vessels from being deserted in the Sanctuary, and would prohibit leaving harmful matter aboard a deserted vessel. The impacts of this proposal would be the same as identified above for GFNMS.

Davidson Seamount

The proposed regulation would include incorporating a rectangular area around the Davidson Seamount in MBNMS and including most of the existing MBNMS sanctuary regulations. The rectangular area would be centered on the top of the Davidson Seamount and consist of approximately 585 square nm (841 square miles; 2,100 square km) of ocean waters and submerged lands thereunder.

The proposed regulation would protect Davidson Seamount from future disturbance or from resource exploitation. The standard MBNMS discharge regulations and seabed disturbance regulations relating to drilling, dredging, seabed alterations, construction, and anchoring would apply in the DSMZ (with certain exceptions). At depths greater than 3,000 feet (914 meters) below the sea surface, the NMSP would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or other wise injuring Sanctuary resources (or attempting to do those activities), except for fishing, which is prohibited pursuant to the MSA (50 CFR part 660). The Sanctuary would also prohibit the possession of Sanctuary resources taken from below 3,000 feet within the DSMZ, except for the possession of fish resulting from fishing, which is prohibited pursuant to the MSA. The NMSP would rely upon the NOAA Fisheries regulatory amendments to the Groundfish FMP to regulate any fishing-related impacts below 3000 feet. These NOAA Fisheries amended regulations prohibit fishing with dredge gear, beam trawl, certain types of bottom trawl, and bottom contact gear or any other gear that is deployed greater than 500 fathoms (3,000 feet) (71 FR 27408). Therefore fishing would take place in the water column above 3,000 feet but not below it and as such existing fishing activities would not impact the seamount. By incorporating the seamount into MBNMS, its resources, including fish habitats, would be protected. Therefore, the increased level of resource protection provided by this Proposed Action would have minor beneficial impacts on the fisheries of the Davidson Seamount by preventing any type of disturbance or injury to fish or fish habitat.

There are only two commercial fisheries that now operate in the area of the Davidson Seamount, drift gillnetting for swordfish and sharks, and trolling for albacore tuna. These fisheries operate only in the top 164 feet (50 meters) of the water column and would not be affected. It is unlikely that any fisheries would have future interest in the deep habitats (beyond 3,000 feet depth) of the Davidson Seamount.

Designating this area as part of MBNMS would have other minor adverse socioeconomic impacts on the fisheries. Namely, all the discharge restrictions that would apply to the MBMNS would apply to this new area. Compliance with these discharge regulations would not place a substantial burden on commercial fishing operations. The resource protective measures included in the MBNMS regulations, considered collectively, would cause a slight reduction in environmental health risks for fish populations and could result in minor beneficial impacts on these populations. In summary, there would be less than significant adverse economic and operational impacts from this proposed action on commercial fisheries, and minor beneficial impacts on fish populations.

Alternative Regulatory Actions

The alternatives would have the same impacts on fisheries as identified in the Proposed Action, with the following minor differences:

Davidson Seamount NMSA Alternative

Under this alternative, the same geographic area as identified in the Proposed Action would be incorporated into MBNMS as well as the same regulation that would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or other wise injuring Sanctuary resources (or attempting to do those activities). However, instead of relying on NOAA Fisheries to regulate fishing activities on the Seamount, the

NMSP would issue a regulation, under the authority of the NMSA, prohibiting all fishing below 3,000 feet (914 meters). This alternative would be implemented if NOAA Fisheries did not impose restrictions on fishing in water depths greater than 3,000 feet (914 meters) below the surface that met the Sanctuary's goals and objectives for protecting the benthic habitats in this area. This regulatory alternative would have greater beneficial impacts for biological resources than described for the Proposed Action since, in addition to the benefits listed in the Proposed Action, the alternative would also directly regulate impacts to biological resources, including fish and fish habitat, resulting from the use of bottom contacting fishing gear on Davidson Seamount. This regulatory alternative would potentially have slightly greater beneficial impacts for fisheries resources than described for the Proposed Action since, in addition to the benefits listed in the Proposed Action, it would directly regulate impacts on biological resources, including fish and fish habitat, resulting from the use of bottom-contact fishing gear on Davidson Seamount. However, the beneficial impacts would be the same as the Proposed Action if the NOAA Fisheries regulations that prohibit bottom-contact gear on Davidson Seamount are considered. In addition, because no commercial fisheries currently operate at that depth, the impacts associated with this alternative would be the same as under the Proposed Action.

Davidson Seamount Circular Boundary Alternative

The Project Alternative would delineate the Davidson Seamount with a circular boundary and would include a greater area. This would result in slightly greater restrictions than the Proposed Action. The impacts would be the same as those described above for the Proposed Action, but the adverse impacts from the alternative may be slightly increased.

The No Action Alternative

The No Action alternative would maintain the status quo and would not make any additional requirements for vessels left adrift or include the Davidson Seamount in MBNMS. This would result in no impact on commercial fisheries.

3.6.8 Cumulative Impacts

Most of the cumulative actions analyzed here that may affect the commercial fishery (described below) relate to the amendments to or establishment of new fisheries management plans by the PFMC or the Department of Fish and Game. In general, these actions are intended to benefit commercial fish species populations, but they may have adverse economic, operational, or social impacts on the commercial fishing industry.

The CDFG manages sport and commercial fisheries within state waters, and all fisherman licensed by the state of California. Such management activities include the management of species off-limits to commercial fishing, permit requirements and fees for certain fisheries, gear restrictions for certain fisheries, and commercial licenses and other administrative requirements. CDFG regularly updates fishery regulations and periodically updates the few fishery management plans it currently has. For example, the Pacific herring commercial fishery regulations are updated on an annual basis. Further, the Fish and Game Commission and the NMFS may propose new or amended regulations every year regarding, for example, fishing gear, total allowable catch or specific restrictions for specific fisheries, and trip limits (CDFG 2004a). Under the authority of the California Marine Life Management Act and other legislation, the Fish and Game Code prohibits commercial fishing for several dozen species, including scallops, krill, white sharks, garibaldi, and marlin (California Fish and Game Commission 2006).

The PFMC is required to amend its management plans on a regular basis. For example, the PFMC is required to update its Groundfish FMP every two years and its harvest specifications on a yearly basis. As described

above under Regulatory Environment, NOAA Fisheries is implementing Amendment 19 to the Groundfish FMP that imposes additional restrictions on fishing within the ROI, in order to preserve groundfish populations. The Salmon Fishery Management Plan requires that spawner escapement goals and harvest allocation quotas be set on a yearly basis. The Coastal Pelagic Species Management Plan requires that harvest guidelines for Pacific mackerel and Pacific sardine be set annually as well (PFMC 2000).

These agencies intend the new and amended fisheries management plans to benefit the commercial fisheries as a whole through sustainable management. Individual fisheries may experience the management plans and related regulations as adverse impacts when they are prohibitively restrictive to an economically viable fishery. However, as a whole, commercial fisheries receive beneficial impacts from the fisheries management tools employed by state and federal government because of the overall protections afforded to fish species, resulting in sustained or increased population levels and subsequently, sustained potential harvests.

Implementation of the FMPs will contribute to the ROI's regional ecosystem health, including water quality, by applying the various protective action plans in CBNMS, GFNMS, and MBNMS. Cross-cutting management associated with ecosystem monitoring will provide a better understanding of fish populations along coastal northern/central California and what, if any, improvements in ecosystem management could be made. GFNMS and MBNMS action plans specific to water quality would have similar beneficial impacts. Such action plans would include the Estuarine and Nearshore Environments, Open Coastal Environment, and Additional Areas action plans in GFNMS and the Beach Closures and Microbial Contamination, Cruise Ship Discharges, and Water Quality Protection Program Implementation action plans in MBNMS. The Vessel Spill action plan would also have a beneficial impact on water quality within GFNMS by managing the likelihood of such spills and the effectiveness of spill responses. The MBNMS Desalination, Harbors and Dredge Disposal, and Cruise Ship Discharges action plans would provide beneficial impacts on water quality by imposing restrictions on discharges. Beneficial effects on marine water quality can result in indirect beneficial effects on fish habitat and commercial fish species. These improvements would benefit the long-term viability of fishing operations along the northern/central California coast.

The Proposed Action

The Proposed Action would have a mix of minor adverse and minor beneficial cumulative impacts on the commercial fishing industry. Increased restrictions on activities in sanctuary waters would decrease fishing opportunities and increase burdens on commercial fishing operations; however, the protections conferred to the species within these waters would allow these populations to thrive, ensuring the longevity of the fishing resources for the future, and in adjacent waters that are not subject to the same restrictions. The Proposed Action would therefore contribute to both cumulative beneficial and cumulative adverse impacts on commercial fisheries.

Alternative Regulatory Actions

Under the alternatives, cumulative impacts would be the same as those described under the Proposed Action.

The No Action Alternative

The No Action alternative would maintain the status quo of sanctuary management. No additional resource protection from proposed regulations would occur. There would also be cumulative beneficial trends on commercial fisheries from existing regulation and management efforts, including implementation of the FMPs and the NOAA Fisheries groundfish regulations, which would help protect fish species populations. The No Action alternative would not contribute to either cumulative adverse or cumulative beneficial trends.

3.7 CULTURAL AND MARITIME HERITAGE RESOURCES

Cultural resources are defined as any historical or cultural feature, including archaeological sites, historic structures, shipwrecks, and artifacts. Historical resources are defined as any resources possessing historical, cultural, archaeological or paleontological significance, including sites, contextual information, structures, districts, and objects significantly associated with or representative of earlier people, cultures, maritime heritage, and human activities and events. Historical resources include “submerged cultural resources,” and also include “historical properties,” as defined in the National Historic Preservation Act (NHPA), as amended, and its implementing regulations, as amended.

Submerged cultural resources can be defined loosely as archaeological or culturally significant sites over fifty years old that are located underwater. These sites may include shipwrecks, downed airplanes, or submerged structures within the more recent historic period, or may include harder to identify sites dating to the prehistoric period consisting of campsites with stone tools or stones used for grinding.

3.7.1 Regional Overview of Affected Environment

The cultural background for the project area can be separated into three broad categories. Precontact history describes events prior to European exploration and influence in the Americas. Ethnohistory represents information gleaned from ethnographic sources (including oral histories and anthropological and sociological studies) and historical accounts of Native American groups within the project area. History is generally post-contact information gathered from written documents from the time of early European exploration until today.

It is generally believed that human occupation of the West Coast dates back to at least 10,000 years before present (BP). Several sites around California are thought to have been occupied between 40,000 to 200,000 years BP; however, the reliability of the dating techniques used and the validity of the artifacts found in those sites remain controversial (Moratto 1984). It is widely held that prehistoric shorelines extended far out onto the Continental shelf, and it is probable that the remains of California’s earliest settlements were inundated following the last Ice Age. Archaeological evidence for occupation of California during the Holocene Epoch (10,000 years BP to present) is stronger.

By the late 1500s Spain had established a regular pattern of trade from the Philippines across the Pacific. Reaching the west coast at points around Oregon, the *Manila Galleons* would sail south along the coast to Acapulco (Marken 1994). One such early expedition was that of the ill-fated *San Augustin* in 1595, which is California’s earliest recorded shipwreck. A Manila Galleon on her way to Acapulco with a load of Chinese trade porcelain, the galleon anchored in what is now Drakes Bay. While most of the crew was ashore, a quick change in wind and a fierce gale wrecked the *San Augustin*. It is not known whether the *San Augustin* is located in GNMS or in Point Reyes National Seashore.

It is interesting to note that San Francisco Bay was virtually invisible to the early Spanish explorers due to the relatively small entrance of the bay, the regular presence of fog off the coast, and the fact that the hills at the eastern end of the bay at Berkeley seem to merge with the Marin and San Francisco shores. Although the Manila trade had been in place for a few decades, it was not until 1602 that Sebastian Vizcaino landed at present day Monterey, which he named. Given the huge Spanish occupation in present day Mexico and other expeditions that may have preceded Vizcaino, it is probable that the European presence was known by the Native Americans living along the coast.

Following Vizcaino's landing, other Spanish ships may have stopped at Monterey, but Spanish presence was limited. Nearly one hundred and seventy years later, an overland expedition in 1769 led by Gaspar de Portola would discover many of California's hidden features, including San Francisco Bay. To the south he would found the city of Monterey in 1769, and following Portola, Padre Junipero Serra would create the Mission San Carlos de Borromeo in 1770. While Portola's expedition would follow the coast, subsequent exploration by Pedro Fages in 1770 and 1772, Fernando Javier de Rivera in 1774, and Juan Bautista de Anza in 1776 was conducted on the east side of the Santa Cruz Mountains, along a route which became known as El Camino Real.

As the influx of Euro-Americans continued, ports, such as San Francisco and Monterey, and smaller coastal harbor towns developed through fishing, shipping, and economic exchange. Regional fishing communities dating back to the middle of the 19th century are distinctive for their rugged, individualistic culture born of a hard and sometime dangerous life harvesting fish at sea (NOAA 2003c, 2003d, 2003e). The fishing boats, fish houses, and other parts of the fishery infrastructure lend to the character of the West Coast sanctuaries, as does the knowledge possessed by working men and women of the ocean waters they ply for their livelihoods (NOAA 2003c, 2003d, 2003e).

The area encompassed by the three sanctuaries is rich in cultural and archaeological resources and has a long and interesting maritime history. Ocean-based commerce and industries (e.g., fisheries, extractive industries, export and import, and coastal shipping) are important to the maritime history, the modern economy, and the social character of this region (NOAA 2003c, 2003d, 2003e).

The NMSA mandates the management and protection of submerged archaeological sites. Therefore, the NMSP is identifying submerged heritage resources and developing education and preservation plans regarding these resources. Program efforts include conducting paleo-ecological and archaeological studies; inventorying, locating, and monitoring both historic shipwrecks and those that pose an environmental threat to sanctuary marine resources; and characterizing and protecting heritage resources. Records indicate that over 600 vessel and aircraft losses were documented between 1595 and 1950 along California's Central Coast from Cambria north to Bodega Head, including the Farallon Islands. Approximately 173 of those documented are in GFNMS, 463 are in MBNMS (Smith and Hunter 2001), and none to date are within CBNMS (NOAA 2003c, 2003d, 2003e). There is only one vessel listed under the National Register of Historic Places. It is the *Tennessee*, a California Gold Rush side-wheel passenger steamer, the sunk in 1853 in the MBNMS just north of the Golden Gate Bridge.

Some of the above-recorded sites have been located and inventoried by NOAA and the National Park Service in the GFNMS region. GFNMS and MBNMS have also collaborated with state and federal agencies and the private sector to gather resource documentation and to create opportunities to locate and record submerged archaeological resources (NOAA 2003d, 2003e). MBNMS recently directed completion of a shipwreck inventory from established shipwreck databases and review of primary and secondary source documentation, entitled *MBNMS Submerged Cultural Resources Study* (Smith and Hunter, 2001). These studies provide a foundation for an inventory of the historic resources in the sanctuaries.

GFNMS is identifying and monitoring historic and non-historic shipwrecks that may pose environmental threats to marine resources. Many vessels may contain hazardous cargo, abandoned fuel, and unexploded ordnance. These sunken vessels are slowly deteriorating in a corrosive marine environment. For instance, one of the shipwrecks of concern is the *Jacob Luckenbach*, which contains Bunker-C fuel oil. Up to 25,000 common

murres, grebes and cormorants were killed in 2001 by extensive tar balls from this ship (Smith and Hunter 2001). In 2002, the U.S. Coast Guard contracted the removal of 85,000 gallons of fuel from this vessel (NOAA 2003d).

3.7.2 Regulatory Environment

Cultural and historical resources are regulated through a number of federal laws, as summarized below. Sanctuary and California State regulations prohibit disturbance of submerged archaeological and historical resources, except by permit. The NMSP and California State Lands Commission have an archaeological resource recovery permit system in place.

The National Historic Preservation Act (NHPA) (16 U.S.C. § 470 et seq.) serves as the basis for a process that considers the effects of federal undertakings on cultural and historic resources. The procedure an agency takes to achieve compliance with this legislation is commonly called the Section 106 process. Although the NHPA was created primarily in response to numerous federally funded urban renewal projects that demolished old neighborhoods and historic homes, it applies to any actions an agency may take that would affect historic or cultural resources as they are defined in the law. The intent of the process is to require the federal agency, in consultation with other affected parties, to make an informed decision as to the effect its actions would have on something that may be important to our heritage.

Depending on the resources identified, the following legislation could also apply within the sanctuaries:

National Historic Preservation Act of 1966, 16 U.S.C. §§ 470-470x-6

Cultural resources on federal lands are protected primarily through the NHPA of 1966 and its implementing regulations (found at 36 CFR Part 800). Section 106 of the NHPA requires federal agencies to identify and evaluate the effects of their actions on properties listed in or eligible for listing in the National Register of Historic Places (NRHP). Consultation with the State Historic Preservation Officer, Native American tribes, native Hawaiian organizations, the Advisory Council for Historic Preservation, and other interested parties is part of the regulatory process. To be protected under the NHPA, a property must meet specific criteria of significance established under the NHPA's regulations at 36 CFR Part 60.

Archaeological Resources Protection Act of 1979, 16 U.S.C. §§ 470aa – 470mm

This act requires all archaeological excavations on federal land to be undertaken pursuant to permit issued by the federal land manager. This act also imposes criminal penalties for unauthorized excavations.

Native American Graves Protection and Repatriation Act of 1990, 25 U.S.C. §§ 3001-3013

This act requires federal agencies to identify and inventory possible Native American, native Alaskan, or native Hawaiian human remains, burial goods, or cultural items in their collections and to make them available for repatriation to affiliated tribes or lineal descendants. The act also establishes procedures for handling and disposing of such remains, burial goods, or cultural items discovered on federal lands.

Abandoned Shipwreck Act of 1987, 43 U.S.C. §§ 2101-2106

This act asserts federal ownership over certain shipwrecks found in state waters (within the 3-mile line) and transfers ownership of those resources to the states. Shipwrecks in federal waters remain under the jurisdiction of the federal government.

Antiquities Act of 1906, 16 U.S.C. §§ 431-433

This act requires a permit to excavate or remove any historic objects or antiquities from federal lands, and grants the President the authority to designate as national monuments landmarks of historic or scientific importance. The permit provisions of the Antiquities Act are generally enforced through the NHPA process.

Historic Sites, Buildings, Objects, and Antiquities Act of 1935, 16 U.S.C. §§ 461-467

This act establishes the national policy of preserving historic resources and gives the Secretary of the Interior the power to make historic surveys and document, evaluate, acquire, and preserve archaeological and historic sites across the country. This act provided the authority behind the establishment of the National Historic Landmarks and Historic American Buildings Survey programs.

3.7.3 Significance Criteria and Impact Methodology

Cultural resources must meet certain federal criteria to be considered a significant historic resource. The following significance criteria are the basis for determining inclusion of a property on the NRHP (36 CFR 60.4). The property must have or be the following:

- Association with events that have made a significant contribution to the broad patterns of our history;
- Association with the lives of persons significant to our past;
- Resources that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master or that possess high artistic values or that represent a significant and distinguishable entity whose component may lack individual distinction; or
- Resources that have yielded, or may be likely to yield, information important in prehistory or history.

Pursuant to the NHPA and its implementing regulations, an undertaking has an effect on a historic property when it alters those characteristics of the property that qualify it for inclusion in the NRHP. An undertaking is considered to have an adverse effect on a historic property when it diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects include, but are not limited to, the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property or alteration of the character of the property's setting when that character contributes to the property's qualifications for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or changes that alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and
- Transfer, lease, or sale of a property without adequate provision to protect the property's historic integrity.

The Proposed Action would have a significant adverse effect on a historic property if its implementation would alter those characteristics of the property that qualify it for inclusion on the NRHP.

Native American sites (whether they are considered NRHP-eligible or not) may also be protected under the American Indian Religious Freedom Act of 1978 and the Native American Graves Protection and Repatriation Act of 1990.

An action that may alter any characteristic of a resource that contributes to its importance to Native Americans would be considered to have a significant effect on that resource. The significance of an effect to a Native American resource is determined based on the importance of the resource to Native American groups and the type of effect the project would have. These effects may include changes to the resource itself or to its setting.

The overall methodology is consistent with CEQ guidance and NOAA NEPA guidelines (NAO 216-6).

3.7.4 Cross-cutting Regulations –Environmental Consequences

There are no adverse impacts on cultural resources associated with the cross-cutting regulations.

The Proposed Action

Introduced Species

The proposed introduced species regulation could provide a beneficial impact on cultural resources. Introduced species tend to proliferate in their new habitats, as has been seen with zebra mussels in the Great Lakes region of North American (Catawaqui Archaeological Research Foundation 2006; Watzin, Cohn and Emerson 2001). In this case, the invasive species has colonized the surfaces of shipwrecks and other submerged cultural resources and when they are removed the surfaces are damaged. As such, they prevent detailed study of the resources. Implementing regulations to restrict the introduction of invasive species would reduce the likelihood of such threats to cultural resources in the three sanctuaries and provide benefits to cultural resources.

Alternative Regulatory Actions

There are no cross-cutting alternatives that would impact cultural resources.

3.7.5 Cordell Bank National Marine Sanctuary –Environmental Consequences

The Proposed Action

Seabed Protection

The Proposed Action would have a beneficial effect on cultural resources because this would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on or in the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Any of these activities could potentially disturb, injure, or damage submerged and cultural resources. In addition, NOAA Fisheries prohibits bottom-contact fishing within the 50-fathom isobath around the Bank, thus helping to protect any unidentified cultural resources in that area from accidental disturbance. Overall, this proposed regulation would result in a minor beneficial impacts to cultural and maritime resources, however, at this time there are no cultural resources identified in the Sanctuary.

Benthic Habitat Protection

The proposed clarifications to the Cordell Bank benthic habitat regulation will have the same amount of protection as the existing regulation and would result in negligible impacts on cultural resources.

Alternative Regulatory Actions

Seabed Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action, that met the Sanctuary's goals and objectives for protecting the benthic habitats in this area. This provision would result in the same beneficial impact on cultural resources as the Proposed Action, although through action by the NMSP rather than NOAA Fisheries. Because no cultural resources have been identified in CBNMS, this alternative would result in the same minor beneficial impact on cultural resources as the Seabed Protection regulation in the Proposed Action.

Benthic Habitat Protection

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within a line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. It would result in the same minor beneficial impact on cultural resources as the Benthic Habitat Protection regulation in the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed; this would result in no impact on cultural resources in the Sanctuary. Under the No Action alternative, the potential benefits of the proposed introduced species regulation would not be achieved.

3.7.6 Gulf of the Farallones National Marine Sanctuary –Environmental Consequences

The Proposed Action

Cultural Resources

The Proposed Action modifies the regulatory wording regarding removing or damaging historical or cultural resources. The proposed regulatory language differs from the original regulation primarily by adding prohibitions on “possessing, moving or injuring” or “attempting to move, remove or injure” a Sanctuary historical resource. The changes make the regulation consistent with newer language for other Sanctuaries. Historical resources in the marine environment are fragile, finite and non-renewable. This prohibition is designed to protect these resources so they may be researched and information about their contents and type made available for the benefit of the public. Although primarily technical in nature, this proposed change would result in a beneficial impact on cultural resources by expanding the prohibition to provide more comprehensive protection of the resource.

Deserted Vessels

The proposed regulations would prohibit abandoning vessels within the Sanctuary, or leaving harmful materials on such abandoned or grounded vessels. Fuel and oil spills from grounded vessels could damage historic submerged ship or airplane wrecks. By prohibiting vessel owners from deserting their vessels and by requiring the removal of harmful materials from abandoned vessels, the proposed action would reduce the

risk of groundings and spills from deserted vessels. Therefore, the proposed action would have the potential to improve protection for submerged cultural resources. This improved protection is considered a beneficial effect.

Alternative Regulatory Actions

There are no alternatives for GFNMS that would impact cultural resources.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on cultural resources. The beneficial effects identified for the Proposed Action would not be achieved under the No Action alternative.

3.7.7 Monterey Bay National Marine Sanctuary—Environmental Consequences

Proposed Action

Davidson Seamount

The proposed regulation would protect Davidson Seamount, including any cultural or historic resources, from future disturbance or from resource exploitation. The standard MBNMS discharge regulations and seabed disturbance regulations relating to drilling, dredging, seabed alterations, construction, and anchoring would apply to the DSMZ (with certain exceptions). At depths greater than 3,000 feet below the sea surface, the NMSP would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or otherwise injuring (or attempting to do those activities) Sanctuary resources (including historic and cultural resources), except for fishing, which is prohibited pursuant to the MSA (50 CFR part 660). The Sanctuary would also prohibit the possession of Sanctuary resources taken from below 3,000 feet within the DSMZ, except for the possession of fish resulting from fishing, which is prohibited pursuant to the MSA. The NMSP would rely upon the NOAA Fisheries regulatory amendments to the Groundfish FMP to regulate any fishing-related impacts below 3,000 feet. These NOAA Fisheries amended regulations prohibit fishing with dredge gear, beam trawl, certain types of bottom trawl, and bottom contact gear or any other gear that is deployed greater than 500 fathoms (3,000 feet) (71 FR 27408). Adding Davidson Seamount to MBNMS would benefit cultural resources that may be submerged in the area because it would give them the same protection as other historic and cultural sites within the current MBMNS. The Proposed Action would result in a beneficial impact on cultural resources at Davidson Seamount.

Dredge Disposal

Defining the Moss Landing dredge disposal site and the Santa Cruz and Monterey sites would have a slight beneficial effect on cultural resources, if there are cultural resources in the vicinity of the existing disposal areas. Strict and precise dumpsite parameters would lessen the chance of accidental destruction of cultural resources that could result from disposing of dredge spoils in the wrong location. Therefore, the regulation would have slight beneficial impacts on cultural resources.

Deserted Vessels

As described for GFNMS, these proposed regulations would have the potential to improve protection for submerged cultural resources from broken-up vessels or from resulting hazardous spills. This improved protection is considered a beneficial effect.

Alternative Regulatory Actions

The only alternative for MBNMS that would impact cultural resources is the alternative configuration for inclusion of Davidson Seamount.

Davidson Seamount Circular Boundary Alternative

This alternative would provide the same beneficial effects on cultural resources as the proposed action, but would cover a larger geographic area.

Davidson Seamount NMSA Alternative

This alternative would be implemented if NOAA Fisheries did not implement bottom-fishing regulations at Davidson Seamount that met the Sanctuary's goals and objectives for protecting the benthic habitats in this area.. The ultimate effect on cultural resources would be the same as described for the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on cultural resources. However, the beneficial effects identified for the Proposed Action would not be achieved.

3.7.8 Cumulative Impacts

The overall trend with regard to cultural resources is an increase in legislative and legal protections, counteracted by increased development onshore and increased scavenging offshore, leading to destruction or damage to these resources. Submerged cultural resources are more difficult to protect because of their remote locations than terrestrial resources are, regardless of their legal status. Cumulative projects that might affect cultural resources in the project area include seawall and other shoreline-hardening projects in GFNMS and MBNMS, construction projects along the shoreline, and pipeline and cable-laying in MBNMS.

Implementation of the FMPs will contribute to the ROI's regional ecosystem health, including cultural resources, by applying the various action plans in CBNMS, GFNMS, and MBNMS. Cross-cutting action plans such as the Community Outreach and Maritime Heritage management will better inform the public and Sanctuary staff about the cultural heritage of CBNMS, GFNMS, and MBNMS. An Education and Outreach action plan will further develop this knowledge for CBNMS cultural resources, as will Education and Outreach and Research and Monitoring programs at GFNMS and Interpretive Facilities and Multicultural Education programs at MBNMS. Action plans concerning introduced species at GFNMS and MBNMS will also aid in the preservation of submerged cultural resources within those sanctuaries by limiting the possibility of damage by species that colonize on the resources. Additionally, NOAA Fisheries is implementing regulatory amendments to the Groundfish FMP that imposes additional restrictions on fishing within the ROI, in order to preserve groundfish populations. These restrictions would help prevent damage to submerged cultural resources from trawl equipment and other fishing gear.

Proposed Action

Ongoing regulatory efforts, including implementation of the FMPs and the NOAA Fisheries regulations restricting bottom-contact fishing, would create a beneficial cumulative impact on cultural resources. Some ongoing adverse impacts would continue (such as coastal development and scavenging activities); these would continue to be part of ongoing adverse cumulative trends within the ROI. The Proposed Action, through limiting or preventing seabed disturbance and better defining preservation measures, would contribute to this

beneficial cumulative effect on cultural resources, and would help mitigate any adverse cumulative trends caused by coastal development and scavenging.

Alternative Regulatory Actions

The alternatives would have a slightly greater cumulative beneficial effect than the Proposed Action by including a larger area of protection around Davidson Seamount.

The No Action Alternative

The No Action alternative would maintain the status quo of sanctuary management. No additional protections for cultural resources would be provided. Some ongoing adverse impacts would continue (such as coastal development and scavenging activities); these would continue to be part of ongoing adverse cumulative trends within the ROI. There would also be cumulative beneficial impacts on cultural resources from existing regulation and management efforts, including implementation of the FMPs and the NOAA Fisheries regulations restricting bottom-contact fishing. The No Action alternative would not contribute to any cumulative impacts, either beneficial or adverse.

3.8 HAZARDOUS WASTES AND WASTE DISPOSAL

This section addresses issues related to the proposed action that are associated with hazardous waste or waste disposal. The Resource Conservation and Recovery Act (RCRA) specifically defines a hazardous waste as a solid waste (or combination of wastes) that due to its quantity, concentration, or physical, chemical, or infectious characteristics can cause or significantly contribute to an increase in mortality. RCRA further defines a hazardous waste as one that can increase serious, irreversible, or incapacitating reversible illness or pose a hazard to human health or the environment when improperly treated, stored, disposed of, or otherwise managed. A solid waste is a hazardous waste if it is not excluded from regulation as a hazardous waste or if it exhibits any ignitable, corrosive, reactive, or toxic characteristics (USEPA 1999).

The ROI for these issues includes the CBNMS, GFNMS, and the MBNMS. Additionally, the ROI includes the area around Davidson Seamount proposed for inclusion in MBNMS and the near-coastal onshore environment along approximately 400 miles (645 km) of shoreline (about one-third of the California coast) located in central and northern California adjacent to the sanctuaries.

3.8.1 Regional Overview of Affected Environment

There are four topics of concern having to do with hazardous waste and waste disposal within and adjacent to the three sanctuaries and the Davidson Seamount area: marine vessel discharge, cruise ship discharge, dredge disposal, and the Comprehensive Environmental Response, Compensation, and Liability Information System/ National Priorities List (CERCLIS/NPL) sites. Each topic is described in detail below.

Marine Vessel Discharges (excluding Cruise Ships)

Marine vessels generate pollutants that are commonly discharged in the water. These potentially hazardous pollutants include, but are not limited to, oil, hydrocarbons, volatile organic compounds (VOCs), and sewage. The marine vessels include a wide array of boats and MPWC and are used in both commercial and recreational activities. Specific types of marine vessel discharges are described in Section 3.5, Water Quality.

Cruise Ship Discharges

The main pollutants generated by a cruise ship are sewage, also referred to as black water; gray water; oily bilge water; hazardous wastes; and solid wastes. A recent California law (State of California Legislature, Assembly Bill 2672) prohibits the discharge of treated or untreated sewage from cruise ships into state waters (from the shoreline to 3 nm [3.5 miles; 5.5 km] offshore).

Graywater from vessels includes wastewater from kitchens, showers, laundry facilities, and galleys. Pollutants in graywater include suspended solids, oil, grease, ammonia, nitrogen, phosphates, copper, lead, mercury, nickel, silver and zinc, detergents, cleaners, oil and grease, metals, pesticides, and medical and dental wastes. Federal regulations do not currently prohibit the discharge of graywater in the sanctuaries (NOAA 2003c, 2003d, 2003e). A recent California law (State of California Legislature, *Assembly Bill 2093*) prohibits the discharge of graywater from cruise ships into state waters (from the shoreline to 3 nm [3.5 miles; 5.5 km] offshore). Details on the types of discharges associated with cruise ships and existing discharge regulations are provided in Section 3.5, Water Quality.

Hazardous wastes specifically produced on cruise ships include by-products of dry cleaning and photo processing operations, paints and solvents, batteries, fluorescent light bulbs containing mercury, and wastes from print shops. A typical ship produces an estimated 110 gallons (416 liters) of photo processing chemicals,

5 gallons (19 liters) of dry cleaning wastes, and 10 gallons (38 liters) of used paints per week. These substances can be toxic or carcinogenic to marine life (NOAA 2003c, 2003d, 2003e).

The RCRA imposes management requirements on cruise ships and other vessels that generate or transport hazardous waste and requires that hazardous materials be offloaded to land-based treatment or disposal facilities (NOAA 2003c, 2003d, 2003e).

Dredge Disposal

Local harbors regularly dredge harbor bottoms and dispose of the bulk of their dredge sediments either in the ocean, on land at landfill sites, or at designated beach nourishment sites adjacent to the harbors. Dredge materials can contain a variety of hazardous materials including mercury and other heavy metals, chlorinated pesticides, polychlorinated biphenyls (PCBs), and PAHs.

Two existing dredge disposal sites, SF-12 and SF-14 (see Figure 2-5) within MBNMS are formally recognized in the MBNMS regulations. Two additional sites that predate the MBNMS regulations are within MBNMS at Santa Cruz Harbor and Monterey Harbor. Details on dredge disposal sites are provided in Section 3.5, Water Quality.

Before dredged material can be disposed of, a Sampling and Analysis Plan (Plan) is prepared and reviewed by the USEPA, the US Army Corps of Engineers, California Coastal Commission and NOAA. Under the plan, the material is tested for contaminants under the CWA, and it is determined whether the material is suitable for unconfined aquatic disposal. If the material to be dredged is contaminated, as indicated by the testing results, and there is not an inland location or landfill option identified, then the sediments will not be able to be dredged (Morton 2004). For this reason, all dredged material that is disposed of in the sanctuary meets the thresholds of the Clean Water Act and is evaluated in the water quality section (Section 3.5) of this document.

Superfund Sites

There are no superfund sites located offshore of the California coastline that fall within the boundaries of the sanctuaries or Davidson Seamount. The closest superfund site to the coastline is at Fort Ord in Monterey County; however the groundwater contamination from this site does not extend to the coastline.

3.8.2 Regulatory Environment

Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9610

The CERCLA, commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. The Superfund Amendments and Reauthorization Act (SARA) amended CERCLA on October 17, 1986. Superfund is the federal government's program to clean up the nation's uncontrolled hazardous waste sites.

The CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL. CERCLIS contains information on sites located within the shoreline counties of the ROI. There are four CERCLIS sites within Santa Cruz County, including one NPL site; eleven CERCLIS sites and one

NPL site are within San Francisco County; three CERCLIS sites are within Marin County; six CERCLIS sites, including three NPL sites, are within Monterey County; twenty-seven CERCLIS sites, including two NPL sites, are within Sonoma County; one CERCLIS site is within San Luis Obispo County; and ten CERCLIS sites are within San Mateo County.

Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901-6992

The RCRA addresses hazardous waste management, establishing duties and responsibilities for hazardous waste generators, transporters, handlers, and disposers.

Clean Water Act, 33 U.S.C. § 1251 et seq.

Section 312 of the CWA requires the use of MSDs for all vessels within 3 nm (3.5 miles; 5.5 km) offshore; raw sewage can be legally discharged beyond 3 nm. Vessels over sixty-five feet in length must have a Type II or Type III MSD. In the sanctuaries, the discharge of raw sewage is prohibited, and it is required that properly functioning marine sanitation devices be used when discharging sewage waste (NOAA 2003c, 2003d, 2003e).

3.8.3 Significance Criteria and Impact Methodology

Criteria to determine the significance of impacts associated with regulatory changes to hazardous waste management practices are based on federal and state regulations. Impacts are considered to be significant if the Proposed Action were to:

- Increase the likelihood of activities that would violate the Resource Conservation and Recovery Act, 42 U.S.C. § 6901, or NOAA hazardous waste handling or waste disposal guidelines;
- Increase the discharge or deposition of unauthorized waste into the sanctuary or in an area outside the sanctuary that could migrate into the sanctuary and affect its resources (including onshore urban or agricultural runoff);
- Increase the generation of hazardous or acutely hazardous waste, resulting in increased regulatory requirements over the long term;
- Increase the likelihood of exposing the environment or the public to any hazardous conditions through release or disposal;
- Increase the likelihood of activities that would cause physiochemical changes that affect the marine ecosystems or are measurably different from ambient background conditions;
- Increase the likelihood for spills or releases of oil, fuel, or hazardous substances from operations, such as commercial shipping, within the sanctuaries; or
- Cause oil, grease, or other waste material to be visible.

Although the ROI for hazardous waste and waste disposal encompasses three marine sanctuaries and the Davidson Seamount area, as well as the onshore environment adjacent to the sanctuaries, regulations for waste-related impacts are relatively uniform, with additional NOAA regulations incorporated for offshore operations. The central objective is to protect the environment of the sanctuaries from hazardous waste or waste disposal impacts. The impact analysis focuses on determining whether any of the proposed or alternative regulatory actions could result in practices that would increase the potential for hazardous waste generation or hazardous waste disposal. The analysis included assessing the compliance of the Proposed

Action with applicable federal or site-specific hazardous or nonhazardous waste regulations, guidelines, management plans, spill response and contingency plans, and pollution prevention plans.

Neither the Proposed Action nor any of the alternatives would impact the USEPA cleanup of hazardous waste sites on land under the USEPA Superfund Program because most of the regulatory changes address offshore habitat. In addition, the Superfund Program is not expected to impact the new management measures identified under the Proposed Action because the program is regulated by the USEPA and focuses on containment within each site. Therefore, the impact analysis does not address superfund sites. The analysis addresses how the proposed action affects disposal of hazardous waste in the sanctuaries and the Davidson Seamount area.

3.8.4 Cross-Cutting Regulations – Environmental Consequences

The Proposed Action

The proposed cross-cutting actions would result in beneficial effects, with regard to hazardous waste disposal in the ROI.

Introduced Species

The proposed regulation would prohibit the release of introduced species into the three sanctuaries. Introduced species have the potential to alter ecosystem composition and function, and their introduction can indirectly impact water quality, including hazardous wastes. An example of a non-native species affecting water quality toxicity is the Asian clam (*Potamocorbula amurensis*), in the San Francisco Bay Estuary. This species concentrates selenium at a much higher rates than any native species, negatively affecting higher trophic organisms that bioconcentrate this contaminate. Oil refineries in the region have spent large sums of money extracting selenium from the ecosystem (SFBRWQCB 2000).

Implementing regulations to reduce the number of nonnative species introduced into the sanctuaries could reduce the discharge of waters that may also contain hazardous materials and wastes. There is currently no language in existing sanctuary regulations with regards to introduced species, though the State of California prohibits the introduction of nonnative species in their waters. The proposed prohibition would result in consistent regulations throughout state and federal waters of the three sanctuaries regarding the introduction of nonnative species. Overall, the proposed prohibition would have a potentially beneficial impact on the management of hazardous waste and waste disposal throughout the ROI.

Discharge Regulation Clarifications, Marine Sanitation Devices, and Graywater

Amending the language regarding allowable discharges would provide a beneficial impact on the management of hazardous waste and waste disposal since the amendments would further clarify that the discharge of untreated sewage is prohibited in the sanctuaries. Large vessels (300 gross tons) would no longer be allowed to discharge or deposit treated sewage, and graywater in the MBNMS, into the sanctuaries, if they have sufficient holding capacity. For vessels under 300 gross tons or larger vessels without sufficient holding capacity, the proposed regulations allow discharges into the sanctuaries from MSD types I and II, but do not allow discharges from Type III MSDs, which essentially is raw sewage. Additionally, the proposed regulation of requiring locks on valves preventing bypass and direct discharge of untreated sewage is meant to facilitate enforcement of this regulation by the Coast Guard to prevent accidental discharge.

The proposed revisions to the regulations may increase compliance and enforceability and reduce unintentional violations relating to the use of marine sanitation devices in the sanctuaries. This may result in a decrease in the accidental or illegal discharge of raw sewage and hazardous wastes from vessels, which would benefit hazardous waste management and hazardous waste disposal in the sanctuaries.

Cruise Ship Discharge and Definitions

The proposed regulations on cruise ships would ban the discharge or deposit of any material or matter other than vessel engine cooling water, generator cooling water and anchor wash. Existing California law prevents discharges of graywater and raw sewage within 3 nm (3.5 miles; 5.5 km) of the shore; this regulation would extend this protection across all three sanctuaries and throughout the proposed Davidson Seamount area. The regulations would provide a beneficial impact on the management of hazardous waste and waste disposal throughout the ROI as they could prevent cruise ships from releasing oily water, graywater, hazardous materials and hydrocarbons into the sanctuary and increase pollution prevention efforts.

Alternative Regulatory Actions

Cruise Ship Prohibition Alternative

This alternative is intended to have the same impact as the Proposed Action; however it should be noted that some MSDs do not meet the effluent standards they are designed to meet (State of Alaska Department of Environmental Conservation 2000). It is possible that ongoing discharge of cruise ship treated wastewater into the sanctuaries could have minor impacts on hazardous waste management, despite being conducted under an approved discharge plan. As noted in Section 3.5.4 (Water Quality), some MSDs do not achieve the effluent standards they are intended to meet. Although beneficial compared to existing conditions, this alternative could result in a less beneficial impact on hazardous waste management and disposal than under the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuaries as they are currently managed. This would result in no impact on hazardous waste and hazardous materials management.

3.8.5 Cordell Bank National Marine Sanctuary – Environmental Consequences

The Proposed Action

Seabed Protection

The proposed regulation would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Additionally, the regulation would prohibit the same activities listed above in the remainder of the sanctuary outside the 50-fathom isobath, with the exception of anchoring. This regulation would help reduce or eliminate the potential for disposal of wastes and hazardous materials that may be associated with the activities listed above and would have an overall beneficial impact on the management of hazardous waste and waste disposal in the sanctuary. The regulations would reduce pollution discharge associated with these activities and would protect benthic resources and their habitats.

Benthic Habitat Protection

This proposed clarification would have no impact on hazardous wastes and waste disposal.

Alternative Regulatory Actions

Seabed Protection

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within a line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. This alternative would help reduce or eliminate activities that have the potential to dispose of wastes and hazardous materials in the Sanctuary. As such it would have the same beneficial impact on hazardous materials management as the Seabed Protection regulation in the Proposed Action.

All other aspects of this alternative would have the same beneficial impacts on the management of hazardous waste and waste disposal as described under the Proposed Action.

Benthic Habitat Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, in addition to the minor corrections and clarifications, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath around the Bank. Similarly, to the Proposed Action, this regulation would have no impact on hazardous wastes and waste disposal.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on hazardous materials management.

3.8.6 Gulf of the Farallones National Marine Sanctuary – Environmental Consequences

The Proposed Action

Deserted Vessels

The proposed regulation would prohibit vessels from being deserted in the Sanctuary and would prohibit leaving harmful matter (hazardous materials or wastes) aboard a deserted vessel. These two regulations would help reduce the potential for release of hazardous materials into the marine environment from deserted leaking vessels and from vessel stranding incidents. When a vessel is deserted there is a high risk of discharge of harmful matter (e.g., fuel, motor oil) into the marine environment. Implementing this regulation would reduce the risk substantially and, therefore, provide beneficial effects on the management of hazardous waste.

Water Quality – Discharges From Outside the Sanctuary

The proposed regulation would prohibit discharging or depositing any material or other matter from beyond the boundary of the Sanctuary that subsequently enters the Sanctuary and injures a Sanctuary resource or quality. This regulation proposes the same exceptions as the cross-cutting “discharge within or into the Sanctuary” regulation and would similarly benefit hazardous waste management and hazardous waste disposal in the sanctuaries as those described in section 3.8.4 for the cross-cutting discharge regulation clarifications. In addition, the Proposed Action would help reduce or eliminate potentially hazardous pollutants such as oil, sewage and other harmful chemicals from entering the sanctuaries and potentially causing injury to Sanctuary resources or qualities. Potential upland sources of pollution include municipal wastewater outfalls, industrial outfalls, surface runoff (nonpoint source pollution), and oil and hazardous materials spills. Some examples of

marine based sources of pollution include discharges from transiting and wrecked ships, and underwater pipelines). This regulation would result in potential direct beneficial impacts on hazardous waste management and hazardous waste disposal in the sanctuaries, by minimizing or reducing the likelihood that these hazardous or toxic spills or discharges will enter the Sanctuary.

Oil and Gas Pipeline Clarification

The proposed regulation would limit pipelines going through the Sanctuary to those associated with facilities located adjacent to the Sanctuary rather than from any offshore oil and gas facility located outside the Sanctuary, as currently allowed by the existing regulation. There are no existing or planned oil and gas production facilities in the vicinity of the sanctuary so this proposed change in regulation is primarily technical in nature. To the minor extent that this change would reduce the potential for pipelines to be installed within the sanctuary, this would reduce the potential for impacts from pipeline construction, and reduce risk of oil or gas spills or other hazardous materials being deposited into Sanctuary waters. This would result in a minor beneficial impact on hazardous waste management in the Sanctuary.

Alternative Regulatory Actions

There are no alternatives that would impact hazardous waste management or disposal.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on hazardous waste and hazardous materials management.

3.8.7 Monterey Bay National Marine Sanctuary – Environmental Consequences

The Proposed Action

Deserted Vessels

The proposed MBNMS prohibitions regarding deserted vessels and leaving harmful matter aboard deserted vessels are the same as the proposed GFNMS regulations and beneficial impacts would be the same as described above in Section 3.8.6.

Davidson Seamount

Adding the Davidson Seamount to the Sanctuary would have a beneficial impact on the management of hazardous waste and waste disposal on and around the Davidson Seamount. By including the seamount, existing Sanctuary regulations regarding activities and discharges would apply, which would help to reduce hazardous discharges. Furthermore, the proposed new discharge regulations would apply to this area. The addition of the seamount to the Sanctuary would clarify regulations for managing hazardous waste issues surrounding the seamount and would make the regulations easier to enforce.

Motorized Personal Watercraft

The proposed definition of MPWC would reduce the MPWCs allowed for use within the Sanctuary. The action would result in a negligible reduction in the amount of pollution discharged from such vehicles. As discussed in the water quality analysis in Section 3.5, Water Quality, MPWCs can discharge fuel-related contaminants (oil and gasoline) into the marine environment. The reduction in potential hazardous materials discharge associated with the anticipated reduction in MPWC use would result in a very slight beneficial effect.

Dredge Disposal—SF-12

The proposed regulation modification would adjust the location of the SF-12 Dredge Disposal Site to the head of the Monterey Canyon. This would allow the dredge material to be disposed in deeper water rather than to shallow coastal waters where it could be transported by waves and currents to onshore beaches. No increase in the volume of dredge material is part of this action. As noted in Section 3.8.1, dredge material cannot be disposed if it contains contaminants. Therefore, the Proposed Action would have no effect on the management of hazardous materials and waste in the Sanctuary.

Dredge Disposal—Monterey and Santa Cruz

The proposed regulation modification would also identify, codify, and recognize the two dredge disposal sites at Twin Lakes State Beach (Santa Cruz Harbor) and Monterey Harbor. These sites have not been consistently identified by coordinate location or have been identified by different descriptions. The use of these two dredge disposal sites predates the designation of the Sanctuary, and the two sites have been recognized as sites approved for dredge disposal subject to the conditions set forth in permits approved by USACE and USEPA subject to MBNMS authorization.

Redefining and officially locating disposal sites at Santa Cruz Harbor and Monterey Harbor would not result in any changes in the amount or location of permitted dredge disposal. Therefore, the Proposed Action would have no impact on the management of hazardous materials and waste in the Sanctuary.

Alternative Regulatory Actions

The alternatives would have the same impacts on hazardous waste management as identified in the Proposed Action, with the following differences.

Davidson Seamount NMSA Alternative

This alternative Davidson Seamount regulation would allow existing Sanctuary regulations to be in effect which would help to reduce hazardous discharges. This alternative would have the same beneficial impact as described under the Proposed Action.

Davidson Seamount Circular Boundary Alternative

This alternative Davidson Seamount regulation proposes a circular boundary instead of a rectangular boundary and would have the same beneficial impact as described under the Proposed Action. Because the circular boundary would encompass a slightly larger area than the proposed boundary, slightly greater beneficial effects would be realized.

Motorized Personal Watercraft Alternative

This alternative would remove the four designated MPWC zones currently existing within the Sanctuary. In comparison to the Proposed Action, prohibiting MPWC from the entire Sanctuary would create a slightly greater, but still minor beneficial impact on hazardous waste and waste disposal management by eliminating the potential for hazardous waste discharged from MPWC to enter the Sanctuary and potentially injure Sanctuary resources.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on hazardous waste and hazardous materials management.

3.8.8 Cumulative Impacts

The ROI for cumulative hazardous waste and waste disposal would be the same as for the Proposed Action. There has been a steady increase in the total amount of hazardous waste shipped off-site from 1997 to 2002 in the state of California (California DTSC 2003). New laws and regulations are developed on an annual basis to manage the increasing hazardous waste generated in the state. Many of the cumulative projects identified in Section 3.1.4 would provide a beneficial impact on hazardous waste and waste disposal. County general plan updates would provide a beneficial impact by updating regulations and management of the resource. Updating NPDES permits regulates any hazardous waste that would leak into the watersheds and impact water quality. Restoration projects would clean up areas that may contain hazardous waste.

Implementation of the FMPs will contribute to the ROI's regional ecosystem health by applying the various action plans in CBNMS, GFNMS, and MBNMS. Implementation of ecosystem monitoring will provide the Sanctuaries with more complete information regarding waste and pollution within their boundaries. Action plans in GFNMS to address vessel spills will provide a better understanding of such risks within Sanctuary boundaries and techniques to protect the GFNMS ecosystem. The Farallon Islands Radioactive Waste Dump action plan would provide similar benefits to GFNMS. Within MBNMS, action plans that address harbor and dredge disposal, microbial contamination and beach closures, cruise ship discharges, and water quality will help MBNMS better understand the potential for hazardous waste contamination and waste disposal within Sanctuary boundaries.

The Proposed Action

While hazardous waste is generated in increasing amounts in the ROI, in recent years, more stringent legal requirements and more efficient hazardous waste management systems help prevent damage or risk to human health or the environment. Implementation of the FMPs and the new limitations on discharge in the sanctuaries, as well as the restrictions on activities that generate hazardous waste, would contribute to a beneficial cumulative impact on hazardous waste management and waste disposal in the ROI.

Alternative Regulatory Actions

Cumulative impacts would be the same as those described under the Proposed Action, with an increase in the level of beneficial impacts due to the increased levels of protection afforded by the MPWC alternative regulation, and the Davidson Seamount Circular Boundary Alternative, as described above.

The No Action Alternative

The No Action alternative would maintain the status quo of sanctuary management. No additional protections from proposed regulations would occur. There would be cumulative beneficial impacts on hazardous materials management from existing regulation and future management efforts, including implementation of the FMPs. The No Action alternative would not contribute to any cumulative impacts on hazardous materials management.

3.9 LAND USE AND DEVELOPMENT

This section describes the current land use along the coast of California within the ROI. The ROI for land use and development encompasses the boundaries of the marine sanctuaries and the Davidson Seamount area, and it also includes land use and development activities adjacent to the boundaries that may affect the individual sanctuaries or management of the sanctuaries. This section identifies and describes potential impacts on land use that would be caused by the Proposed Action, Project Alternatives, and the No Action alternative. This section also covers those uses of coastal waters that abut coastal lands that are within municipal jurisdictions, as well as military uses in the water and airspace of the ROI.

3.9.1 Regional Overview of Affected Environment

This section focuses on coastal development and marine uses not addressed in other specific resource sections. In addition to the uses described in this affected environment, the ROI is utilized for many research and educational uses (described in Section 3.12), recreation (addressed in Section 3.11), and commercial fishing (addressed in Section 3.6).

Regional Land Use

The ROI for land use includes the coastal areas of Sonoma, Marin, San Francisco, San Mateo, Santa Cruz, Monterey and San Luis Obispo counties that are adjacent to or that could be affected by actions in CBNMS, MBNMS, and GFNMS. CBNMS is entirely offshore and therefore does not include a coastal component. Land use immediately adjacent to the project area is mainly open space (including national, state, and local parklands), commercial use, and single-family and multi-family residential. Land use is urbanized in these coastal areas in the cities of San Francisco, Pacifica, Half Moon Bay, Santa Cruz, the Monterey Peninsula, and Morro Bay. In these cities, development is denser than the rest of the coastal areas bordering or near the three sanctuaries.

There are also some limited industrial uses in the project area, mainly commercial and recreational fishing harbors at San Francisco Bay, Bodega Bay, Bolinas, Half Moon Bay, Santa Cruz, Moss Landing, Monterey, and Morro Bay harbors. There are electricity generating plants at Moss Landing and Morro Bay and sewage treatment facilities in coastal areas in San Francisco, Half Moon Bay, Santa Cruz, and Monterey. San Francisco/Oakland/Richmond, Santa Cruz, Moss Landing, and Monterey harbors have ocean dredge disposal sites, all of which were in historic use prior to MBNMS designation. Every county contains coastal developments or beaches that serve as water-oriented recreational uses (see Section 3.11, Public Access and Recreation).

Much of the coastal area is set aside for open space. Adjacent to GFNMS, most of Sonoma and Marin's coastline is reserved for open space, including Salt Point State Park, Sonoma Coast State Beach, Tomales Bay State Park, Pt. Reyes National Seashore (PRNS), Stinson Beach Park (administered by the National Park Service), and the Golden Gate National Recreational Area (GGNRA). The exceptions are small residential coastal communities in Jenner, Bodega Bay, Tomales, Bolinas, Stinson Beach and Muir Beach.

San Francisco coastal areas immediately adjacent to GFNMS waters are federal or state open space, mainly consisting of GGNRA. Along the MBNMS coastline, there are very densely populated single-family and multi-family residential communities within a hundred yards of the shore from Geary Avenue south to Daly City. San Mateo County coastal areas are mainly open space. These open space areas include agricultural areas

used mainly used for grazing, interspersed with the following state beaches: San Gregorio, Pompanio, Pescadero, and Año Nuevo. There are small urbanized areas at Pacifica and Half Moon Bay.

Santa Cruz County's land use is similar to San Mateo's, with open space and agriculture dominating most of the county's coastal areas. The cities of Santa Cruz and Capitola, however, have a fairly dense population within 50 to 200 yards (46 to 183 meters) from the shore, including small lot single-family and multi-family residences on coastal bluffs immediately above the shore. There are seven state parks and beaches in Santa Cruz County that border MBNMS, including Año Nuevo State Reserve.

Monterey County contains the longest and most diverse urban land use adjacent to the sanctuaries. The Monterey Peninsula includes the cities of Marina, Sand City, Pacific Grove, Monterey, Pebble Beach, and Carmel. Land uses in the Monterey Peninsula are mainly single-family residential, with some commercial areas in the city of Monterey and private recreational areas in various places on the Monterey Peninsula. Much of the southern Monterey County coast is open space including 27 miles (43 km) of coastline of the Los Padres National Forest with day use beaches and coastal recreational opportunities. There are 12 California state parks or beaches in Monterey County that border MBNMS, including Andrew Molera State Park, Point Lobos State Reserve and Asilomar State Beach. Elkhorn Slough National Estuarine Reserve is located near Moss Landing. There are five Monterey County parks that border MBNMS, including South Monterey Dunes Park.

San Luis Obispo County coastal areas are mainly open space. These open space areas include agricultural areas, mainly used for grazing, which are interspersed with county beaches. At the southern end of MBNMS is the city of Cambria, which is mainly a retirement community and center for tourism. There are two California state parks or beaches in San Luis Obispo County that border MBNMS.

Water and Airspace Use

The main activities in sanctuary waters are commercial and recreational fishing, commercial shipping, and recreational activities, such as boating and whale watching. These activities are described in depth in sections 3.6, 3.10, and 3.11, respectively. Other uses in sanctuary waters include patrols by the US Coast Guard (USCG) and other Department of Homeland Security agencies, patrols by the California Department of Fish and Game, and passage of US Navy vessels and aircraft. Surface ships from the above entities and US Navy submarines routinely transit through the sanctuaries. During Navy transits, they engage in training onboard and operate in accordance with all CWA requirements and associated federal regulations. The Navy indicates that protective measures are used by training exercise planners to increase situational awareness of unit commanders to ensure that training activities do not result in takes under the MMPA and ESA. The USCG is the most active government agency regarding use of sanctuary waters. USCG activities include nearshore search and rescue operations, environmental enforcement, drug interdiction, and "Deepwater" program activities, which are located more than 50 miles (80 km) offshore. Also, the USCG flies maintenance personnel by helicopter to the lighthouse on Southeast Farallon Island for periodic servicing.

Airspace above the sanctuaries is transited by commercial jets using San Francisco, Oakland, and San Jose airports and private aircraft based at or using the numerous small airports throughout Northern and Northern/Central California (i.e., Monterey or Half Moon Bay). Sanctuary airspace is also used by the US Navy for training. The US Navy's Third Fleet conducts surface, air, and submarine maneuvers. The Federal Aviation Administration (FAA) has approved Special Use Airspace designations for Navy and Marine Corps

flights over sanctuary waters. The Navy maintains the following two warning areas in and around the current boundaries of the Gulf of Farallones National Marine Sanctuary.

- **Warning Area 260 (W-260):** W-260 is special-use airspace over open-ocean located off the California coast north of the San Francisco Bay area beginning approximately 70 nm (81 miles; 136 km) northwest of the previous Naval Air Station Moffett Field. The airspace extends from the surface up to 60,000 feet (18,288 meters). W-260 is used for all-weather flight training, air intercepts, surface operations, air-to-surface bombing, and rocket and aerial gunnery exercises with conventional ordnance. No ordnance expenditures are authorized within eight nm of Cordell Bank (38°01'N, 123°25'W).
- **Warning Area 513 (W-513):** W-513 is special-use airspace over open-ocean located off the California coast located west of the San Francisco Bay area. It is bounded to the north by W-260 and begins approximately 55 nm (61 miles; 102 km) northwest of the former Naval Air Station Moffett Field. The warning area extends from the ocean bottom up to 60,000 feet (18,288 meters). W-513 is used for flight training, air intercepts, and surface operations with inert conventional ordnance. No ordnance or pyrotechnics are authorized within 3 nm (3.5 miles; 5.5 km) of Noonday Rock (37°49'N, 123°13'W).

Military use of MBNMS includes air, surface and underwater activity. Some activity includes the use of non-explosive ordnance, sonar, smoke markers and the temporary placement of objects for torpedo firing or sonar location training. Air activities include aircraft carrier takeoffs and landings, and low-level air combat maneuvering. The U.S. Navy uses these areas for submarine operations and minesweeping training exercises. On occasion, U.S. Marines practice amphibious landings on the beaches adjacent to this area. The military also conducts non-combat-related preparedness activities such as underwater cable repair and breakwater maintenance. There are six designated military zones within or adjacent to MBNMS, including three submerged submarine operating areas, a warning area (#285), a naval operating area, and the Hunter Military operations area (onshore). More details on these military uses are provided at the MBNMS website: <http://montereybay.noaa.gov/research/techreports/marinezones/mil.html>. Military activities that were specifically identified in the MBNMS designation document are exempt from Sanctuary regulations. For new activities, or activities which were not identified in the designation document, MBNMS requests modification or prohibition of the activities to minimize impacts on Sanctuary resources.

Coastal and Offshore Energy Development

Oil and gas exploration and development is prohibited in the three sanctuaries and no oil and gas development occurs in the surrounding waters or in the Davidson Seamount area. There are no discovered oil and gas resources in the sanctuaries, though the United States Department of Interior (USDO I) has estimated that there are substantial undiscovered conventionally recoverable oil and gas resources (USDO I 1999).

3.9.2 Regulatory Environment

California Coastal Act of 1976, Cal. Pub. Res. Code § 30000 et seq.

The California Coastal Act of 1976 establishes policies guiding development and conservation along the California coast. The Coastal Act requires that local governments lying wholly or in part within the coastal zone prepare a Local Coastal Program (LCP) for its portion of the coastal zone. LCPs implement the California Coastal Act by establishing plans that are consistent with the Coastal Act. A Local Coastal Program is defined by Coastal Act Section 30108.6 as “a local government’s (a) Land Use Plans, (b) zoning ordinance,

(c) zoning district maps, and (d) within sensitive coastal resources areas, other implementing actions, which, when taken together, meet the requirements of, and implement the provisions and policies of, this division at the local level.”

City and County Plans

All city and county local coastal plans and land use plans in the project area have been certified by the California Coastal Commission except for small areas in Pacifica in San Mateo County; small areas of the city of Santa Cruz; Pacific Grove, Sand City, and Malpasos and Yankee beaches in Monterey County; and Sweet Springs Marsh in San Luis Obispo County (California Coastal Commission 2004a). The Coastal Commission has retained original jurisdiction over these latter areas.

The Sonoma County General Plan and the Sonoma County Local Coastal Program govern land use along the coastal areas in Sonoma County that are adjacent to GFNMS. The LCP includes a coastal plan last updated in 2000, maps, and zoning ordinances to implement the plan (Sonoma County 1989; Posternak 2004).

The Marin Local Coastal Program Land Use Plan and the West Marin Planning Area portion of the Marin Countywide Plan are the planning documents that govern development along the coastline in Marin County (Marin County 1982 and Marin County 2004).

The Western Shoreline Area Plan of the San Francisco General Plan governs land use development along the shoreline in the county of San Francisco (City and County of San Francisco 2004).

The San Mateo County Local Coastal Program was approved in 1982 and most recently amended in June of 1998. The LCP includes local coastal program components similar to a general plan, figures, standards, and management guidelines for managing the coastal resources in the county’s portion of the coastal zone pursuant to the requirements of the California Coastal Act (San Mateo County 1998).

The Santa Cruz County General Plan is the comprehensive planning document governing development within the city and contains goals, policies, and programs describing the community’s vision for economic viability, livable neighborhoods, and environmental protection. The county’s coastal zone is regulated according to coastal-dependent uses in which priority is given to agricultural, recreational, and residential uses, respectively. Coastal communities in Santa Cruz County have incorporated elements of the county LCP into their specific plans (Santa Cruz County 1994).

The city of Santa Cruz has prepared its LCP as part of its general plan. The city’s LCP contains a land use plan, implementing ordinances, and maps designed to preserve the unique coastal resources within the city’s portion of the coastal zone pursuant to the requirements of the California Coastal Act. On March 9, 1995, the California Coastal Commission certified relevant portions of the city’s general plan as the LCP (City of Santa Cruz 2004).

The City of Monterey Local Coastal Program establishes land use guidelines for the area of Monterey that lies within the coastal zone (City of Monterey 1981). The coastal zone in Monterey is regulated under the City of Monterey General Plan and specific LCPs, including the Skyline Land Use Plan and the Del Monte Beach Plan (City of Monterey 1981).

The Monterey County Local Coastal Program covers the non-urban areas of Monterey County. The Big Sur Coast Land Use Plan serves as the planning document for the area from Carmel to the San Luis Obispo County border (Monterey County 1981).

The north area of San Luis Obispo is covered by the North County Coastal Plan (San Luis Obispo County 1982); this plan was amended in 1992.

Other regulatory requirements and permit processes that affect land use in the sanctuary areas include regulation of wetlands under Section 404 of the CWA by the USACE (see Section 3.3.4 for more detail), management plans and permit systems by GGNRA, Point Reyes National Seashore, the Los Padres National Forest Management Plan, and various State Parks (mentioned above) that border sanctuary waters.

3.9.3 Significance Criteria and Impact Methodology

Criteria to determine the significance of impacts from land use and development are based on federal, state, and local standards and regulations. Impacts are considered to be significant if the Proposed Action creates the following:

- A conflict or inconsistency with established land or water use plans (e.g., county plans);
- A substantial change in existing land or water uses;
- An interference with the public's right of access to the sea; or
- Otherwise violates the NMS or NOAA Program Regulations.

Impacts on land use and development were assessed based on whether the Proposed Action is consistent with state and local plans and whether the Proposed Action would cause adverse land use changes or land use conflicts. The overall methodology is consistent with CEQ guidance and NOAA NEPA guidelines (NAO 216-6).

3.9.4 Cross-Cutting Regulations – Environmental Consequences

While cross-cutting regulations are similar for all three sanctuaries, their impact could be different in different areas. Therefore, land use impacts from cross-cutting regulations in all three sanctuaries are described below based on their impact on those municipal jurisdictions (mainly by county) that are adjacent to the sanctuaries and the ports used by vessels that visit the sanctuaries (see Section 3.6, Commercial and Recreational Fisheries, for more detail). These jurisdictions are grouped into three sets, including the northernmost counties (Sonoma and Marin); central counties (San Francisco and San Mateo); and southernmost counties (Santa Cruz, Monterey, and San Luis Obispo).

The Proposed Action

Introduced Species

Implementing stricter regulations to reduce the number of introduced species in the sanctuaries would have a beneficial impact on land use, especially in the San Francisco Bay and Monterey Bay coastal areas.

Invasive fouling organisms such as mollusks and sea squirts can attach themselves to any solid substrate within the San Francisco Bay and Monterey Bay coastal areas. Such attachment of introduced fouling organisms causes increased repair and maintenance costs for any operations that involve the use of submarine

structures. This negative economic impact affects wastewater treatment facilities, ship operators, harbor-based fishery operations, aquaculture operations, public aquariums, biological control operators, erosion control structure operators, and live bait operations. By reducing the number of invasive species in the area, this measure may decrease the interference of invasive fouling organisms with intake and discharge pipes and other marine equipment and allow current land users to reduce repair costs. Reducing the costs of existing land users would promote the economic viability for the continuation of existing land uses.

No land uses have been identified that are dependent upon the introduction of nonnative species into the sanctuaries, other than perhaps the possibility of culturing nonnative species, such as oysters, clams, abalone, and fish. Regulations already exist that prohibit hull scrapings (toxic antifouling agents and associated fouling organisms) from entering waterways and that limit the extent and type of mariculture operations. Laws addressing this include the California Marine Invasive Species Act of 2003 (this act mandates the management of ballast water and reauthorized and improved upon the California Ballast Water Management and Control Act (AB 703) and the National Invasive Species Act of 1996 (this act controls the spread of Aquatic Nuisance Species). In addition, the California State Aquatic Invasive Species (AIS) Management Plan is currently being drafted to address invasive species problems.

The proposed prohibition includes an exception for species cultivated by existing mariculture activities in Tomales Bay pursuant to a valid lease, permit, license or other authorization issued by the State of California and in effect on the effective date of the final regulation, so no adverse impacts on this land use would occur. Live bait operations will be prohibited from depositing any left-over nonnative live bait species into MBNMS waters. Other users of harbors within MBNMS include restaurants, retail seafood operations and public aquariums. While most businesses do not, as a standard practice, intentionally introduce nonnative species into ocean waters, such introduction might happen accidentally through improper disposal of unused stock or packing materials such as seaweed or seawater. The introduced species prohibition would not impose a significant burden on business operations, however, and compliance would likely be assisted by the public education and outreach elements of the FMPs.

The Proposed Action would have no significant adverse impact on land use in the ROI, and would have a beneficial impact on existing land uses.

Discharge Regulation Clarifications, Marine Sanitation Devices and Graywater

There would be both beneficial and less than significant adverse impacts on land use and development from the proposed discharge regulations.

The proposed regulations require vessel operators to lock all MSDs in a manner that prevents discharge of untreated sewage. The proposed regulations also require vessels of 300 gross tons or larger to hold sewage onboard, within sanctuary boundaries, if they have sufficient holding capacity. This regulation may decrease levels of contaminants in all coastal waters, which would be consistent with the current use of those waters for recreation activities that depend upon clean water, such as swimming, surfing, and fishing. This regulation would have a beneficial impact on land use by furthering the recreation goals of the relevant land use plans. Very few large-vessels dock in sanctuary waters so there would be no increased demand for shore side waste processing facilities. The proposed regulations are therefore not expected to cause any changes in land use and would not cause any adverse impacts.

The proposed discharge regulations would require that commercial and recreational boat operators dispose of harmful (as defined in the proposed regulations) deck washdown, oily bilge and ballast water, and waste from on board meals outside of the sanctuary. Planned sanctuary education and outreach programs would help with reducing the source of harmful materials. Some of this effluent, however, would have to be discharged at harbor facilities which would place additional burdens on them to accommodate the larger amount of waste disposed dockside. This additional burden on harbor facilities would be a less than significant impact. In the northern area of the ROI, facilities for processing such waste exist at harbors in Bodega Bay and San Francisco County. Due to the small scale of harbor facilities servicing commercial vessels visiting CBNMS and GFNMS from Sonoma and Marin county ports, potential offloaded waste would not be of a large enough quantity to necessitate expansion of harbor facilities. It should be noted that GFNMS is investigating locating a sewage pumpout station in Tomales Bay.

Adverse impacts in San Francisco and San Mateo counties due to potential additional burdens on harbor facilities would be less than significant. The potential offloaded waste for vessels that frequent the three sanctuaries would not be a large enough quantity to necessitate expansion of harbor facilities beyond the current areas that are designated for industrial or harbor uses. While there may be redesign of harbor areas to accommodate any new facilities, this would not change the nature of the land use nor would it conflict with current land use designations. Therefore, there would be less than significant impacts on land use.

Adverse impacts on harbor facilities in Santa Cruz, Monterey, and San Luis Obispo counties due to potential increased waste-handling demand would be similar to impacts in other counties and would be less than significant. The potential offloaded waste from vessels that frequent MBNMS would not be a large enough quantity to necessitate expansion of harbor facilities. In 1999, bilge and crankcase oil pump-outs were installed at Monterey and Moss Landing harbors. A similar system was installed in Santa Cruz harbor in 2002. These systems, with a significant amount of education and promotion, have been very successful, leading to the recycling of over 8,000 gallons (30,283 liters) of oil in Monterey and Moss Landing harbors. The systems however, have proved to be expensive to operate and maintain for the harbors. The existing pump-out station at Pillar Point harbor is now of insufficient capacity and needs to be replaced (NOAA 2003f). However, this existing condition needs to be remedied regardless of the proposed action and the potential slight increase in demand for waste handling facilities would not result in a significant impact.

Cruise Ship Discharge and Definitions

Proposed regulations regarding discharges in the sanctuaries state that cruise ships may not discharge into sanctuary waters other than clean engine cooling water, generator cooling water and anchor wash. This regulation may decrease levels of contaminants in Sonoma and Marin county waters, which would be consistent with the use of those waters for recreation. This regulation would have a beneficial impact on land use by furthering the recreation goals of the relevant land use plans. Cruise ships do not dock in Sonoma or Marin counties; therefore, there would be no increased demand for shoreside waste processing facilities.

This regulation may decrease levels of contaminants in San Francisco and San Mateo county waters, which would be consistent with use of those waters for recreation. This regulation would have a beneficial impact on land use by furthering the recreation goals of the relevant land use plans. Cruise ships do not dock in San Mateo County; therefore, there would be no increased demand for shoreside waste processing facilities. Cruise ships do dock in San Francisco, and it is possible that there would be an increase in demand for shoreside waste treatment processing facilities. The proposed new cruise ship terminal in San Francisco is currently evaluating the need to install pumpout facilities. However, this scenario is unlikely because cruise

ships are more likely for economic reasons to discharge their waste in the ocean outside of the sanctuaries and outside of state waters.

This regulation may decrease levels of contaminants in Santa Cruz, Monterey and San Luis Obispo County waters, which would be consistent with use of those waters for recreation. This regulation would have a beneficial impact on land use by furthering the recreation goals of the relevant land use plans. Cruise ships currently only anchor offshore Monterey, but cannot dock at the port since the harbor is too shallow and small; therefore, there would be no increased demand for shoreside waste processing facilities.

The Proposed Action is not expected to cause any changes in land use in the ROI. Therefore, it would not cause any adverse impacts.

Alternative Regulatory Actions

Cruise Ship Prohibition Alternative

This alternative would result in the same impacts on land use as the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuary as it is currently managed. This would result in no impact on land use.

3.9.5 Cordell Bank National Marine Sanctuary –Environmental Consequences

The Proposed Action

Seabed Protection

The proposed prohibition against disturbing the seabed would have no impact on land use. As noted in Section 3.6, Commercial Fisheries, the Proposed Action would not have a significant adverse effect on commercial fishing and thus the Proposed Action would not affect fishing-related land uses or businesses. The proposed action includes an exception that would allow anchoring in areas outside the 50 fathom isobath of the Bank. The ability to anchor in these areas would mean that no changes in boat type or docking facilities would be necessary and there would be no impact on coastal land use in the ROI. There are no other current or planned land use activities that would be impacted by this regulation and there would be no adverse impact on land use as a result of the Proposed Action.

Benthic Habitat Protection

The proposed clarification would result in no adverse impact on land use.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following differences.

Seabed Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. The ultimate effect of this alternative would be the same as under the Proposed

Action. As there would be no impact on land use under the Proposed Action, there would be no impact on land use under this alternative either.

Benthic Habitat Protection

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action and would have no impact on land use, the same as the Benthic Habitat Protection regulation in the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed; however NOAA Fisheries would issue regulations that would continue to limit fishing activities around Cordell Bank. This would result in no impact on land use.

3.9.6 Gulf of the Farallones National Marine Sanctuary –Environmental Consequences

The Proposed Action

Water Quality – Discharges From Outside the Sanctuary

The proposed regulation would prohibit discharging or depositing any material or other matter from beyond the boundary of the Sanctuary that subsequently enters the Sanctuary and injures a Sanctuary resource or quality. This regulation proposes the same exceptions as the cross-cutting “discharge within or into the Sanctuary” regulation and would have similar beneficial and less than significant adverse impacts to land use and development as those described in section 3.9.4 for the cross-cutting discharge regulation clarifications. In addition, the Proposed Action would help reduce or eliminate potentially harmful pollutants such as oil, sewage and other hazardous chemicals from entering the sanctuaries and causing injury to Sanctuary resources or qualities. Potential upland sources of pollution include municipal wastewater outfalls, industrial outfalls, surface runoff (nonpoint source pollution), and oil and hazardous materials spills. Some examples of marine based sources of pollution include discharges from transiting and wrecked ships, and underwater pipelines).

Although many land uses, such as livestock grazing, agriculture, and urban and suburban runoff may discharge pollutants outside the Sanctuary that subsequently enters the Sanctuary, the threat of any one discharge injuring a Sanctuary resource is very small to negligible. The combination of the distance from the pollution source and the strong mixing action of the Pacific Ocean (or strong tidal flushing and mixing in the Estuaries and Bays) tends to rapidly dilute the pollutants from individual sources to a level that is not likely to cause injury to a Sanctuary resource. Likewise, most municipal wastewater treatment facilities, if functioning properly, are capable of discharging secondary or tertiary treated wastewater to levels that meet EPA and State Regional Water Quality Board standards. Treated sewage that is discharged by municipalities in high-energy offshore ocean sites would rapidly mix and dilute to levels that are not likely to cause injury to Sanctuary resources. The proposed regulation, therefore, is targeted at those high volume or harmful discharges, such as such oil, untreated sewage, and hazardous spills or deliberate releases that are capable of entering Sanctuary and injuring a Sanctuary resource. The NMSP is not aware of any uses that, through their normal activity, would be impacted by this regulation. Therefore, the proposed regulation would have less than significant adverse impacts on land use and development. Since this proposed regulation could help

reduce potentially harmful impacts from entering the Sanctuary, it could provide beneficial impacts to some land uses that rely upon a healthy water quality, such as recreation, tourism, and mariculture.

Alternative Regulatory Actions

There are no regulatory alternatives for GFNMS that would have any discernable impacts on land uses in the ROI.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on land use.

3.9.7 Monterey Bay National Marine Sanctuary–Environmental Consequences

The Proposed Action

Boundary Changes - Davidson Seamount

Inclusion of Davidson Seamount in MBNMS would result no adverse land use impacts. No current or planned land use activities would be affected by incorporating the Seamount into the Sanctuary.

Motorized Personal Watercraft

The change in definition for MPWC would have the potential to reduce the number of MPWC in the Sanctuary. This reduction may lessen the demand for launching facilities at local ports (and reduce revenues for the harbors), but this type of socioeconomic impact is addressed in Section 3.13. No adverse impacts on land uses would occur. Impacts on recreational uses associated with this proposed regulation are described in Section 3.11.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following differences.

Motorized Personal Watercraft Alternative

This alternative would prohibit all MPWC in MBNMS. By eliminating MPWC, commercial MPWC operations in MBNMS would cease and demand for MPWC launching facilities at local ports would be eliminated. MPWC operations do not make up a significant percentage of local marine business or commercial harbor facilities in the area. Therefore, no impact on land use and development would occur as a result of this alternative.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on land use.

3.9.8 Cumulative Impacts

The ROI for cumulative impacts includes the coastal, nearshore, and offshore areas of the three sanctuaries and surrounding coastal lands and waters, including the Davidson Seamount area. This section addresses the cumulative effects on land use that would be caused by the combination of impacts from the Proposed

Action and from other sources of potential land use impacts, such as coastal development and coastal land use regulations.

Trends for land use resources in the coastal areas adjacent or near sanctuary waters are: higher density in urban areas near coastal areas, such as San Francisco, Half Moon Bay, Monterey, Santa Cruz and Cambria and increased use of land for open space and recreation. Federal, state and local government agencies, such as the National Park Service and California State Parks and non-profit organizations, such as the Nature Conservancy have been purchasing land in coastal areas to preserve agriculture and open space. Due to these purchases and due to other socioeconomic factors, some small coastal communities have seen a reduction in commercial and residential land uses.

Implementation of the FMPs will contribute to the ROI's regional ecosystem health by applying the various protective action plans in CBNMS, GFNMS, and MBNMS.

The Proposed Action

The proposed regulations would not result in any substantial change in existing land uses, would not cause a conflict or inconsistency with established land or water use plans, would not interfere with the public's right of access to the sea, and would not otherwise violate the NMS or NOAA Program Regulations. Therefore, the proposed regulations would not contribute to any cumulative impacts related to land use within the ROI.

Alternative Regulatory Actions

As with the Proposed Action, the alternative regulations would not contribute to any cumulative impacts related to land use within the ROI.

The No Action Alternative

The No Action alternative would maintain the status quo of sanctuary management. Under the No Action alternative, existing trends in land use would continue, and the No Action alternative would not contribute to any cumulative impacts on land use, either beneficial or adverse.

3.10 MARINE TRANSPORTATION

This section addresses the impact of proposed regulatory changes on marine transportation. A summary of existing marine transportation activities in the region is provided. The impact analysis presents the standards used to evaluate impacts on marine transportation and addresses potential effects of the proposed action on this resource area. Impacts on recreational boating and fishing are addressed in Section 3.11 and impacts on commercial fishing are assessed in Section 3.6.

The ROI for the marine transportation analysis includes the coastal area from the southern edge of MBNMS north to Bodega Bay on the edge of GFNMS, west to include all the waters within the three sanctuaries as well as the proposed area surrounding Davidson Seamount, and east to include the Golden Gate. In addition, the proposed regulatory changes would affect discharges occurring outside of the NMS boundaries that flow back into the NMS.

3.10.1 Regional Overview of Affected Environment

Vessel Activity

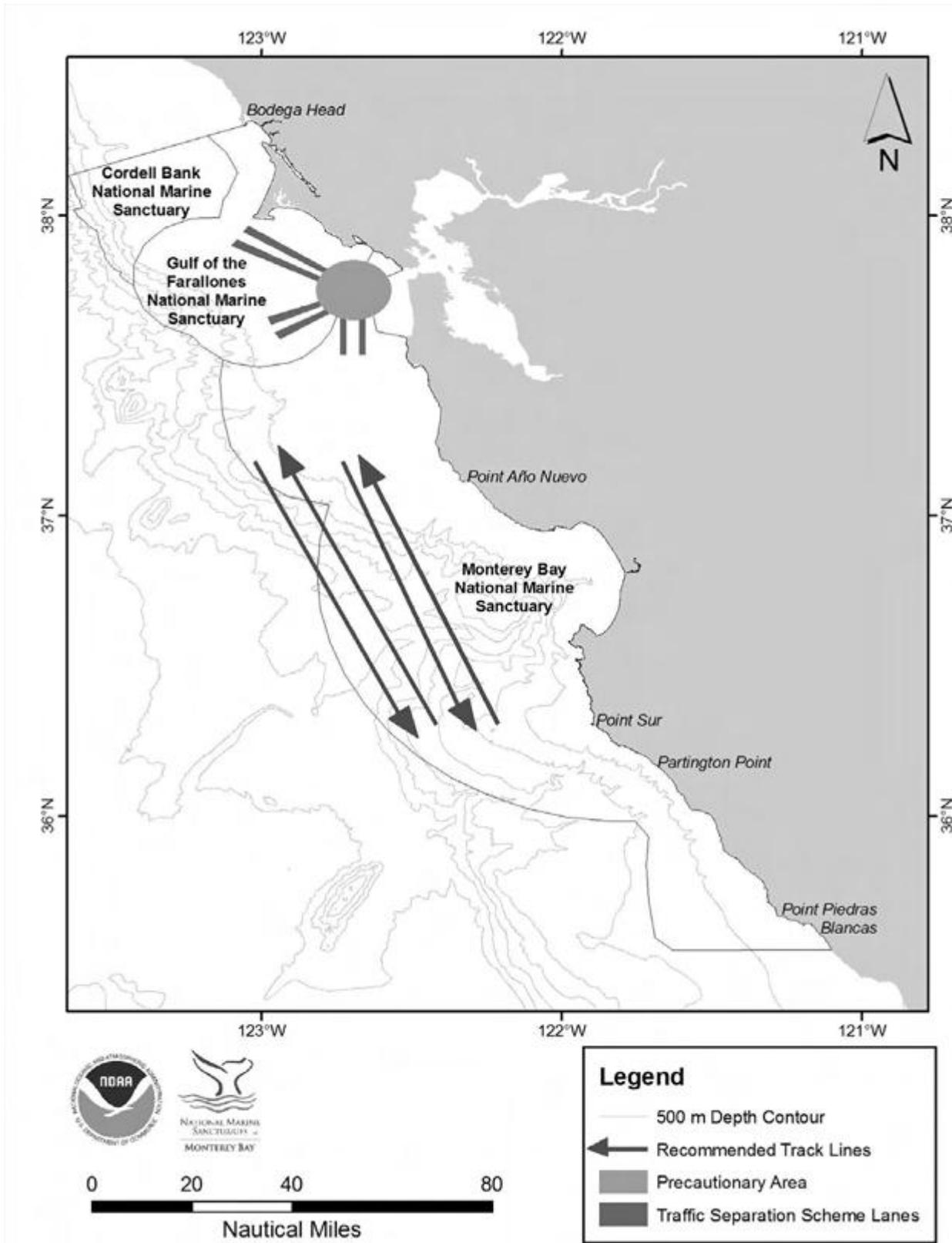
According to Lloyds Maritime Information Services, in 2000, 3,575 cargo vessels called at ports on San Francisco Bay, including 1,936 container vessels, 787 tankers, 626 dry bulk vessels, and 226 other types (Bureau of Transportation Statistics 2002). Approximately half of these vessels transit south off the coast of California, while the other half transit north or west of San Francisco. Data from the USACE show a similar level of movement, with approximately 3,600 vessels (including foreign and domestic vessels, tugs, and barges) entering San Francisco Bay from the Pacific Ocean each year (USACE 2002a). In addition, approximately 3,000 large vessels transit along the northern/central California coast every year (Pacific States/British Columbia Oil Spill Task Force 2002), passing through the three sanctuary ROI. Shipping lanes are shown in Figure 3-11.

Historically, the total number of hazardous spills from transiting vessels is small, but the potential impacts may be enormous given the number and volume of vessels and the hazardous cargo lane's proximity to major seabird and marine mammal populations at the GFNMS Islands and elsewhere in Sanctuary waters. During the last year (2005), approximately 2,000 commercial vessels were reported using the southern approach shipping lane. Large commercial vessels are of particular concern for spills since they can carry up to 1 million gallons of bunker fuel, a heavy viscous fuel similar to crude oil, which they use for fuel. Also, there is a great deal of movement of oil from oil tankers carrying oil annually up and down the coast of California.

The overwhelming majority of foreign vessel traffic in this region consists of ships and barges destined for San Francisco Bay. The harbors at Monterey, Morro Bay, and Santa Cruz saw occasional foreign vessel calls between 1998 and 2002, while foreign traffic at Humboldt Bay peaked in 2000, then fell sharply (Algert 2004; Yerena 2004; Casey 2004; Kinnamon 2004).

A relatively small amount of the traffic in the ROI is cruise ships. In 2004, 37 cruise ships repositioned from Mexico and the Caribbean to Seattle and Vancouver, British Columbia for cruises through the Inside Passage to Alaska. These ports jointly experienced growth in cruise passengers from 605,000 in 1994 to 1.3 million in 2003, an average annual growth rate of 8.9 percent (Port of Seattle 2004; Port of Vancouver 2004).

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Shipping Lanes

Northern/Central California

The Port of San Francisco experienced steady gains in cruise ship traffic, from 44 calls and 56,968 passengers in 1994 to 80 calls and 137,315 passengers in 2003 (Port of San Francisco 2004). San Francisco is a port of call for approximately 10 percent of its cruise calls and a port of embarkation or homeport for 90 percent of its calls. Some of the cruises originating in San Francisco travel down the coast of California to Mexican ports of call. One of the ports of call along the way is Monterey. There were three visits by cruise ships to Monterey in 2002, 14 visits in 2003, 18 visits in 2004, and 9 visits in 2005. There are 2 visits planned for 2006 (City of Monterey 2006).

Fifteen of the eighteen vessels that visited Monterey in 2004 carried an average of 1,921 passengers and were 870 feet (265 meters) in length. The remaining three vessels carried an average passenger load of 357 and were 569 feet (173 meters) in length. In San Francisco, 70 out of 85 vessel calls were ships that carried 1,745 passengers and averaged 861 feet (262 meters) in length. The remaining 15 vessels carried 232 passengers and averaged 387 feet (118 meters) in length.

The US Navy routinely operates surface ships and submarines through GFNMS as part of training activities. During these transits, they comply with the requirements of the Federal Water Pollution Control Act section 312 and associated federal regulations. However, this does not apply to activities that may be required of the US Navy during times of national crisis. Activities of other services or federal agencies, including the USCG or Homeland Security Department, are not included in this description.

3.10.2 Regulatory Overview

Federal Regulations

Several acts of Congress govern the movements of commercial vessels in specified waterways. These acts include the Ports and Waterways Safety Act of 1972, the Port and Tanker Safety Act of 1978, and the Oil Pollution Act of 1990. In addition, the Coast Guard Vessel Traffic Service (VTS) regulations became effective October 1994. The VTS San Francisco Area includes the Pacific Ocean in a 38.7 nm (33 miles; 77 km) radius around Mount Tamalpais, which is 10 miles (16 km) north of the Golden Gate. State law also governs the discharging of ballast water through the California Marine Invasive Species Act (AB 433, 2003), the California Coastal Ecosystems Protection Act (SB 497, 2006) and the Ballast Water Regulations for Vessels Arriving at California Ports or Places after Departing from Ports or Places within the Pacific Coast Region (2 CCR Sections 2280 through 2284, 2005)..

The Ports and Waterways Safety Act of 1972 authorizes the US Coast Guard to establish vessel traffic service/separation (VTSS) schemes for ports, harbors, and other waters subject to congested vessel traffic. The VTSS apply to commercial ships, other than fishing vessels, weighing 300 gross tons (270 gross metric tons) or more (NOAA 2005b).

The volunteer traffic separation lanes used by commercial vessels transiting the northern/central California coast were established in 2000 by the United Nations International Maritime Organization (IMO) and were the result of a collaborative effort between the USCG and MBNMS. The intention of this effort was to reduce the likelihood of a spill in MBNMS along the central and northern California Coast as well as to ensure safe, efficient, and environmentally sound transportation by vessels.

The new plan routes large vessels in north-south tracks ranging from 13 to 20 nm (15 to 23 miles; 24 to 37 km) from shore between Big Sur and the San Mateo coastline. Most cruise ships sail along the

northern/central California coast at 15 to 17 nm (13 to 15 miles; 28 to 31 km) from shore unless accessing a port. Ships carrying hazardous materials, such as refined petroleum, chemicals, and munitions, follow north-south tracks between 25 and 30 nm (29 to 34.5 miles; 46 to 56 km) from shore. Loaded tankers are required to stay at least 50 nm (57.5 miles; 93 km) offshore, while unloaded tankers are required to stay 25 nm (29 miles; 46 km) offshore.

The Port and Tanker Safety Act of 1978 provided broader regulatory authority over regulated and non-regulated areas. The act improved the supervision and control of all types of vessels operating in navigable waters of the US, and improved the safety of foreign or domestic tank vessels that transport or transfer oil or hazardous cargoes in ports or places subject to US jurisdiction (NOAA 2005b).

The Oil Pollution Act of 1990 established that parties responsible for discharging oil from a vessel or facility are liable for: (1) certain specified damages resulting from the discharged oil; and (2) removal costs incurred in a manner consistent with the National Contingency Plan (NCP). The liability for tank vessels larger than 3,000 gross tons was increased to \$1,200 per gross ton or \$10 million, whichever is greater. The fine for failing to notify the appropriate Federal agency of a discharge was increased from a maximum of \$10,000 to a maximum of \$250,000 for an individual or \$500,000 for an organization, and the maximum prison term was increased from one year to five years. Civil penalties were authorized at \$25,000 for each day of violation or \$1,000 per barrel of oil discharged, and failure to comply with a Federal removal order can result in civil penalties of up to \$25,000 for each day of violation (USEPA 2005).

State Regulations

Ballast Regulations

State regulations designed to minimize the uptake and the release of nonindigenous species through ballast water include the California Marine Invasive Species Act (AB 433, 2003), the California Coastal Ecosystems Protection Act (SB 497, 2006) and the Ballast Water Regulations for Vessels Arriving at California Ports or Places after Departing from Ports or Places within the Pacific Coast Region (2 CCR Sections 2280 through 2284, 2005). The Marine Invasive Species Act (AB 433, 2003) and the California Code of Regulations Title 2, Division 3, Chapter 1, Article 4.6 contain specific ballast water discharge requirements applicable to all vessels weighing 300 gross registered tons or more. Article 4.6 requires all vessels arriving at a California port or place from another port or place within the Pacific Coast Region to (1) exchange ballast water in near-coastal waters before entering the waters of the State if that ballast water was taken on in a port or place within the Pacific Coast Region, (2) retain all ballast water on board, (3) discharge the ballast water to a reception facility approved by the CSLC or (4) use an alternative, environmentally sound method of ballast water management that has been approved by the CSLC or the USCG. “Near-coastal waters” are defined in Article 4.6 as those waters that are more than 50 nm from land and at least 200 meters (656 feet) deep. “Pacific Coast Region” is defined in Article 4.6 as all estuarine and ocean waters within 200 nm of land or less than 2,000 meters (6,560 feet, 1,093 fathoms) deep, and rivers, lakes or other water bodies navigably connected to the ocean on the Pacific Coast of North America east of 154 degrees west longitude and north of 25 degrees north latitude, exclusive of the Gulf of California. The Coastal Ecosystem Protection Act (SB 497, 2006) requires the state to adopt ballast water performance standards by January 2008 and sets specific deadlines for the removal of different types of species from ballast water applies to all commercial vessels.

California Clean Coast Act

The California Clean Coast Act, which became effective on January 1, 2006, prohibits the release from large passenger vessels (cruise ships) and other oceangoing ships (300 gross tons or more) of hazardous waste, oily bilge water, other waste, and sewage sludge into the marine waters of the state and marine sanctuaries. The Clean Coast Act also prohibits the release of graywater from cruise ships and oceangoing ships with sufficient holding capacity into the marine waters of the state. Furthermore, the Clean Coast Act requires the State Water Resources Control Board to request the appropriate federal agencies to prohibit the release of wastes from cruise ships and oceangoing ships into state marine waters and the four National Marine Sanctuaries in California.

3.10.3 Significance Criteria and Impact Methodology***Significance Criteria***

The Proposed Action would result in a significant impact on marine transportation if its implementation would result in the following:

- Injury or death;
- Spillage of oil or other hazardous materials into the waters of the ROI;
- Displacement of vessels in harbors within the ROI; or
- Delay of commercial vessel traffic for over one hour.

Impact Analysis Methodology

The proposed regulatory changes may impact vessel operations. The analysis includes an assessment of the following:

- Commercial shipping, which includes both domestic and foreign passenger vessels, such as cruise ships, dry cargo freighters, and tankers;
- Navy and Homeland security vessels that use, traverse, or patrol sanctuary waters; and
- Vessels associated with marine research facilities within the sanctuaries that conduct surveys and experiments from specially equipped research vessels.

Data for the above were obtained from NOAA, the USCG, USACE, Harbor Districts, California Department of Boating and Waterways, and other government agencies. In addition, interviews with selected members of the marine transportation industry and selected facility operators in the affected area provided information on how proposed changes in regulations could impact operations. The overall methodology is consistent with CEQ guidance and NOAA NEPA guidelines (NAO 216-6).

3.10.4 Cross-Cutting Regulations –Environmental Consequences

The cross-cutting regulations identified in Table 2-1 include those regulatory changes that are similar in all of the three sanctuaries. The impacts resulting from these cross-cutting changes are discussed separately from regulations that may apply to only one or two sanctuaries to reduce redundancy in this EIS.

The Proposed Action

Discharge Regulation Clarifications, Marine Sanitation Devices and Graywater

The proposed action would revise regulations to prohibit sewage discharges/deposits from within or into the three sanctuaries from vessels of 300 GRT or more. The prohibitions would only apply to vessels with sufficient holding tank capacity to hold sewage while within the sanctuary. The proposed action would also amend the exception to the prohibition on discharging or depositing graywater from within or into the MBNMS. The revised regulation would provide an exception for discharging or depositing graywater from vessels less than 300 GRT, and vessels 300 GRT or greater without sufficient holding tank capacity to hold graywater while within the MBNMS. Discharge of graywater is currently prohibited in the CBNMS and GFNMS.

The Proposed Action prohibits the marine discharge/deposit of any material or other matter, except the following:

- Fish, fish parts, or chumming material used in lawful fishing activities;
- For vessels less than 300 GRT (or vessels over 300 GRT that do not have sufficient holding tank capacity), clean effluent incidental to vessel use and generated by a Type I or Type II MSD;
- Clean vessel deck washdown, vessel engine cooling water, vessel generator cooling water, anchor wash, or bilge water; and
- Vessel engine or generator exhaust.

These prohibitions would result in less than significant impacts on marine transportation; the impact discussion is broken down into ballast water and other discharges.

Ballast Water Discharges. Ballast water discharge is already prohibited by the existing sanctuary discharge/deposit regulations. The impact of this restriction on vessel operations depends on the type of vessel, route characteristics, and weather patterns in question. Ballast water is used to ensure stability, trim, and structural integrity. According to the California State Lands Commission, the average ballast water capacity of various types of ships calling in California (Faulkner 2003) is as follows:

- Tank vessel – 6,371,000 gallons (24,117 cubic meters)
- Bulk carriers – 5,386,000 gallons (20,388 cubic meters)
- Container vessel – 3,441,000 gallons (13,026 cubic meters)
- Passenger vessel – 766,500 gallons (290 cubic meters)

Tankers are generally loaded with products when calling at US West Coast ports. As a result, ballast water discharges are minimal on this stage of the trip. Most tankers depart the US West Coast without a load and thus must ballast prior to their voyage, but this would not exacerbate the problems associated with ballast water discharge in the ROI. In addition, the phase-out of single hulled tankers is reducing the amount of ballast water discharge because less ballast is required in double-hulled tankers to achieve safe operating conditions (Chapman 2004).

Cargo vessels may require ballast water while transiting the California Coast. Generally, cargo vessels on transpacific routes are able to manage ballast water at-sea outside of the NMS boundaries (Stewart 2004). Vessels operating on coastal routes also are required to manage their discharges and do not expect any changes in operations from the proposed regulations (Lawson 2004). However, ballasting may be required in order to safely operate the vessel under emergency conditions. . As the preface to the prohibitions list includes an exception for emergencies “threatening life, property or the environment,” the proposed action would not prevent ships from discharging ballast water in an emergency.

The prohibition on discharges outside the sanctuaries does not state how far from the boundary such discharges may take place, because no set distance could be easily defined, given the many variables that factor into such a determination, such as speed and direction of ocean currents and the volume and type of the discharge. In the absence of set criteria, operators are likely to discharge their ballast water at a greater distance from sanctuary boundaries than previously, in order to avoid regulatory violations.

As stated before, the existing discharge/deposit regulation already prohibits the discharge of ballast water in the three sanctuaries. The proposed modifications to the discharge exceptions would not add any more constraints to this industry and thus the adverse impacts on the marine transportation industry would be less than significant. The Proposed Action would not result in any increased risk of injury or death, spillage of oil or other hazardous materials, displacement of vessels in harbors, or delay of commercial traffic.

Other Discharges. The proposed prohibition on discharges of oily waste from bilge water and on-board meals, the Type I or Type II MSD requirement for vessels under 300 GRT, and the limitation on deck wash materials would not cause a significant impact on the marine transportation industry. The proposed regulation prohibiting discharge/deposit of treated sewage, and graywater (in the MBNMS), from vessels 300 gross registered tons or more would apply existing law in state waters to the federal waters of the marine sanctuaries. The regulation would not restrict vessels without capacity to hold the waste while in a national marine sanctuary.

This prohibition would result in less than significant impacts on marine transportation. The proposed modifications to the discharge exceptions would not add any more constraints to this industry and thus the adverse impacts on the marine transportation industry would be less than significant.

Current state and federal regulations already limit the types of discharge that may occur in the sanctuaries and along the coast of California, and most operators would not be required to implement any changes in order to comply with the Proposed Action.

The prohibition on the discharge of wastes from on-board food materials would not significantly impact commercial vessel operations. For commercial vessels other than cruise ships, the amount of food waste generated while within the NMS boundaries is limited and can be stored until the ship is outside the boundaries and then disposed of according to MARPOL and Coast Guard standards, or stored until it could be disposed at an onshore facility. The prohibition on the discharge of deck washing material would not significantly impact vessel operations, because this type of activity does not need to take place while the vessel is transiting the NMS.

Impacts on the marine transportation industry from the Proposed Action with regards to other discharges are not expected to be significant because the proposed rules are not anticipated to result in injury or death,

spillage of oil or other hazardous materials, displacement of vessels in harbors, or delay of commercial traffic for over one hour. In summary, the proposed regulations would not significantly affect the shipping industry.

Introduced Species

Aquatic organisms are often transported within the ballast water of ships, leading to the introduction of non-native species when the ballast water is discharged at the ship's destination. Vessels that are empty or loaded light typically take on a load of ballast water to improve the handling of the ship on rough seas; the water taken on is whatever is available, either fresh or seawater. Once the vessel is at or near its destination, the ballast water is pumped overboard, at the same time discharging whatever organisms may be present in the water. Impacts on marine transportation associated with this regulatory change are described above (see *ballast water discharge*). This would result in a less than significant impact on marine transportation.

Cruise Ship Discharges and Definitions

In addition to the above restrictions, the new regulations would prohibit discharge by cruise ships of treated or untreated graywater, black water, and other waste products. Cruise ships remain closer to shore than some of the other types of vessels, in order to avoid rough water. In addition, cruise ships have a much smaller payload in terms of weight than other types of vessels. As a result, cruise ships have a minimal need for ballast water (Valenti 2004).

Cruise ships usually have enough storage capacity for graywater and black water to accommodate vessel operations for between one and two days, although there are variations between specific ships (Pruitt 2004). Vessels that have installed advanced treatment water devices generally have less storage capacity than those without these systems because a portion of the storage capacity has been converted into processing facilities. Cruise ships travel at between 15 and 20 knots, so the transit through the National Marine Sanctuaries from San Francisco is only a few hours duration. Cruise ships that call in Monterey are in harbor for up to 12 hours (7 AM or 8 AM until 3 PM or 6 PM). These operations are able to meet the requirements of zero discharge considered under the proposed action.

Zero discharge of gray and black water under the proposed action would result in less than significant impacts on cruise ship operations.

First, as explained above in the ballast water discussion, the regulations do not state how far a discharge must be from a sanctuary boundary to ensure no injury to sanctuary resources. Prohibiting wastewater that is discharged outside of sanctuary boundaries from entering the sanctuary has the de facto effect of expanding the boundaries of the sanctuary. Due to the limits of wastewater holding tanks this may affect the ability of cruise ships to store wastewater, limit the time that they can spend in the sanctuary, and increase the distance they must sail from shore in order to discharge wastewater. However, because cruise ships are in transit through the sanctuaries for only a limited time, these burdens would be minor and would not result in any significant impacts on cruise ship operations.

Second, the federal government and some coastal states have implemented gray- and black-water discharge protocols that impose varying standards on cruise ships. Federal and state laws enacted in Alaska in 2000 and 2001 set some of the most restrictive discharge regulations in the country (P.L. 106-554; Alaska Statute [AS] 45.03.460-AS 46.03.490), and Maine adopted the same standards in 2003 (Maine Legislative Document 1158). Other states, including Florida, Washington, and Hawaii, have entered into voluntary agreements with the cruise industry to manage waste from cruise vessels.

Regulatory standards vary from state to state and internationally;.. This perceived lack of consistency between jurisdictions (including the affected marine sanctuaries) could increase the burden of compliance on cruise ship operators. However, because of the availability of information about sanctuary regulations and of programs to educate the industry, this possible burden would not increase the risk of accidental discharges.

The prohibition on the discharge of food materials would not significantly affect cruise ship operations. Cruise ships generate a large volume of food waste but have on-board equipment, such as macerators and incinerators, that reduce the volume of the food waste. The limited amount of waste generated during the actual transit through the marine sanctuaries will not significantly impact the ability of the ships to store it and discharge it outside the sanctuary in compliance with MARPOL and Coast Guard regulations.

In summary, the proposed regulations banning discharges in the sanctuaries would not significantly affect the cruise ship industry.

Alternative Regulatory Actions

Cruise Ship Prohibition Alternative

This provision would result in similar impacts on marine transportation as the Proposed Action. Instead of preventing all cruise ship discharge into the sanctuaries, this provision would allow cruise ships to discharge properly treated effluent so long as it can be shown to be in compliance with the water quality standards established by the US Coast Guard in Alaska at 33 CFR 159, Subpart E (Discharge of Effluents in Certain Alaska Waters by Cruise Vessel Operators) and USEPA (as described in the Consolidated Appropriations Act, 2001, Pub. L. No. 106-554, § 1[A][4], 114 Stat. 2763, 2763A-315-2763A-316 [2000]). Such proof would comprise a discharge plan with associated maintenance logs, approved by NMSP prior to entry into the sanctuaries. This alternative would allow cruise ship operators to discharge in the sanctuaries instead of holding their waste until the ships are well outside the sanctuary boundaries. However, it could increase the regulatory burden on operators in a minor way by obligating them to submit discharge plans, including maintenance logs and demonstration of ability to meet standards, for approval prior to entry into the sanctuaries. This alternative would not result in a significant impact on marine transportation.

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuary as it is currently managed. This would result in no impact on marine transportation.

3.10.5 Cordell Bank National Marine Sanctuary – Environmental Consequences

The Proposed Action

The proposed regulations regarding seabed disturbance and benthic habitat protection would not result in marine transportation impacts at CBNMS.

Alternative Regulatory Actions

Proposed alternative actions at CBNMS regarding seabed disturbance and benthic habitat protection would not result in any impacts on marine transportation.

The No Action Alternative

The No Action alternative would result in no additional impacts on marine transportation.

3.10.6 Gulf of the Farallones National Marine Sanctuary – Environmental Consequences

The Proposed Action

None of the proposed regulations specific to GFNMS would result in impacts on marine transportation, with the exception of the proposed prohibition on anchoring a vessel in a designated seagrass protection zone. The discharge from outside the sanctuary regulation is described for clarity.

No-Anchoring Seagrass Protection Zones

Prohibiting anchoring a vessel in a designated seagrass protection zones in Tomales Bay, except as necessary for mariculture operations conducted pursuant to a valid lease, permit, or license would have the potential to create minor adverse impacts on marine transportation for vessels currently anchoring in the proposed zones. The total estimated size of the no-anchor seagrass protection zones affected by this regulation is approximately 654 hectares, which comprises approximately 22% of Tomales Bay. The zones were designed so that they do not include areas adjacent to marinas or other recreational day use areas where boaters are known to anchor.

Because Tomales Bay is shallow and there are no substantial human population centers or industrial development along the shore, there is no commercial shipping industry in the Bay. Most vessel transportation is limited to recreational vessels (sailboats, pleasure craft, recreational fishermen) and some commercial vessels (fishermen, mariculture industry). Though the regulation would require vessel operators to anchor outside of these designated zones, it would not prevent vessels from using and transiting through the Bay. Furthermore, vessel operators could anchor in the remaining 78% of the Sanctuary. Because this regulation does not limit actual vessel use, and there are alternatives for anchoring a vessel outside of designated zones, the adverse impacts on the marine transportation industry would be less than significant. The analysis of potential impacts to fishing is further described in section 3.06 (fisheries) and the impacts to recreational users are described in section 3.11 (public access and recreation).

Water Quality – Discharges From Outside the Sanctuary

The proposed regulation would prohibit discharging or depositing any material or other matter from beyond the boundary of the Sanctuary that subsequently enters the Sanctuary and injures a Sanctuary resource or quality. This regulation proposes the same exceptions as the cross-cutting “discharge within or into the Sanctuary” regulation and would have similar beneficial and less than significant adverse impacts to land use and development as those described in section 3.10.4 for the cross-cutting discharge regulation clarifications. Potential marine based sources of pollution include discharges from transiting and wrecked ships, and underwater pipelines).

Under normal operation at sea, marine vessels may discharge several different types of wastewater, as described in section 3.5.1 (Water Quality). However the threat of any one vessel, under normal operating procedures, discharging outside a Sanctuary that subsequently enters Sanctuary and injures to a Sanctuary resource is very small. Discharges from transiting vessels tend to very rapidly mix with open ocean waters and dilute individual pollutant sources to levels that are not likely to injure to Sanctuary resources. The proposed regulation, therefore, is targeted at those high volume or harmful discharges, such as such oil, fuel, untreated sewage, and hazardous spills or deliberate releases that are capable of entering the Sanctuary and injuring a Sanctuary resource. At this time, the NMSP is not aware of any marine vessel that, through their normal activity would be impacted by this regulation. Therefore, the proposed regulation would have less than significant adverse impacts on marine transportation.

Alternative Regulatory Actions

No alternative language is proposed that would affect marine transportation.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on marine transportation.

3.10.7 Monterey Bay National Marine Sanctuary – Environmental Consequences**The Proposed Action**

No additional impacts on marine transportation at MBNMS are expected other than those already identified and discussed above under the cross-cutting regulations discussion. Proposed regulations may affect the use of MPWC, but this is discussed in Section 3.11, Recreation. Including the Davidson Seamount in MBNMS would not impact marine transportation, other than by expanding the area in which discharge is generally forbidden. However, as this is at most a less than significant impact, the fairly minimal expansion of the MBNMS boundary would not result in any measurable adverse impact on marine transportation.

Alternative Regulatory Actions

There would be no impacts on marine transportation as a result of the alternatives.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on marine transportation.

3.10.8 Cumulative Impacts

Commercial marine transportation is subject to increasing amounts of regulation on the federal and state level. Commercial vessel operators are currently able to safely operate under a number of state and federal regulations that govern the types of discharge activities that may occur from commercial vessels. However, these existing regulations cumulatively put an increasing burden on vessel operators with regards to when and where operations such as ballast water discharge may occur, allowable navigation routes, and other operational constraints.

Implementation of the FMPs will contribute to the ROI's regional ecosystem health by applying the various action plans in CBNMS, GFNMS, and MBNMS. Implementation of wildlife disturbance management actions described in the GFNMS and MBNMS action plans will provide staff with information necessary to better manage vessel traffic and activities within the two sanctuaries. New management in GFNMS designed to address vessel spills would have similar results concerning marine transportation. New cruise ship discharge and MPWC management efforts in the MBNMS action plan would also have similar results.

One potential cumulative program that would interrelate with the proposed GFNMS prohibition on anchoring in seagrass beds is the Tomales Bay vessel management plan, which is currently being developed by a Technical Advisory Committee consisting of 10 agencies with jurisdiction over the waters and submerged lands of the Bay. The plan provides an overview of recommendations and actions for operation of vessels in Tomales Bay, and includes an evaluation of existing boating facilities. The plan will include recommendations for facility improvements, as well as provisions for establishing education programs to inform users about responsible boating practices. This plan is part of a multi-agency effort to coordinate vessel operations for

the benefit of the public as they seek to improve water quality, protect wildlife and habitats, and ensure public health and safety of water related activities and recreational uses of Tomales Bay.

Proposed Action

The proposed actions will contribute to a cumulative adverse trend affecting vessel operations in the sanctuaries. While the Proposed Action would not result in a significant direct impact on marine transportation, it may contribute to an adverse cumulative impact on vessel traffic in the ROI by way of this increased regulatory burden. However, this cumulative effect would not be significant.

Implementation of the Tomales Bay boating management plan would provide positive effects on marine transportation and would offset any minor adverse effects of the seagrass anchoring prohibition. When considered together with the proposed seagrass anchoring regulation, the implementation of this boating management plan would result in a slight net positive cumulative effect on marine transportation. The Proposed Action would not contribute to this beneficial impact.

Alternative Regulatory Actions

Cumulative impacts would be the same as those described under the Proposed Action, with a minor increase in the level of adverse impacts due to the increased size of the area in which discharge is prohibited because of the larger size of Davidson Seamount, and because of the obligation to maintain discharge logs under the Cruise Ship Prohibition Alternative.

The No Action Alternative

Under the No Action alternative, there would be cumulative adverse trends to marine transportation due to the continuation of existing levels of resource management in the sanctuaries, as well as cumulative beneficial trends in boating management in Tomales Bay. However, no change to existing regulations would occur; therefore there would be no contribution to any cumulative impacts.

3.11 PUBLIC ACCESS AND RECREATION

This section addresses public access and recreational issues (recreational fishing, boating, wildlife watching, surfing, motorized personal watercraft use, and onshore activities) related to the Proposed Action. The ROI for public access and recreation encompasses the boundaries of the marine sanctuaries, the Davidson Seamount area, and access and recreational activities adjacent to the sanctuary boundaries that may be affected by proposed management of the sanctuaries.

3.11.1 Regional Overview of Affected Environment

The waters and adjacent shoreline of the three sanctuaries host a variety of recreational activities. Most of the visitor use related to the sanctuaries is concentrated in adjacent coastal areas, particularly at the main access points distributed along the shoreline. Many of these access points offer services and facilities for both day and overnight use of coastal and nearshore areas.

The main marine-related recreation activities that occur in the three sanctuaries are beach visitation, coastal hiking, tidepool walking, fishing, scuba diving (both consumptive and non-consumptive), pleasure boating, whale and other wildlife watching, surfing, windsurfing, kayaking, and personal watercraft use (Ehler, Leeworthy and Wiley 2003).

As quantitative sanctuary-specific data regarding marine-related recreation activities are difficult to collect and often incomplete, Table 3-9 presents the major marine recreation activities and participation for the State of California in 2000. Beach visitation was the recreation activity with the most participation, with 12.6 million

**Table 3-9
California Marine Recreation**

Activity	Number of Participants (millions)	Number of User Days (millions)
Beach Visitation	12.6	151.4
Visiting Watersides Besides Beaches	1.5	20.7
Swimming	8.4	94.6
Snorkeling	0.7	3.8
Scuba Diving	0.3	1.4
Surfing	1.1	22.6
Windsurfing	0.1	-
Fishing	2.7	20.3
Motorboating	1.5	11.6
Sailing	1.1	6.8
Personal Watercraft Use	0.7	2.9
Canoeing	0.2	-
Kayaking	0.4	-
Rowing	0.3	-
Water-skiing	0.3	3.3
Bird Watching	2.6	65.8
Viewing Other Wildlife	2.6	38.6
Viewing or Photographing Scenery	4.2	107.9
Hunting Waterfowl	0.1	-

Source: Source Ehler, Leeworthy and Wiley 2003.

participants in 151.4 million days. The activities with the next highest number of participants in terms of days were viewing or photographing scenery (4.2 million participants in 107.9 million days), followed by swimming (8.4 million participants in 94.6 million days), and then bird watching, viewing other wildlife, surfing, visiting watersides besides beaches and fishing (Ehler, Leeworthy and Wiley 2003). A selection of popular recreational activities within the sanctuaries is discussed in more detail below.

Offshore Recreation

The major marine recreational access areas within or adjacent to the sanctuaries are the harbors at Monterey, Moss Landing, Santa Cruz, Pillar Point, San Francisco, and Bodega Bay. Other bays within the sanctuaries (e.g., Tomales Bay) are popular for recreational uses such as wildlife watching, sailing and kayaking.

Recreational Fishing

Sport fishing involves a large number of recreational users in both nearshore and offshore waters. A search of the Pacific States Recreational Fisheries Information Network (www.recFIN.org) database indicates that anchovy, jacksmelt, rockfish, mackerel, surfperch, mackerel, sanddab, salmon, and striped bass are among the major species taken by recreational fishermen in northern California. GFNMS may account for the state's largest salmon party boat fishery (out of San Francisco Bay). Bodega Bay and Duxbury Reef are among the most popular areas for rockfish fishing in the sanctuary. The waters around the Farallon Islands have also been used for rockfish fishing, but a groundfish closure in specified depths for federally managed species has been in place since 2001, which has redirected most recreational rock fishing opportunities to the nearshore (see Section 3.6, Commercial Fishing). According to the Bodega Harbormaster, prior to the groundfish closure, one large party boat made approximately 100 trips annually to Cordell Bank, and six other party boats each made about 30 to 40 trips annually (Black 2004). In 2000, approximately 440,000 saltwater anglers, mostly California residents, fished the Pacific Ocean off the coast of northern California (from Monterey County north) over 2.2 million days (Ehler, Leeworthy and Wiley 2003).

As presented in Table 3-10, northern California residents' preferred mode of fishing was by use of private/rental boats or from the shore. Most nonresident anglers fished from party/charter boats (Ehler, Leeworthy and Wiley 2003).

Table 3-10
Estimated Number of Days Fished and Participants in Northern California by Mode and Resident Status (2000)

	Resident	Nonresident	Total
Total Days	2,074,628	92,377	2,167,005
Party/Charter Boat Days	198,267	39,429	237,696
Private/Rental Boat Days	963,959	30,961	994,920
Shore Days	912,402	21,987	934,389
Total Participants	387,927	51,221	439,148
Average Days Per Participant	5.3	1.8	4.9

Source Ehler, Leeworthy and Wiley 2003

Wildlife Watching/Sailing

Whale watching, Farallon Island trips, and pelagic birding excursions organized by private whale watching operations, fishermen, and other environmental education groups account for several thousand visitors venturing offshore. Visitation to the Elkhorn Slough National Estuarine Research Reserve, a popular bird watching area on Monterey Bay, has significantly increased from 20,000 visitors in the mid-1980s to over 50,000 visitors in the mid-1990s (Ehler, Leeworthy and Wiley 2003). In addition to offshore whale watching, thousands of people every year travel to coastal areas of these sanctuaries to observe marine mammals and seabird rookeries and haul out areas. Some of the most popular places to see sea lions, harbor seals and elephant seals include: Pt. Reyes National Seashore, Bolinas Lagoon, Año Nuevo State Park, Cannery Row in Monterey, Pebble Beach, and San Simeon.

Sailing and powerboat clubs in San Francisco, Santa Cruz and Monterey Bay sponsor ocean and bay races at various times throughout the years; these races often use the calmer waters within Monterey Bay or may extend from San Francisco to the Farallon Islands (NOAA 1980; NOAA 1984).

White Shark Diving

The white shark (*Carcharodon carcharias*) is the world's largest predatory fish, and can reach 21 feet (6.5 meters) in length and weigh up to 4,800 pounds (2,100 kilograms). In GFNMS white sharks may be seen any time throughout the year. However, adjacent to the Farallon Islands researchers have observed a seasonal peak from September to November, when they hypothesize that larger numbers of white sharks migrate to the Islands and opportunistically feed on abundant northern elephant seals and California sea lions.

A recreational sport that has become more popular in the last five years in the Farallon Islands is white shark diving. Shark diving allows shark enthusiasts and researchers from around the world an easy way to observe white sharks. Shark cages are used to allow participants to safely observe and experience sharks up close while being protected behind a safe cage-like barrier.

Some operators increase the chances of their customers viewing white sharks by actively attracting them to a dive area using decoys, lures, blood, fish parts, or animal carcasses. Shark viewing can occur from the deck of the boat or underwater by placing divers in metal cages.

Commercial white shark expeditions at the Farallones are primarily offered from September to November. There are currently at least two known commercial operations that offer seasonal cage diving expeditions to view white sharks in GFNMS and at least one group that conducts opportunistic diving but does not operate a commercial venture. In years past, as many as eight white shark diving operations have operated at the Farallones. Currently no commercial operation derives all of its income from shark diving operations at GFNMS since the actual shark season is so short and unpredictable. As such, any income derived from commercial operations at the Farallones supplements income from other activities (such as shark diving and adventure operations in Mexico or Ecuador) or from other business activities altogether.

During the white shark season in fall 2005, the commercial companies conducting white shark dive trips at the Farallon Islands planned on offering a combined total of at least 71 full-day trips. Each company can accommodate a maximum of eight cage divers and four topside observers each trip. In addition, another non-profit group anticipates taking up to 15 people cage diving during the entire season. Thus, for 2005, the estimated maximum number of people conducting this activity is approximately 583 cage divers and 284 observers from the boat (NOAA 2005c). Variables such as weather and oceanographic conditions, alterations

in the shark's primary food source, approach by other vessels, predatory events on white sharks by killer whales, consumer demand, and other unforeseen events, could affect commercial viewing operations in the Farallon Islands area, and therefore could reduce the number of trips and yearly observations. The impact of this industry on white sharks is a topic of controversy; several studies are under way to evaluate its impact on the behavior and health of sharks and other marine species.

Surfing

In California, the sport of surfing saw a huge jump in participation rates between 1992 and 2002. According to the California Outdoor Recreation Plan, 6.1 percent of California residents participated in surfing in 1992, but by 2002 this rate of participation had more than doubled to 12.4 percent. At the same time, however, the average number of days that people surfed actually declined. In 1992 the average number of days surfed to the total state population was 3.0, and this fell to 2.1 in the 2002 survey. Even more dramatic was the drop in the average number of days spent surfing for those who participated in surfing; in 1992, surfers averaged 49.2 days in the water, but in 2002 they averaged just 16.5 days surfing. The central coast of California is one of the most popular surfing areas in the world, serving as home to roughly 45 percent of the nation's 1.6 million surfers (Ehler, Leeworthy and Wiley 2003). Surfing-related expenditures by resident surfers and surfers who travel to over 50 spots along the central coast contribute considerably to local economies (Ehler, Leeworthy and Wiley 2003).

Motorized Personal Watercraft

MPWC, also known by the brand names of the popular models Jetski and Waverunner, are small, fast, and highly maneuverable craft that possess unconventionally high thrust capability and horsepower relative to their size and weight. This characteristic enables them to make sharp turns at high speeds and alter direction rapidly while maintaining controlled stability. Their small size, shallow draft, instant thrust, and "quick reflex" enable them to operate closer to shore and in areas that would commonly pose a hazard to conventional boats operating at comparable speeds. Many can be launched across a beach area, without the need for a launch ramp. Most MPWC are designed to shed water, enabling an operator to roll or swamp the vessel without serious complications or interruption of vessel performance. The ability to shunt water from the load carrying area exempts applicable MPWC from Coast Guard safety rating standards for small boats. MPWC often are designed to accommodate sudden separation and quick remount by a rider. MPWC are not commonly equipped for night operation and have limited instrumentation and storage space compared to conventional vessels. Many MPWC propelled by a directional water jet pump do not have a rudder and must attain a minimum speed threshold to achieve optimal maneuverability.

Water jet-propelled MPWC gained mainstream popularity in the US in the 1980s, and sales accelerated through the mid-1990s. Their size, power, speed, and sophistication have advanced steadily. Some current models can carry up to 4 passengers and achieve maximum speeds between 30 and 60 or more miles per hour. Engine size, horsepower ratings, and vessel range and endurance have increased over time.

The two primary uses for MPWC in MBNMS are public safety and recreation. The main type of public safety use of this type of vessel is for search and rescue, although some patrol work is also performed using MPWC. Additionally, public safety organizations, including some from outside the Sanctuary, conduct MPWC training sessions in the Sanctuary in order to prepare for search and rescue work. Recreational use of MPWC in MBNMS includes two categories, general recreational riding and tow-in surfing. Because the waters of MBNMS are generally colder and rougher than those of inland lakes and reservoirs, few MPWC owners

choose to ride in the Sanctuary rather than in lakes, and as a result there is little of this type of recreational activity. However, MPWC use for tow-in surfing has increased in the past five years.

In 2002, the California Outdoor Recreation Plan surveyed California residents on their use of MPWC. According to this survey, 13.6 percent of California residents use MPWC. All residents average 1.7 hours of MPWC use per year, while active participants average 12.4 hours of use per year. MPWC use statistics were not available for previous years (California State Parks 2002).

Registrations of personal watercraft have grown more rapidly than other types of boats. Between 1995 and 2003 the number of personal watercraft registered in California grew by more than 62 percent, increasing at an average annual rate of 6.2 percent. For the six counties that border MBNMS, MPWC registrations grew at a slower rate than for the state as a whole. These counties (i.e., Marin, San Francisco, San Mateo, Santa Cruz, Monterey, and San Luis Obispo) saw MPWC registrations grow by an average of 5.0 percent per year. The strongest growth rates were the southern counties, with Santa Cruz growing at 8.4 percent per year, Monterey at 6.5 percent, and San Luis Obispo at 8.9 percent per year (California State Parks 2002). These three counties comprise the majority of the MBNMS shorelines.

Formal statistics documenting the use of MPWC within the boundaries of MBNMS are not collected by the California Department of Motor Vehicles, the California Department of Boating and Waterways, California State Parks and Recreation, or local harbormasters. However, based upon reports from harbormasters and NOAA enforcement personnel, MBNMS estimates that 1,200 MPWC trips were conducted in the Sanctuary in 2002, which represents repeated activity of approximately 150 individual MPWC. By contrast, the Florida Keys National Marine Sanctuary, one-third smaller in size than MBNMS, had approximately 1.3 million MPWC trips during the same time period.

The California Boating Facilities Needs Assessment (CBFNA), completed in October of 2002, provides some information on where MPWC are used (California Dept. of Boating and Waterways 2002). There is little information on GFNMS or CBNMS; however, the greatest amount of MPWC use is located in MBNMS and is the focus of the impact analysis. The CBFNA provides information on vessel use by region. Two regions, the San Francisco Bay Area and Central Coast, border MBNMS. The San Francisco Bay Area includes three counties that border the Sanctuary (Marin, San Francisco, and San Mateo) and five that do not (Alameda, Contra Costa, Napa, Santa Clara, and Solano). The Central Coast region includes just three counties, all of which border MBNMS (Monterey, San Luis Obispo, and Santa Cruz).

According to the survey in the CBFNA, residents of the San Francisco Bay region seldom use their MPWC (and other registered vessels less than 16 feet) in salt water. The results show that of those surveyed, only 17.3 percent reported using their vessels in salt water, and nearly all of this use was reported as occurring on San Francisco Bay. The only reported use of small craft within MBNMS was in Half Moon Bay, which accounted for just 4.0 percent of all use. Owners of MPWC and other small vessels that live in the Central Coast region also favor fresh water over saltwater. According to the survey, 84 percent of respondents listed various freshwater lakes and reservoirs as the most common area of operation, while 16 percent did not list a preferred water body.

This survey information is consistent with information gathered through interviews undertaken for this analysis. According to these interviews, most users of MPWC want to drive their boats at high speeds on warm water, which tends to rule out operating in the Pacific Ocean. In the ocean, the water is cold, and wave

conditions make it somewhat harder to go fast. Furthermore, MPWC tend to be used by more than one person on the same day. Typically, a group of people will find a stretch of beach on a lake or reservoir that allows the users to take turns operating the vessel from the shoreline. In the surf conditions on ocean beaches, this is problematic. Taken together, the survey and the interviews indicate that use of MBNMS accounts for a very small share of MPWC operations.

Another set of data that provides some indication of MPWC use is accident data collected by the California Department of Boating and Waterways. Personal watercraft accident rates for the counties that border MBNMS do not indicate an increase for the years 1996 through 2003. Assuming that there has not been a change in the relationship between the number of accidents and the number of hours used, this indicates that use of MPWC in these counties has not increased over the time period.

According to interviews, the majority of MPWC use in MBNMS occurs at surfing spots in San Mateo, Santa Cruz, and Monterey counties. Accident rates for these three counties are substantially lower than those for the six-county region (California Department of Boating and Waterways 2004; Rigby 2004). For the three-county region, the number of reported MPWC accidents averaged 3.5 incidents per year, and since 1999 that average was only exceeded in 2002 (California Department of Boating and Waterways 2004; Rigby 2004). It is important to remember that these statistics included reported accidents on both salt and fresh water, and that the survey results from the CBFNA show that most use occurs on fresh water. The majority of the MPWC use in MBNMS, and most or all of the growth in such use, is related to tow-in surfing. The difficulty lies in documenting just how popular tow-in surfing has become. Insufficient statistical data exist to document the growth of tow-in surfing, but anecdotal evidence suggests that this activity is a very small subset of surfing.

Information developed by NOAA in Ecosystem Observations for MBNMS (NOAA 2000) suggests that most of the surfing in Monterey Bay occurs in and around Santa Cruz. According to estimates in this document, the average daily number of people surfing in and around Santa Cruz is 300. In contrast, interviews with harbor personnel at Santa Cruz indicate that only 30 to 50 MPWC are launched there per year, and only 60 percent of these were for the purpose of tow-in surfing. This may be growing by 5 percent per year.

Field interviews also show that tow-in surfing is an extremely small portion of surfing. It is estimated that the Monterey Peninsula/Carmel Bay area has only six regular tow-in surfers, and that both Moss Landing and Santa Cruz have approximately the same number. However, tow-in is becoming increasingly popular at Moss Landing and around Monterey Peninsula. The Pillar Point area, most notably Mavericks, has the highest number of regular tow-in surfers, with as many as 20 two-man teams regularly operating there. Mavericks is a world-renowned big-wave location one-quarter mile off the coast of Half Moon Bay within the MBNMS. MPWCs are typically used at this site for access and safety precautions due to waves that can crest at over 50 feet and remarkably strong currents, jagged rocks, shallow reefs, and frigid water temperatures (Mavericks Surf Ventures, LLC 2006). MPWCs are commonly used at the Mavericks Surf Contest for photographers to document the contest and to rescue competitors when necessary. The harbors at Monterey, Moss Landing, Santa Cruz, and Pillar Point are the primary locations for launching MPWC within MBNMS. Morro Bay Harbor is also a launch site, but it is 15 miles (24 km) past the southern end of the Sanctuary and sees very little MPWC launch activity related to the Sanctuary.

Onshore Recreation

The predominant onshore recreational uses (most of which occur in the very shallow nearshore or along the shore adjacent to the sanctuaries) are beach-related activities, including coastal hiking, nature observation, tidepooling, surfing, windsurfing, clamming, abalone diving, surf fishing, and duck hunting (CDFG 1979; NOAA 1984).

Several onshore locations adjacent to the sanctuaries have become popular in recent years for wildlife watching. Large numbers of marine mammal enthusiasts and bird-watchers spend time along the sanctuaries' coastal estuaries and shorelines observing marine mammals, shorebirds, waders, and waterfowl. Popular locations include Elkhorn Slough, Pescadero Marsh, Santa Cruz, and Monterey in MBNMS and Bolinas Lagoon, Tomales Bay, Estero Americano, Estero de San Antonio, and Abbotts Lagoon in GFNMS. Birding excursions and field seminars organized by local environmental groups help introduce visitors to sanctuary wildlife resources.

3.11.2 Regulatory Environment

The recreation element of each land use plan identified in the Land Use and Development section (Section 3.9) regulates recreation adjacent to the sanctuaries. Other regulatory requirements and permit processes that affect recreation in the sanctuary areas include regulation of wetlands under Section 404 of the CWA by the USACE (see Section 3.7 for more detail) and management plans and permit systems by GGNRA and Point Reyes National Seashore and various state parks (mentioned above) that border sanctuary waters.

3.11.3 Significance Criteria and Impact Methodology

Criteria to determine the significance of impacts on public access and recreation are based on federal, state, and local standards and regulations. Impacts are considered to be significant if the proposed action creates the following:

- A temporary loss of recreational beach use for which there is no mitigation;
- A temporary disruption of land-based recreational resources, such as access to parks or recreational bicycle paths, for a period of more than two days, for which there is no mitigation;
- A long-term preemption of a recreational use or substantial temporary preemption during a peak use season; or
- A conflict with the objectives, policies, or guidance of federal, state and local plans.

Types of recreational uses in and around the sanctuary boundaries were determined and impacts were evaluated based on their sensitivity to the proposed regulatory changes. Also considered was the consistency of the proposed action with the objectives and policies of federal, state and local recreation plans.

The overall methodology, including data sources and assumptions, used to conduct the public access and recreation impact evaluation is consistent with the NOAA NEPA guidelines (NAO 216-6).

3.11.4 Cross-Cutting Regulations –Environmental Consequences

The Proposed Action

Introduced Species

Implementing stricter regulations to reduce the number of introduced species in the sanctuaries would have a beneficial impact on recreational resources. As stated in the Proposed Action, several types of introduced species inhibit the survival of native species and can result in changes in species composition, abundance and distribution and overall predator-prey relationships. This in turn may negatively impact important recreational activities, such as fishing, scuba diving, wildlife watching, and clamming. By implementing measures to protect the resources that support recreation, the Proposed Action would provide a minor beneficial recreational effect. Additionally, minor adverse impacts on recreational boaters are expected as a result of prohibiting releases of introduced species into the three sanctuaries.

Discharge Regulations Clarifications, Marine Sanitation Devices and Graywater

For vessels 300 or more gross tons, sewage discharges/deposits would be prohibited, as the vessels would be required to hold them while in the sanctuaries, if they have sufficient holding capacity. This proposed prohibition may decrease levels of contaminants in coastal waters and increase water quality. As a long-term impact, reducing pollution in the ocean would increase water quality and the health of the sanctuaries' ecosystems, both of which are key elements in recreation (e.g., fishing, scuba diving, wildlife watching, surfing, swimming and boating), and therefore the impact on recreational resources would be beneficial.

For vessels less than 300 gross tons, the proposed regulatory language modification clarifies that vessel operators must use a Type I or Type II MSD when discharging sewage, which is what is already required by the Coast Guard. The regulation would allow vessels to have a Type III MSD, but they could not discharge untreated waste into the sanctuary and would have to either discharge this waste at a harbor pump-out facility or outside the sanctuary according to Coast Guard regulations. Overall these regulatory changes would help improve water quality and thus improve recreational opportunities, such as diving, swimming, fishing, and surfing in the sanctuaries. This regulation essentially clarifies expectations to recreational boaters and does not add any significant burdens beyond what is already required by sanctuary or Coast Guard regulations. Therefore, no adverse effect on recreational use is associated with the modification.

The requirement to secure marine sanitation devices in a manner to prevent discharge of untreated sewage may pose a minor burden on boat owners who have not purchased a lock or clasp to ensure the effective operation of the marine sanitation device; however, the impact of this addition is negligible. Amending the language regarding discharge regulations would provide a slight beneficial impact on recreational resources within the sanctuary as a result of improved water quality, which contributes to the overall quality of recreational resources. See Section 3.5, Water Quality, for more details on proposed discharge regulations and their effects on water quality.

Cruise Ship Discharge and Definitions

The proposed regulations on cruise ships would provide a beneficial impact on recreational uses within the sanctuaries. The proposed regulation would eliminate potentially harmful discharges from cruise ships in sanctuary waters and would reduce the amount of oily water, hydrocarbons, and sewage released into the sanctuaries that can sicken, injure or even kill plants and animals exposed to their effects. As a long-term impact, reducing pollution in the ocean would increase water quality and the health of the sanctuaries'

ecosystems, both of which are key elements in recreation (e.g., fishing, scuba diving, wildlife watching, surfing, swimming and boating), and therefore the impact on recreational resources would be beneficial.

Alternative Regulatory Actions

Cruise Ship Prohibition Alternative

This alternative provision would result in cruise ships being allowed to discharge wastewater that has been properly treated to a level not to exceed the standards set forth by the US Coast Guard in Alaska at 33 CFR 159, Subpart E (see discussion about cruise ship wastewater discharges in Section 3.5, Water Quality). Because the wastewater would be treated to reduce nutrients (nitrogen and phosphorus) and reduce or eliminate the toxicity or hazardous properties of the wastes, the overall water quality would be improved and therefore have beneficial impacts on recreation (e.g., fishing, scuba diving, wildlife watching, surfing, swimming and boating). Although the discharged wastewater would be treated, there is still the potential for the discharges to contain harmful effluent (i.e., oily wastes, toxic chemicals, nutrients, pathogens, viruses), which can impair, injure or even cause death to living resources. As discussed in Section 3.5.4, some MSDs do not achieve the effluent standards they are designed to meet. Therefore, the beneficial nature of the impact would be slightly less than under the Proposed Action because no discharge (treated or untreated) would be allowed under the Proposed Action.

No Action

The No Action alternative would be to continue to manage the sanctuary as it is currently managed. This would result in no impacts on recreational resources.

3.11.5 Cordell Bank National Marine Sanctuary –Environmental Consequences

The Proposed Action

Wildlife Disturbance

Adding sanctuary regulations on the taking or possessing of protected wildlife within CBNMS would have a minor beneficial impact on recreational viewing activities, such as wildlife watching and scuba diving, by adding further protection of the resources that recreational users are interested in viewing. Since users are already subject to regulations that prohibit the taking or harassment of animals, the additional sanctuary regulations will not add any new burdens, other than the possible increase in enforcement of these regulations. The overall impact would be beneficial, however the benefit is very minor, as there are existing regulations protecting wildlife and the proposed regulation essentially mirrors existing regulations.

Seabed Protection

The proposed regulation would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Additionally, the regulation would prohibit the same activities listed above in the remainder of the sanctuary outside the 50-fathom isobath, with the exception of anchoring. The proposed regulation would result in enhanced protections for species and habitats by reducing or eliminating physical impacts and associated habitat loss and would result in positive impacts on biological resources at all trophic levels (i.e., within all categories of organisms, including fish, invertebrates, seabirds, and marine mammals). Therefore, the Proposed Action would have an indirect beneficial impact on recreation resources by

protecting the species and habitats that are the focus of several recreational activities, including fishing and diving. This regulatory change would result in a minor beneficial impact on recreational uses.

Benthic Habitat Protection

There is an existing benthic habitat regulation that prohibits the removal, taking, or injuring benthic invertebrates or algae on or within the 50-fathom isobath surrounding Cordell Bank, except for “accidental removal, injury, or takings during normal fishing operations.” The proposed regulatory clarification would have the same amount of protection as the existing regulation and would result in negligible impacts on recreational activities.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following differences.

Seabed Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within a line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath surrounding the Bank. Lawful use of fishing gear other than bottom-contact gear would be exempt from the regulation. This regulation would result in beneficial impacts on biological resources, and recreational uses such as recreational fishing and scuba diving, because in addition to prohibiting drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands it would prohibit the use of bottom-contact fishing gear, which can snag, entangle, break-off, injure and remove fragile bottom habitats on Cordell Bank. The proposed definition of bottom contact gear would not apply to most, if any, recreational fishing activities. Therefore, this regulatory alternative would have slightly greater beneficial impacts for certain recreational activities, such as fishing or scuba diving, than described for the Proposed Action since it would regulate harmful impacts on biological resources resulting from the use of bottom contact fishing gear on Cordell Bank. However, it should be noted that bottom contact fishing gear is currently prohibited in the area pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific).

Benthic Habitat Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, in addition to the minor corrections and clarifications, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath around the Bank. In addition, a new definition of bottom-contact fishing gear would be included in the sanctuary regulations, though this would not apply to most, if any, recreational fishing activities. Therefore, this regulatory alternative would have slightly greater beneficial impacts for certain recreational activities, such as fishing or scuba diving, than described for the Proposed Action since it would regulate harmful impacts on biological resources resulting from the use of bottom contact fishing gear on Cordell Bank. However, as noted above, bottom contact fishing gear is currently prohibited in the area.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on recreational resources.

3.11.6 Gulf of the Farallones National Marine Sanctuary –Environmental Consequences

The Proposed Action

Wildlife Disturbance

As described for CBNMS, stricter regulations on the taking or possessing of protected wildlife, such as marine mammals, sea turtles, and birds within GFNMS would have a beneficial impact on recreational viewing activities, such as wildlife viewing where their main intent is to see these Sanctuary resources in their natural habitat.

Deserted Vessels

Prohibiting marine vessel owners from deserting vessels and from leaving harmful matter aboard grounded or deserted vessels could indirectly be a beneficial impact on recreational resources. When a vessel is left unattended, there is a potential risk of discharge of harmful matter (e.g., fuel or motor oil) into the marine environment or risk of physically damaging habitats, impairing a majority of the recreational activities in the Sanctuary, including fishing, surfing, diving and swimming. Therefore, this regulatory change would result in a beneficial impact on recreational resources, by reducing the potential for harmful discharges that could affect recreation resources.

No-Anchoring Seagrass Protection Zones

As described in the Marine Transportation analysis (Section 3.10), minor adverse impacts on recreational boating in general may occur as a result of the proposed prohibition on anchoring a vessel in a designated seagrass protection zones in Tomales Bay, except as necessary for mariculture operations conducted pursuant to a valid lease, permit, or license. The total estimated size of the no-anchor seagrass protection zones affected by this regulation is approximately 654 hectares, which comprises approximately 22% of Tomales Bay. The zones were designed so that they do not include areas adjacent to marinas or other recreational day use areas where boaters are known to anchor.

Tomales Bay is a popular recreational area. Recreational boaters include small sailboats, pleasure craft, and recreational fishing vessels. Recreational fishing includes clamming on mudflats, California halibut and salmon fishing in deeper areas of the bay, and crab trapping. Recreational fishermen generally do not target their activity within seagrass, since that is not the primary habitat areas where salmon or halibut are located. Boaters, including recreational fishermen, generally avoid shallow areas of the Bay (which includes seagrass habitat) to avoid grounding, unless they are trying to “store” or anchor their vessels overnight or for longer periods. Due to the tidal extremes and the shallow depths along the shoreline, vessels may be completely exposed during low tide and rest directly on the seabed (or in seagrass).

Recreational vessel use within the Tomales Bay varies throughout the year, with a peak during the summer and fall months. The number of vessels recorded on one day within a one-hour period has been recorded as high as 449 vessels. Various agencies collect information on vessel use in Tomales Bay.

The Point Reyes National Seashore collects information on visitors who camp overnight on the west side of Tomales Bay within the boundaries of the park. There is a limit of 7,200 boat-in overnight camping permits per year. This data is limited to the number of camping permits issued at launch sites around the Bay and includes public and private areas. Day use within the Point Reyes National Seashore is more difficult to determine since there are so many entry points around the Bay that are accessible to boaters.

The California Department of Parks and Recreation also tracks the number of visitors to Tomales State Park. There is an estimated total annual visitation of 124,000 visitors to all units within the park. The water-based recreational usage varies among shoreline locations at the Park. The term “water-based recreation” covers beach use, swimming, and launching of kayaks and other vessels without motors. These counts are based on cars at parking lots at a particular time multiplied by a factor that reflects the number of passengers.

Marin County maintains a concrete boat launch ramp on Tomales Bay at Miller County Park. Although no accurate numbers are collected, this facility is likely used to launch motor-driven vessels, mostly 20 feet and under in length, as well as sailboats and kayaks.

According to California Department of Health Services, the number of boats using the launching facilities at Miller County Park has more than doubled since 1995 when 2,300 boats were reported to have used the launch site. In 2001, 6,000 boats were recorded by October. July was the busiest month at the Park for boat launches. This information was obtained from Marin County to California Department of Health Services, but it is not known how the boat numbers were derived since the Marin County Parks provided only car estimates for this report.

The California Department of Boating and Waterways used an aerial survey (conducted on Saturday, September 6, 2003, between approximately 1:00 – 2:00 pm) of the Tomales Bay waters to gather additional information on the number and size of vessels in Tomales Bay. The aerial survey resulted in a total vessel count of 449 vessels. This count included those vessels in the water, or on the immediate shoreline of Tomales Bay. Of these vessels, there were 146 power craft, 165 sailboats, 126 human powered craft (kayaks, canoes, sculling craft) and 12 unknown vessel types. Vessels have been observed through aerial photographs within current and historic eelgrass beds throughout Tomales Bay.

In addition, studies in other parts of the world have found that boat propellers, anchors and mooring lines can damage the underground root and rhizome system of seagrass, which can have long-term impacts on the health of the seagrass community. As vessels swing on their anchors, drag them in strong winds, or pull up their anchors, they can plow up seagrass beds, dislodging their stems and killing the plants. Also, prolonged anchoring or mooring can shade the seabottom and cut off light sources to seagrass beds. See additional information about biological effects and seagrass recovery rates in Section 3.3.8.

The proposed regulation would allow vessel operators to continue to sail, boat, fish or transit the Bay, and even anchor adjacent to marinas (since these areas are not included in the zones). Though the regulation would prohibit operators from anchoring a vessel in a designated seagrass protection zone, they could still anchor in the remaining 78% of the Sanctuary. Because this regulation does not limit actual vessel use, and provides alternatives for anchoring a vessel outside of designated zones, the adverse impacts on the public access and recreation would be less than significant.

White Shark Attraction and Approaching

The Farallon Islands are among the best places in the United States to see white sharks because they feed upon the young elephant seal, harbor seal, and California sea lion pups. The Proposed Action would prohibit white shark attraction activities throughout the Sanctuary and prohibit white shark-approaching activities from within 164 feet (50 meters) of any white shark within 2 nm (2.3 miles; 3.7 km) of the Farallon Islands (where the white sharks are most prevalent during feeding). The proposed regulation does not prevent any user, vessel or business from conducting shark viewing activities, however, it may reduce a company’s ability

to predictably “attract” white sharks to their boat and offer a close encounter with the sharks. As such, this may reduce the number of people participating in this recreational activity.

This regulation would create an adverse impact on those specific recreational activities that use decoys and chumming to feed and attract sharks for white shark viewing (e.g., photography, filming, and cage diving). Most of this unregulated seasonal activity (September-November) in GFNMS is directed at white shark populations located between Mirounga Bay and Fisherman’s Cove in the Southeast Farallon Islands (Absolute Adventures-Shark Diver 2003). As described in the Affected Environment, up to eight shark-related individual or ecotourism groups have operated at the Farallones in the past, but currently only two companies are known to conduct operations. During the white shark season in fall 2005, the commercial companies conducting white shark dive trips at the Farallon Islands planned on offering a combined total of at least 71 full-day trips (NOAA 2005c).

Noninvasive shark viewing would continue to be permitted within the 2 nm (2.3 miles; 3.7 km) boundary around the islands, and approaching would continue to be permitted elsewhere in the Sanctuary. Vessels would be allowed to observe natural white shark feeding behavior. Furthermore, some shark approach activities that have a legitimate research or education value (e.g., educational filming or white shark behavior studies) could be allowed through the issuance of a sanctuary permit. Therefore, this prohibition would result in a less than significant adverse impact on recreation. Economic impacts related to the shark diving businesses are addressed in Section 3.13.

Beneficial effects on other recreational activities may result from the proposed prohibition. By not attracting a top food chain predator, the possibility of sharks habituating to human activities would be reduced or eliminated. This may prove beneficial for other nearby in-water human users, such as surfers, kayakers, divers, and swimmers.

Oil and Gas Pipeline Clarification

The proposed change in regulations regarding the placement of oil and gas pipelines in GFNMS would have slight positive effects on recreational activities. Since pipelines would be permitted only for oil and gas operations that are adjacent to the Sanctuary, rather than oil and gas operations anywhere outside of the Sanctuary, the potential for future pipeline development would be more limited. Such limited pipeline construction would reduce the likelihood of any pipeline failure and spill. Therefore, the management measure would be a slightly beneficial impact on recreation by protecting water quality and health of marine wildlife that is the focus of several recreational activities, such as fishing and wildlife watching. However, there are no current oil and gas operations in the area and none planned in the near future.

Historical and Cultural Resources

Amending the administrative language regarding historical and cultural resources would have a minor positive impact on recreational resources within the Sanctuary. These cultural and historical resources will be protected and left in the Sanctuary for others to enjoy or even dive on.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following differences.

White Shark Approach Prohibition Alternative

This alternative would provide a variation on the proposed regulations for approaching white sharks. Approaching would be prohibited throughout the Sanctuary rather than just within 2 nm (2.3 miles, 3.7 km) of the Farallon Islands. This alternative would have a slightly greater adverse impact on the existing white shark diving operators than as identified in the Proposed Action due to the greater level of restriction on their activities. However, as outlined for the Proposed Action, the overall adverse impact on recreation would be less than significant due to the very limited number of activities that actually rely upon the active attraction of white sharks in the GFNMS. Economic impacts related to the shark diving businesses are addressed in Section 3.13.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on recreational resources.

3.11.7 Monterey Bay National Marine Sanctuary—Environmental Consequences***The Proposed Action*****Deserted Vessels**

Similar to that describe in GFNMS, prohibiting marine vessel owners from deserting vessels could have an indirect beneficial impact on recreational resources. When a vessel is left unattended, there is a potential risk of discharge of harmful matter (e.g., fuel or motor oil) into the marine environment or risk of physically damaging habitats, impairing a majority of the recreational activities in the Sanctuary, including fishing, surfing, diving and swimming. Therefore, this regulatory change would result in a beneficial impact on recreational resources, by reducing the potential for harmful discharges that could affect recreation resources.

Boundary Changes - Davidson Seamount

Adding the Davidson Seamount to the boundary of MBNMS would have minimal impacts on recreation. Prohibiting or regulating activities that could impact benthic communities is not likely to have an impact on recreational uses since there is no evidence that any significant recreational activity takes place at Davidson Seamount.

Motorized Personal Watercraft

As described in Chapter 2, MPWC use in MBNMS is confined to four existing designated zones. However, some larger MPWC do not fall under the sanctuary's current definition of MPWC and therefore are not confined to the four zones. Altering the definition of MPWC to include a broader range of vessels, including increased rider capacity watercraft, would limit their operation to the designated MPWC zones, but a new seasonal zone would be established at the Mavericks surf area. The only exception to this regulation would be for emergency use by public safety agency personnel. For training of those public safety personnel during non-emergency situations, permits could be made available. Permits would be limited to training for public safety organizations with jurisdiction within the Sanctuary.

MPWCs are used in a variety of environments and in a variety of ways in the Sanctuary. One of the primary uses is for "tow-in" and "tow-at" surfing. In "tow-in" surfing, MPWC use has allowed surfers to catch waves that are too large and consequently traveling too fast to catch by paddling. According to interviews with surfers and state and local personnel, most tow-in surfing activity occurs in big-wave conditions (larger than

15 feet), which are most often associated with the storms that occur between October and March. However, MPWC use has spread to towing surfers into more moderately sized waves that can also be ridden by paddling. Additionally, there has been an increase in what is known as “tow-at” surfing where MPWC are used to sling a surfer at smaller waves at high speeds.

There have been some anecdotal reports of increased use of MPWC in traditional paddle-in surf spots, causing some conflict between the two types of surfers, as well as conflict between MPWC-users and other recreational uses of the Sanctuary, such as kayakers and wildlife-watchers. Restricting all MPWC to the designated zones would eliminate this conflict, which would have a beneficial impact on other recreational users in areas outside the MPWC zones.

Impact 1: Long-term Preemption of Tow-in Surfing. Eliminating all non-emergency MPWC from use outside the MPWC zones would result in a less than significant adverse impact by creating a long-term preemption of the recreational use of MPWC for “tow-in” and “tow-at” surfing in some areas such as Moss Landing and Pescadero Point. The establishment of a seasonal zone (as shown in Figure 2-5) would allow continued use of MPWC at Mavericks (off of Pillar Point) during high surf conditions in winter months. While the Mavericks surfing competition does not permit the use of MPWC for tow-in purposes, professional and recreational surfers practice at Mavericks using MPWCs, and MPWC are used during the competition by photographers, spectators, and rescue personnel. Establishing the seasonal zone at Mavericks would accommodate this recreational use; therefore overall impacts on this form of MPWC use would be less than significant. Impacts on other recreational MPWC use would not be significant because MPWC could still be used in the designated MPWC zones in the sanctuary.

The MBNMS MPWC Action Plan, Strategy "MPWC-2: Consider Zone Restriction Exceptions" provides information about how the sanctuary plans to comprehensively address MPWC use in the Sanctuary.

White Shark Attraction

Currently white shark attraction is already prohibited in state waters of MBNMS. This proposed regulation would extend the prohibition to federal waters to make the regulation more consistent throughout the entire Sanctuary and with the proposed regulation in GFNMS. However, unlike GFNMS where this activity occurs around the Farallon Islands, this activity does not occur in these deeper offshore waters of MBNMS because there are many fewer white sharks and they are not easily accessed in concentrated feeding areas such as the Farallon Islands. Therefore, no impact on this type of recreational use is expected.

Dredge Disposal – SF-12

Redefining and officially locating disposal site SF-12 would reduce the probability of accidental release of dredged material in areas of the Sanctuary used for recreation. The purpose of this proposal is to reduce impacts on local beaches and nearby harbors and estuaries caused by current disposal in the nearshore subtidal area. Movement of the site to the head of the Monterey Canyon may reduce existing impacts associated with dredged sediment being washed into the surf zone at Moss Landing and deposited in the beach, harbor and estuary areas. This action would have a beneficial impact on recreational activities, by improving the beach environment for recreational use.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following minor differences:

Motorized Personal Watercraft Alternative

Impact 1: Long-term Preemption of MPWC Use. Prohibiting the use of all MPWC within the Sanctuary boundary would eliminate all MPWC from the entire MBNMS, not just outside the MPWC zones. This would be a significant impact on MPWC users.

Mitigation. Potential mitigation for this impact could include the issuance of specialized permits.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on recreational resources.

3.11.8 Cumulative Impacts

The ROI for cumulative public access and recreation encompasses the boundaries of the marine sanctuaries, the Davidson Seamount area, and access and recreational activities adjacent to the sanctuary boundaries that may affect the individual sanctuaries or management of the sanctuaries. Trends in recreational use and public access include increasing amounts of recreational development along the coastline, in conjunction with local, state, and federal planning efforts to protect natural resources that contribute to the recreational experience, and to preserve public access to these resources. Simultaneously, ongoing development in the ROI, as well as increasing population, in the ROI, are putting pressure on recreational uses, through over-use by the expanding population, and by the need for open land to develop for residential or commercial purposes. Specific types of projects that would affect recreational uses include almost all coastal development or construction, coastal armoring projects, harbor maintenance, and environmental restoration projects. Environmental restoration efforts such as the Big Lagoon Restoration Project contribute to the preservation of resources valuable for both ecological and recreational uses; harbor maintenance preserves the capacity of harbors to support recreational and commercial boating; and coastal armoring projects may damage natural resources while at the same time preserving public access to the coastline.

Faced with such pressures, planning agencies are forced to balance the sometimes conflicting needs of preserving public access and protecting natural and cultural resources, as too much public access may damage those resources that support recreational uses. County implementation of LCPs and the California Coastal Commission's regulatory overview all require planning to preserve public access and recreational uses, but not exclusive of natural resources protection. Near-term planning efforts that restrict recreational uses may indirectly result in long-term recreational benefits. In the long term, cumulative projects and planning efforts may have beneficial impacts on recreation, by preserving natural resources and recreational uses and guaranteeing public access to the shoreline in the ROI.

Additionally, implementation of the FMPs will contribute to the ROI's regional ecosystem health by applying the various action plans in CBNMS, GFNMS, and MBNMS. The action plans provide for public outreach and education, research, and coordination with other natural resources and planning entities, in order to preserve the resources of the sanctuaries and the ROI as a whole. Implementation of these plans would contribute to protection of the recreational resources in the sanctuaries, but might result in minor restraints on some recreational uses through management of the sanctuaries' sensitive resources.

One program that would intersect with the proposed GFNMS prohibition on anchoring in seagrass beds is the Tomales Bay vessel management plan, which is described in Section 3.10.8.

The Proposed Action

Recreational resources within the ROI are subject to both adverse and beneficial cumulative trends through better management and increased development pressure. While these are ongoing impacts, the Proposed Action would not contribute to a cumulatively significant adverse impact on public access or recreation in the ROI.

The Proposed Action may limit certain recreational uses (white shark attraction and use of MPWCs outside designated zones), but these prohibitions would enhance the recreational experience for other visitors to the sanctuaries, either directly by limiting the noise and disruption of MPWCs, or indirectly by preserving the natural resources that draw visitors to the area. Recreational resources in the ROI are subject to a cumulatively adverse impact from development pressure on recreational resources and from coastal armoring, which would reduce public access to the shoreline, reduce the natural landscape, increasing beach erosion and sand loss from the beach. However development and coastal armoring are both increasingly subject to regulatory constraints. The Proposed Action would not contribute to this ongoing adverse effect, because the long-term consequences of the Proposed Action for recreational resources would be beneficial.

The Proposed Action would contribute to cumulatively beneficial impacts on recreation from the cumulative projects that would also improve water quality and habitat. Such cumulative projects include the restoration projects, updating NPDES permits, and other planning efforts. Implementation of the Tomales Bay boating management plan would provide positive effects on recreational boating and would offset any minor adverse effects of the seagrass anchoring prohibition. When considered together with the proposed seagrass anchoring regulation, the implementation of this boating management plan would result in a slight net positive cumulative effect on recreational boating. Therefore, overall, the Proposed Action would result in a cumulative contribution to beneficial impacts.

Alternative Regulatory Actions

Cumulative impacts would be the same as those described under the Proposed Action, with an increase in the level of beneficial impacts due to the increased levels of resource protection afforded by these alternatives.

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuaries as they are currently managed, although the action plans in the FMPs would be implemented. This would result in no contribution to beneficial or adverse cumulative impacts on recreational resources.

3.12 RESEARCH AND EDUCATION

This section addresses issues related to research and education activities that might be affected by the proposed actions. Research and education activities in the sanctuaries are summarized, and potential adverse effects are identified.

3.12.1 Regional Overview of Affected Environment

The research and education resources of the three sanctuaries are affected by the uses and activities within the study area. The ROI includes areas in which research and education facilities are located within and around the boundaries of the marine sanctuaries, the Davidson Seamount area, and areas adjacent to the boundaries that are affected or involved with the individual sanctuaries or management of the sanctuaries.

Goals of all three sanctuaries include promoting appreciation, public awareness, and understanding for the marine resources. Both education and research are important components of the Sanctuary programs.

The three sanctuaries provide a variety of outreach and education programs for teachers, students, resource users, and the general public. Sanctuary education and outreach efforts are focused in two general areas: (1) community involvement, partnerships, and community program development (training programs, workshops, special events, school programs), and (2) product development (printed materials, website development, audio visual materials, interpretive signs, displays and exhibits) as critical education and outreach tools.

Research and Education Activities

Cordell Bank National Marine Sanctuary

The majority of research and monitoring in CBNMS is conducted by or through the Sanctuary, Bodega Marine Laboratory, and the NOAA Fisheries. Each year, NOAA Fisheries assesses juvenile rockfish recruitment and every three years it surveys adult fish populations. The Sanctuary has conducted monitoring of Sanctuary conditions since 1997. Monitoring programs have included investigating oceanographic conditions and how they relate to the distribution and abundance of krill, seabirds, and whales. Since 2001, the Sanctuary and its partners have been characterizing benthic habitats on Cordell Bank and monitoring fishes and invertebrates on and around the bank. Education programs in CBNMS include a yearly lecture series, outreach events, presentations at local schools, teacher training, and wildlife viewing.

Gulf of the Farallones National Marine Sanctuary

Scientific research on both marine and estuarine ecosystems in GFNMS is led by the site staff, but mostly through its partners, including CDFG, GGNRA, PRNS, USFWS, EPA, USGS, NOAA Fisheries, local universities, volunteer groups, and the Pt. Reyes Bird Observatory (PRBO). Several government agencies and nongovernmental organizations conduct research programs in the area. PRBO Conservation Science and the USFWS coordinate research on the islands. The Sanctuary collaborates with these agencies and other institutions on conducting research to help characterize Sanctuary resources and understand natural and human factors responsible for causing changes in the marine environment.

Monterey Bay National Marine Sanctuary and Davidson Seamount

MBNMS's research program is focused on science for resource management, which includes determining information gaps, developing collaborative studies to improve understanding of issues, and interpreting research for decision makers. Over 40 research institutions utilize MBNMS for a variety of programs. Several

large-scale programs have been conducted to map habitats, monitor nearshore ecosystems, and model ocean circulation. Research activities cover a broad spectrum of activities, including monitoring birds, marine mammals, krill, gray whale migrations, kelp canopies, rocky shores, and water quality; characterizing pinniped rookeries, nearshore, offshore, and formerly restricted military zone seafloor habitats; and studying tidal erosion in Elkhorn Slough, distribution of introduced species, sea lion death, fishery impacts from trawling and gill net by-catch, coastal erosion, ship groundings and oil spills, and human use effects in kelp forest and rocky shore systems. An ecosystem monitoring program, entitled SIMoN, has been developed and is a key regional source of information. SIMoN is a long-term program that takes an ecosystem approach to identify and understand changes in the Sanctuary. The program enables researchers to monitor the Sanctuary effectively by integrating the existing monitoring programs and identifying gaps in information. By avoiding duplication of these programs, resources can be more effectively directed towards surveying and characterizing habitats, assessing the impact of natural processes or human activities on specific resources, and long-term monitoring. Further details about research activities in MBNMS are provided at the SIMoN website: www.mbnms-simon.org.

In addition to the Sanctuary itself, the Davidson Seamount area represents a unique ecosystem, which is of great interest to the research community (see Section 3.3, Biological Resources). Research activities related to the seamount include the following programs:

- Since the seamount was first mapped in 1933, there have been ongoing NOAA charting efforts.
- Rock samples were dredged by the US Geological Survey in 1978 and 1979.
- The Naval Postgraduate School placed scientific instruments on the seamount through the 1990s to measure currents between this offshore location and the coast.
- In 1998, the Monterey Bay Aquarium Research Institute (MBARI) completed detailed side scan and multibeam surveys to map the shape and structure of the seamount precisely.
- In 2000, MBARI led a remotely operated vehicle survey of the seamount's geology, making biological observations at the sea surface, in the midwater, and on the seamount itself.
- The Sanctuary arranged an airplane survey with NOAA Fisheries in 2001 to begin a more detailed characterization of the region's mammals.
- In 2002, the Sanctuary led another ROV expedition to explore the seamount at all depths, with the primary purpose of characterizing patterns of species distribution and abundance.
- In 2006, another expedition to study the corals of the seamount was conducted through a collaboration of the Monterey Bay National Marine Sanctuary, the Monterey Bay Aquarium Research Institute, Moss Landing Marine Laboratories, the British Broadcasting Corporation, and NOAA's Office of Ocean Exploration.

Education activities and programs in MBNMS include public events, interpretive signs and displays at parks and beaches, volunteer programs, water quality/urban runoff information, teacher workshops, shipboard and submersible “teacher-in-the-sea” opportunities, and intertidal monitoring programs for students.

3.12.2 Regulatory Environment

Goals, objectives, and action plans for research and education activities in the sanctuaries are addressed in the Sanctuary Management Plans. Some research activities are regulated by the NMSA and by Sanctuary

regulations. Some research activities, such as collecting certain wildlife (e.g., marine mammals) for study purposes, require a permit from the sanctuary. Scientific collecting permits for marine fishes, invertebrates and plants are also required by CDFG.

3.12.3 Significance Criteria and Impact Methodology

Criteria used to determine the significance of impacts on research and education resources are based on federal, state, and local standards and regulations. Impacts are considered to be significant if one or more of the proposed actions were to disrupt or interfere with the following activities:

- Interpretative programs that aim to enhance public awareness, access, and understanding of the significance of the sanctuaries and the need to protect their resources;
- Community involvement, partnerships, and program development (training programs, workshops, special events, school programs);
- Educational product development (printed materials, Web site development, audio visual materials, signs, displays, and exhibits) as critical education and outreach tools;
- Educational leadership in marine conservation and protection efforts;
- Programs that promote the sanctuaries' identity with site-specific application and products;
- Programs to establish standards of excellence to be upheld by all 13 NMS sites; and
- Scientific research on, and long-term monitoring of, the resources of the Sanctuary.

The methodology used to assess impacts involved reviewing and evaluating each proposed and alternative action to identify the action's potential to interfere with or pre-empt existing and proposed research and education programs.

3.12.4 Cross-Cutting Regulations – Environmental Consequences

The cross-cutting regulations identified in Table 2-1 include almost identical changes to the regulations in all of the three sanctuaries.

The Proposed Action

Introduced Species

The proposed regulation would prohibit the introduction of nonnative species into the three sanctuaries. Invasive species have the potential to alter ecosystem composition and function, and their introduction can indirectly impact water quality. Prohibiting the introduction of nonnative species to the sanctuaries would protect native species, habitats and ecosystem function, which would provide future beneficial impacts on research and education. Research activities concerning non-native species, such as in mariculture, would continue to occur but may require a sanctuary permit.

Discharge Regulation Clarifications

Each of the proposed new and modified regulations under the Proposed Action would provide greater protection of the sanctuaries' waters from the harmful effects of vessel pollution (oil and gas), which in turn would provide increased protection for sanctuary living resources. Although research vessels would be subject to these same discharge regulations, the overall effect would be considered beneficial for future

research and education programs. Alternate disposal options for discharges, other than within the sanctuaries, are feasible and affordable and would not prevent research vessels from operating within the sanctuaries.

Discharge — Sewage, Marine Sanitation Devices and Graywater

Requiring large vessels (300 gross tons or more) to hold sewage while in the sanctuaries and clarifying the existing regulations regarding MSDs may increase compliance and enforceability and reduce unintentional violations relating to the use of marine sanitation devices in the sanctuaries. This may result in a decrease in the discharge of raw sewage from vessels, which may benefit marine water quality. Beneficial water quality effects would increase protection of sanctuary living resources and maintain the ecosystems that are the subject of many research and education activities. Although research and education vessels would be subject to these same regulations, the proposed regulations would not prevent research and education activities from taking place in the sanctuaries.

Cruise Ship Discharges and Definitions

This proposed regulation would reduce potential harmful discharges from cruise ships including sewage, graywater, blackwater, oily bilge water, and ballast water, which degrade water quality and can impair, injure or even kill marine wildlife. Maintaining and improving water quality in the sanctuaries would provide beneficial effects for biological resources and associated research and education activities.

Alternative Regulatory Actions

Cruise Ship Prohibition Alternative

This alternative provision would result in cruise ships being allowed to discharge wastewater that has been properly treated to a level not to exceed the standards set forth by the US Coast Guard in Alaska at 33 CFR 159, Subpart E (see discussion about cruise ship wastewater discharges in Section 3.5, Water Quality). Because the wastewater would be treated to reduce nutrients (nitrogen and phosphorus) and reduce or eliminate the toxicity or hazardous properties of the wastes, the overall water quality would be improved and therefore have beneficial impacts on biological resources. This would in turn have beneficial impacts on research and education activities. Although the discharged wastewater would be treated, there is still the potential for the discharges to contain harmful effluent (i.e., oily wastes, toxic chemicals, nutrients, pathogens, viruses) that can impair, injure or even cause death to living resources. As discussed in Section 3.5.4, some MSDs do not achieve the effluent standards they are designed to meet. Therefore, the beneficial nature of the impact would be slightly less than under the Proposed Action because no discharge (treated or untreated) would be allowed under the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuaries as they are currently managed. This would result in no impact on research and education within the sanctuaries.

3.12.5 Cordell Bank National Marine Sanctuary – Environmental Consequences

The Proposed Action

Seabed Protection

The proposed regulation would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Additionally, the regulation would prohibit the same activities listed above in the remainder of the sanctuary outside the 50-fathom isobath, with the exception of anchoring. Future research activities that may involve activities that would disturb the seabed would now be prohibited. However, researchers would be eligible to apply for a research permit from the Sanctuary to conduct such activities, so there remains a mechanism to allow research in the area. Furthermore, the proposed regulations would provide additional protection for Cordell Bank biological resources, which in turn would be beneficial for future research and education activities. Therefore, no adverse impacts on research and education are anticipated.

Benthic Habitat Protection

There is an existing benthic habitat regulation that prohibits the removal, taking, or injuring benthic invertebrates or algae on or within the 50-fathom isobath surrounding Cordell Bank, except for “accidental removal, injury, or takings during normal fishing operations.” The proposed regulatory clarifications to this regulation will have the same amount of protection as the existing regulation and would result in negligible impacts on research and education. Existing and future research activities that may involve activities that would remove, take or injure benthic invertebrates or algae would remain prohibited. However, researchers would remain eligible to apply for a research permit from the Sanctuary to conduct such activities, so there remains a mechanism to allow research in the area.

Alternative Regulatory Actions

Seabed Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within a line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath surrounding the Bank. Lawful use of fishing gear other than bottom-contact gear would be exempt from the regulation. Similar to the Proposed Action, this regulation would also prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on Cordell Bank. Existing and future research activities that may involve activities that would remove, take, or injure benthic invertebrates or algae would remain prohibited. However, researchers would remain eligible to apply for a research permit from the Sanctuary to conduct such activities, so there remains a mechanism to allow research in the area. Therefore, the impacts of this regulation to research and education are the same as the Proposed Action and would result in negligible impacts on research and education.

Benthic Habitat Protection Alternative

This alternative would be implemented if NOAA Fisheries did not impose restrictions on bottom-contact fishing gear on or within the line representing the 50-fathom isobath surrounding Cordell Bank, as expected under the Proposed Action. Under this alternative, in addition to the minor corrections and clarifications,

NOAA would issue regulations under the authority of the NMSA prohibiting bottom-contact fishing gear within the 50-fathom isobath around the Bank. As is the case with the Proposed Action, existing and future research activities that may involve activities that would remove, take or injure benthic invertebrates or algae would remain prohibited. However, researchers would remain eligible to apply for a research permit from the Sanctuary to conduct such activities, so there remains a mechanism to allow research in the area. Therefore, the clarifications to this regulation will have the same amount of protection as the Proposed Action and would result in negligible impacts on research and education.

3.12.6 Gulf of the Farallones National Marine Sanctuary – Environmental Consequences

The Proposed Action

Deserted Vessels

The proposed regulation would prohibit vessels from being deserted, either aground, at anchor, or adrift in the Sanctuary and would require vessel owners to remove harmful matter from deserted vessels. This would prevent future impacts on water quality, biological resources, and the seabed from vessel strandings and related spill incidents that could discharge harmful materials such as oil, gas and marine debris (fishing gear, pieces of a broken up boat, etc.). This regulation would have potential beneficial future impacts on water quality in the sanctuaries. Beneficial effects on water quality would have the potential to improve ecosystem protection and benefit research and education activities.

Seagrass Anchoring Prohibition

Research and education vessels would be prohibited from anchoring in designated seagrass protection zones in Tomales Bay. However, persons needing to anchor in these zones to conduct their research or education activities could apply for a research or education permit. At this time, there are no known research or education programs requiring anchoring within seagrass beds. In addition, there are areas adjacent to seagrass beds where vessels could safely anchor, so this regulation would not likely impact their activities. Therefore, this proposed prohibition would result in no impact on research and education.

Water Quality – Discharges From Outside the Sanctuary

The proposed regulation would prohibit discharging or depositing any material or other matter from beyond the boundary of the Sanctuary that subsequently enters the Sanctuary and injures a Sanctuary resource. Potential future beneficial impacts on the water quality of the Sanctuary would aid in the protection of biological resources and would potentially enhance research and education activities.

White Shark Attraction and Approaching

The Proposed Action would prohibit white shark attraction activities throughout the Sanctuary and prohibit white shark-approaching activities from within 164 feet (50 meters) of any white shark within 2 nm (2.3 miles; 3.7 km) of the Farallon Islands (where the white sharks are most prevalent during feeding). Noninvasive shark education and research would continue to be allowed within the 2 nm (2.3 miles; 3.7 km) boundary around the islands, and approaching would continue to be allowed elsewhere in the Sanctuary.

Although the regulation may restrict some types of invasive research and education activities (such as directly approaching or attracting the sharks), the regulation would not prevent research and education activities from taking place. Researchers and educators would be allowed to observe natural white shark feeding behavior throughout the entire Sanctuary. Furthermore, some shark approach activities that have a legitimate research

or education value (e.g., educational filming or white shark behavior studies) could be allowed through the issuance of a sanctuary permit. Therefore, this prohibition would result in no significant impact on research and education activities.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on research and education within the sanctuaries.

3.12.7 Monterey Bay National Marine Sanctuary – Environmental Consequences

The Proposed Action

Davidson Seamount

The NMSP proposed to include the Davidson Seamount within MBNMS. In addition, the proposed regulation would protect Davidson Seamount from future disturbance or from resource exploitation. The standard MBNMS discharge regulations and seabed disturbance regulations relating to drilling, dredging, seabed alterations, construction, and anchoring would apply to the DSMZ (with certain exceptions). At depths greater than 3,000 feet below the sea surface, the NMSP would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or otherwise injuring Sanctuary resources (or attempting to do those activities), except for fishing, which is prohibited pursuant to the MSA. The Sanctuary would also prohibit the possession of Sanctuary resources taken from below 3,000 feet within the DSMZ, except for the possession of fish resulting from fishing, which is prohibited pursuant to the MSA. The NMSP would rely upon the NOAA Fisheries regulatory amendments to the Groundfish FMP to regulate any fishing-related impacts below 3000 feet. These protections to Davidson Seamount would have the potential to slightly change the way research is conducted in the area, but it would not preclude or prohibit research and educational activities. Research activities requiring the take of species beyond the 3,000 feet water depth would be allowed, subject to issuance of a permit from the Sanctuary. Overall, beneficial effects would result from including the Davidson Seamount in MBNMS, as further protection of fragile ecosystems would be provided through Sanctuary regulations. By protecting these resources, future research and educational programs could be enhanced.

Deserted Vessels

As described in GFNMS, the proposed regulation would prohibit vessels from being deserted in the Sanctuary and would prohibit leaving harmful matter (hazardous materials or wastes) aboard a deserted vessel. This would reduce the potential threat of potentially harmful discharges of oil and gas or marine debris in Sanctuary water. Since this regulation minimizes potential threats to sanctuary resources, it would have the same potential beneficial impacts on research and education activities in the Sanctuary as described above for GFNMS.

Motorized Personal Watercraft

This Proposed Action would reduce the number of MPWC used in the Sanctuary and would provide further protection of water quality and biological resources. To the extent that MPWC use has interfered or

conflicted with research and education activities, this conflict would be eliminated. Overall, this action would result in a beneficial effect for research and education.

Dredge Disposal

The proposed regulation modifications would have the potential to improve water quality in the surf zone in the Moss Landing area and have an overall minor beneficial future impact on water quality in the Sanctuary. Improved water quality may benefit research and education activities planned for the area. However, this beneficial effect is negligible.

Alternative Regulatory Actions

Motorized Personal Watercraft Alternative

The alternative action would eliminate the four designated MPWC-permitted use zones, thereby eliminating use of MPWCs in the entire Sanctuary. Compared to the Proposed Action, a slightly greater potential beneficial impact on research and education would occur due to additional protection of marine water quality and biological resources and less potential for conflicts with research and education.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on research and education within the sanctuaries.

3.12.8 Cumulative Impacts

The ROI for cumulative impacts is the same as the ROI described above. Implementation of the FMPs will contribute to a better understanding of the ROI's regional ecosystem health and provide new research and education opportunities by applying the various protective action plans in CBNMS, GFNMS, and MBNMS. Cross-cutting action plans such as Community Outreach and Maritime Heritage will serve to educate the community and ensure that research continues within the Sanctuaries. Education and Outreach action plans specific to CBNMS and GFNMS as well as the Fishing Related Education and Research, Interpretive Facilities, and Multicultural Education action plans at MBNMS will have similar to effects. There are also many action plans specific to each sanctuary that would provide opportunities for researchers to study the sanctuary's resources and share their results with the scientific community and general public.

The Proposed Action

The proposed actions will not contribute to any cumulative adverse trends; therefore, there will be no cumulative adverse impacts. There would be cumulative beneficial impacts since several of the proposed actions are expected to have positive individual effects on research and education.

Alternative Regulatory Actions

Cumulative impacts would be the same as those described under the Proposed Action, with an increase in the level of beneficial impacts due to the increased levels of protection afforded by this alternative.

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuaries as they are currently managed. This would result in no cumulative impact on research and education within the sanctuaries.

3.13 SOCIOECONOMIC, DEMOGRAPHIC, AND ENVIRONMENTAL JUSTICE RESOURCES

This section discusses the socioeconomic resources of the ROI. Marin, Monterey, San Francisco, San Luis Obispo, San Mateo, Santa Cruz, and Sonoma counties were identified as the ROI for socioeconomic analysis, since potential effects on the economy would occur within this coastal region. Data for the state of California are presented for comparison and to analyze the possible broader effects of the proposed actions.

This section also discusses business uses of the sanctuaries that may potentially be impacted. Such businesses include tourist/recreational uses (e.g., whale watching, kayaking, scuba diving), and commercial uses (e.g., kelp harvesting). Depending on their relative importance to local economies, “these uses will have ripple or multiplier effects as measured by market economic values (e.g., output/sales, income, employment, and tax revenues)” and nonmarket economic values (e.g., consumer’s surplus and economic rents) (Ehler, Leeworthy and Wiley 2003). This section discusses the significance and potential market effects of impacts on direct uses of the sanctuaries. Please note that impacts on commercial fishing and mariculture are addressed separately in Section 3.6 and impacts on the non-economic aspects of recreation are addressed in Section 3.11.

3.13.1 Regional Overview of Affected Environment

Definition

The socioeconomic and demographic indicators used for this study include regional economic activity (employment and business sales volume), population, employment, income, earnings, housing, and the protection of children. The ROI includes nearby trade and service centers related both directly and indirectly to the economic activities of each sanctuary. The population data include the number of residents in the area and recent changes in population growth. Data on employment, labor force, unemployment trends, income, and industrial earnings describe the economic health of a region. Income information is provided as an annual total by county and per capita.

Population

Table 3-11 presents population figures for counties of the planning area and California from 1990 to 2000. Between 1990 and 2000, the population of Sonoma County increased by 15.3 percent, which is greater than the state’s growth rate of 13.6 percent. During the same time period, the populations of San Luis Obispo

Table 3-11
County Population Estimates 1990-2000

County	1990	2000	1990-2000 Change	1990-2000 Percent Change
Marin	230,096	247,289	17,193	7.0%
Monterey	355,660	401,762	46,102	11.5%
San Francisco	723,959	776,733	52,774	6.8%
San Luis Obispo	217,162	246,681	29,519	12.0%
San Mateo	649,623	707,161	57,538	8.1%
Santa Cruz	229,734	255,602	25,868	10.1%
Sonoma	388,222	458,614	70,392	15.3%
JMPR Planning Area	2,794,456	3,093,842	299,386	9.7%
California	29,760,021	33,871,648	4,111,627	13.6%

Source: US Census Bureau 2004.

(12.0 percent), Monterey (11.5 percent), and Santa Cruz (10.1 percent) increased at a rate over 10 percent, followed by San Mateo (8.1 percent), San Francisco (6.8 percent), and Marin (7.0 percent) counties. The densest population per square mile exists in San Francisco County; within the coastal JMPR planning area, other dense populations are located in Santa Cruz and the Monterey Peninsula area. The two counties within the JMPR planning area having the largest populations are San Francisco (776,733) and San Mateo (707,167). Together, these counties account for almost half (48.0 percent) of the JMPR planning area population.

Employment

In 2000, the total labor force for the JMPR planning area was approximately 1,628,460 people, of which 1,550,581 were employed. Of the seven counties in the planning area, San Francisco, San Mateo, and Sonoma counties had the largest labor forces, with 448,432, 373,831, and 239,445 people, respectively. With the exception of Marin County (1.9 percent), these same counties also had the lowest unemployment rates of 3.0 percent, 2.2 percent, and 2.8 percent, respectively. Of all the counties, Monterey County had the highest unemployment rate of 5.8 percent. In 2000, all counties' unemployment rates were considerably below the state's unemployment rate of 7.0 percent, with the JMPR planning area's unemployment rate of 3.2 being less than one-half that of the state.

Table 3-12 provides a breakdown of 1990 and 2000 employment by employment category in all seven counties of the planning area. The major economic sectors within the counties of the JMPR planning area are the services and trade sectors. The next category with the largest number of jobs is the finance/insurance/real estate sector, followed by the government, manufacturing, transportation/public utilities, construction, and farming sectors, and then the agriculture/forestry/fishing and mining sectors. Since 1990, the JMPR planning area has experienced the most growth in employment in the finance/insurance/real estate sector (29.8 percent) and the least growth in the mining sector (-23.2 percent).

Recreation and Tourism

Table 3-13 provides a breakdown of the types of travel expenses spent by travelers within the counties of the planning area in 2000. According to the Dean Runyan Associates 2002 study *California Travel Impacts by County, 1992-2000*, total travel spending in the JMPR planning area was estimated to be \$16 billion dollars. This accounts for roughly 22 percent of the \$75.4 billion dollars contributed to the state's economy by Californian travelers.

As shown in Table 3-13, close to \$2.2 billion dollars were estimated to be spent on recreation-related travel spending in the JMPR in 2000. This accounts for approximately 14 percent of total travel spending in the JMPR planning area, and it accounts for roughly 3 percent of the \$75.4 billion dollars contributed to the state's economy by travelers to California. Of the seven counties in the JMPR planning area, San Francisco County's travel spending (\$8.5 billion) constitutes nearly one-half of travel spending in both total travel spending and recreation-related travel spending in 2000.

Spending on recreation-related travel activities in 2000 was estimated to be approximately \$2.2 billion. Of the counties within the planning area, San Francisco (\$1 billion), San Mateo (\$355 million), and Monterey (\$300 million) were the counties most responsible for driving recreation-related spending in the JMPR planning area, while Santa Cruz County (\$79 million) was the least. In 2000, total employment estimated to be generated by recreation-related travel in the JMPR planning area was estimated to be 36,050. As with recreation-related travel spending, the same counties of San Francisco (14,500), San Mateo (4,590) and Monterey (4,590) drove recreation-related employment.

Table 3-12
County Employment by Industry Sectors (2000)

Industry Sector (Percent Change)	Marin	Monterey	San Francisco	San Luis Obispo	San Mateo	Santa Cruz	Sonoma	JMPR Planning Area
Farm								
1990**	-	-	-	-	-	-	-	-
2000	843	18,710	-	5,050	3,449	8,949	9,475	46,526
Agriculture/Forestry/ Fishing (-20.2%)								
1990	2,406	20,682	2,328	5,686	5,934	7,099	8,202	52,337
2000	(D)	26,197	2,990	5,177	(D)	2,995	6,167	43,526
Mining (-23.2%)								
1990	184	211	562	423		122		
2000	(D)	281	587	323	370	132	415	2,287
					(D)		533	1,856
Construction (22.3%)								
1990	8,289	8,633	16,620	8,853	20,978	9,220	17,422	90,015
2000	12,179	9,967	26,111	10,325	27,773	8,878	20,665	115,898
Manufacturing (-12.8%)								
1990	9,524	12,314	35,748	7,879	44,089	18,946	24,364	152,864
2000	5,646	11,062	32,222	1,287	39,328	11,908	34,060	135,513
Transportation/Public Utilities (10.8%)								
1990	7,746	7,369	31,418	6,510	37,885	5,549	12,386	108,863
2000	4,437	6,182	43,684	8,838	46,863	3,813	8,269	122,086
Trade (27.7%)								
1990	24,339	31,526	80,990	22,405	76,300	25,090	42,202	302,852
2000	35,467	41,448	131,493	31,245	94,508	32,164	52,694	419,019
Finance/Insurance/ Real Estate (28.8%)								
1990	16,193	8,589	41,617	5,443	33,839	6,612	16,370	128,663
2000	23,498	14,996	103,642	12,519	49,874	11,247	23,514	239,290
Services (46.2%)								
1990	57,205	57,561	177,247	40,218	133,569	45,266	71,935	583,001
2000	77,433	60,034	335,359	41,096	206,770	50,902	86,505	819,305
Government (6.9%)								
1990	14,172	26,282	55,153	20,006	41,899	17,735	27,939	203,186
2000	14,410	34,895	97,591	20,649	31,770	18,570	29,711	218,321

Source: US Census Bureau 2004; Bureau of Economic Analysis (BEA) 2004.

*(D) Not shown to avoid disclosure of confidential information.

** Farming was not considered as a separate industry sector from Agriculture/ Forestry/ Fishing in 1990.

Table 3-13
Total Recreation Travel Spending by County (1992-2000) (\$ Millions)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	Percent Average Annual Change
Marin	49	55	58	61	67	73	78	86	92	8.3
Monterey	186	193	199	212	236	254	266	295	300	6.2
San Francisco	536	566	602	649	730	813	872	992	1,003	8.2
San Luis Obispo	100	105	101	102	112	119	127	136	147	5.0
San Mateo	206	213	228	250	278	310	330	346	355	7.1
Santa Cruz	50	52	52	55	60	66	69	78	79	6.0
Sonoma	119	123	127	134	145	158	170	181	188	5.9
JMPR Planning Area	1,246	1,307	1,367	1,463	1,628	1,793	1,912	2,114	2,164	6.7
California	7,400	7,600	7,900	8,300	9,100	10,000	10,700	11,500	12,100	6.4

Source: The California Travel and Tourism Commission 2000; Dean Runyan Associates 2002.

In 2000, the total earnings generated by travel spending in the JMPR planning area were estimated to be \$5.5 billion. This accounts for over one-fifth (22 percent) of total earnings generated by travel spending in the state of California (\$24.9 billion) that same year. Again, San Francisco (\$2.1 billion), San Mateo (\$1.7 billion), and Monterey (\$377 million) counties accounted for approximately 82 percent of total earnings generated by travel spending in the JMPR planning area.

In 2000, total tax revenues generated from travel spending in the JMPR planning area were \$973 million. Of this \$973 million, \$535 million were state taxes, which include state gasoline fuel tax, corporate income taxes, and personal income taxes. Property taxes and business license taxes are not included. Local taxes in the region were estimated to be \$438 million. This includes sales and use taxes, and transient occupancy taxes collected by the cities and counties (Ehler, Leeworthy and Wiley 2003).

Marine-related Recreation Business

As described in Section 3.11, Recreation, the three JMPR sanctuaries offer a variety of recreational opportunities, some of which are supported by coastal businesses (e.g., tour operators, fishing supplies, and dive shops). The central coast of California is one of the most popular surfing areas in the world, serving as home to roughly 45 percent of the nation's 1.6 million surfers. Surfing-related expenditures by resident surfers and surfers who travel to over 50 spots along the central coast are a considerable component of local economies. One major surf shop operator's three regional stores alone generate \$2 million annually from surf product sales; and annual surf events, such as tournaments, generate up to \$2 million dollars annually (Weinstein 1996).

Popular tourist marine-related activities include pelagic birding excursions, such as those organized by Oceanic Society Expeditions, the Whale Center, and other environmental education groups, as well as sanctuary nature cruises, whale-watching trips, and shark-diving excursions.

Marine Recreational Fishing Business

Approximately 440,000 saltwater anglers, mostly California residents, fished in Pacific Ocean waters off the coast of Northern California over 2.2 million use days in 2000 (Ehler, Leeworthy and Wiley 2003). Most of

the 438,000 residents preferred fishing by use of private/rental boats or from the shore; most nonresident anglers preferred fishing by use of party/charter boats.

Expenditures by saltwater anglers provide substantial benefits throughout the Northern California region. As shown in Table 3-14, boat expenditures account for a significant portion of anglers' expenditures. A significant amount of monetary benefits to local economies are also generated in the form of sales, income, and employment from fishing-related expenditures at sporting goods stores, bait and tackle shops, marinas, and restaurants. This further creates a ripple effect to regional economies, as it transcends into the creation of income and jobs in manufacturing, transportation, and service sectors (NMFS 2001).

Table 3-14
Total Northern California Recreation/Fishing-related Expenditures
by Mode and Resident Status (\$000s)

	Party/Charter		Private/Rental		Shore	
	Residents	Non-Residents	Residents	Non-Residents	Residents	Non-Residents
Trip Expenditures						
Private Transportation	\$4,055	\$2,839	\$13,044	\$1,989	\$16,879	\$1,455
Food	\$3,269	\$902	\$8,634	\$724	\$11,866	\$644
Lodging	\$1,701	\$1,776	\$3,525	\$316	\$9,033	\$669
Public Transportation	\$363	\$4,533	\$122	\$92	\$698	\$812
Boat Fuel			\$9,358	\$370		
Party/Charter Fees	\$11,126	\$2,036				
Access/Boat Launching	\$166	\$49	\$1,176	\$93	\$877	\$3
Equipment Rental	\$1,017	\$740	\$646	\$43	\$1,327	\$101
Bait & Ice	\$515	\$48	\$5,816	\$158	\$3,548	\$137
Total Trip Expenditures	\$22,212	\$12,923	\$12,321	\$3,885	\$44,228	\$3,821

Source: NMFS 2001.

In 2000, the total average expenditure per person per day among Northern California anglers was approximately \$1,588 (NMFS 2001). In total, Northern California saltwater anglers in 2000 spent approximately \$761 million, of which resident anglers spent approximately \$740 million.

White Shark Diving

There are currently two known commercial operations that offer seasonal cage diving expeditions to view white sharks in GFNMS and at least one group that conducts opportunistic diving but does not operate a commercial venture. In years past, as many as eight white shark diving operations have operated at the Farallones. Currently no commercial operation derives all of its income from shark diving operations at GFNMS since the actual shark season is so short and unpredictable. Shark diving within GFNMS is estimated to comprise approximately 30 percent of one of the annual revenue for one company (Great White Adventures), and less than one percent for the other company (Incredible Adventures) (NOAA 2005c).

Protection of Children from Environmental Health or Safety Risks

In April 1997, President Clinton signed Executive Order (EO) 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. This EO requires federal agencies to identify, assess, and address disproportionate environmental health and safety risks to children from federal actions.

Environmental Justice

On February 11, 1994, President Clinton signed EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The purpose of this order is to require federal agencies to identify and avoid disproportionate impacts on minority or low-income communities. This section identifies any minority or low-income communities that could be affected by the proposed project.

Table 3-15 provides 2000 demographic information for the counties in the planning area. According to the 2000 census, the populations of each county in the planning area, as well as that of the JMPR planning area as a whole, are close to or greater than 50 percent Caucasian and less than 10 percent black/African American. Regionally, the planning area's northern counties of Sonoma and Marin are predominantly white, while the southern counties of Santa Cruz, Monterey, and San Luis Obispo have large Hispanic/Latino populations. The Asian population is greatest in San Francisco and San Mateo counties (30.8 percent and 20.0 percent, respectively). In 2000, the Latino population was highest in Monterey County (46.8 percent) and was the largest ethnic group overall, accounting for 22.0 percent of total JMPR planning area population.

Table 3-15
Total Percentage of Population by Race/Ethnicity (2000)

County	One Race	White	Black, African American	Native American, Alaska Native	Asian	Native Hawaiian, Pacific Islander	Some Other Race	Two or More Races	Latino, Hispanic, Any Race
Marin	96.5 %	84.0 %	2.9 %	0.4 %	4.5 %	0.2 %	4.5 %	3.5 %	11.1 %
Monterey	95.0 %	55.9 %	3.7 %	1.0 %	6.0 %	0.4 %	27.8 %	5.0 %	46.8 %
San Francisco	95.7 %	49.7 %	7.8 %	0.4 %	30.8 %	0.5 %	6.5 %	4.3 %	14.1 %
San Luis Obispo	96.6 %	84.6 %	2.0 %	0.9 %	2.7 %	0.1 %	6.2 %	3.4 %	16.3 %
San Mateo	95.0 %	59.5 %	3.5 %	0.4 %	20.0 %	1.3 %	10.2 %	5.0 %	21.9 %
Santa Cruz	95.6 %	75.1 %	1.0 %	1.0 %	3.4 %	0.1 %	15.0 %	4.4 %	26.8 %
Sonoma	95.9 %	81.6 %	1.4 %	1.2 %	3.1 %	0.2 %	8.4 %	4.1 %	17.3 %
JMPR Planning Area	96.7 %	70.1 %	3.2 %	0.8 %	10.1 %	0.3 %	11.2 %	4.2 %	22.0 %
California	95.3%	59.5%	6.7%	1.0%	10.9%	0.3%	16.8%	4.7%	32.4%

Source: US Census Bureau 2004.

Note: In combination with other races. The categorical figures/percentages may add up to more than the total population (100 percent) because individuals may report more than one race.

Note: Percentages for a given year may not add to 100 because "Hispanic" is an ethnicity category, which includes all races and because people can select from more than one race.

Table 3-16 provides income and poverty statistics for all counties in the planning area and in California in 2000. Marin, San Mateo, and San Francisco counties had the highest per capita personal incomes of \$60,618, \$58,644, and \$55,272, respectively. The average per capita personal income for the JMPR planning area was approximately \$43,370, an average increase of 40.5 percent over its 1990 value and remaining considerably higher than the state average of \$32,149 (US Census Bureau 2004).

Table 3-16
Income and Poverty Statistics (2000)

County	Median Household Income (\$)	Per Capita Income (\$)	Per Capita Personal Income (\$)	Percentage of Population Living in Poverty (2000)	Percentage of Population Living in Poverty (1990)
Marin	71,306	44,962	\$60,618	6.6 %	5.2 %
Monterey	48,305	20,165	\$29,695	13.5 %	11.6 %
San Francisco	55,221	34,556	\$55,272	11.3 %	12.7 %
San Luis Obispo	42,428	21,864	\$26,932	12.8 %	13.0 %
San Mateo	70,819	36,045	\$58,644	5.8 %	6.3 %
Santa Cruz	53,998	26,396	\$37,567	11.9 %	10.7 %
Sonoma	53,076	25,724	\$34,863	8.1 %	7.6 %
JMPR Planning Area	56,450	29,959	\$43,370	10.0 %	9.6 %
California	47,493	22,711	\$32,149	14.2 %	12.5 %

Source: US Census Bureau 2004; Economic Research Service 2004; BEA 2004; Ehler, Leeworthy and Wiley 2003.

Note: Figures calculated without taking into account the inflation rate.

As with personal per capita income values, Marin, San Mateo, and San Francisco counties had both the highest per capita incomes of \$44,962, \$36,045, \$34,556, respectively, and the highest median household incomes of \$71,306, \$70,819, and \$55,221, respectively. San Luis Obispo County had the lowest median and per capita incomes of the seven counties, at \$42,428 and \$21,864, respectively. The JMPR planning area's median and per capita income was significantly above the California average. In 2000, 14.2 percent of the population was below the poverty level in California, and 10.0 percent, approximately 279,445 people, were below the poverty level in JMPR planning area (US Census Bureau 2004).

3.13.2 Significance Criteria and Impact Methodology

Criteria to determine the significance of impacts associated with socioeconomic, demographic, and environmental justice issues are based on federal, state, and local standards and regulations. Impacts are considered to be significant if the Proposed Action were to result in:

- Substantial changes in unemployment rate;
- Substantial changes in total income;
- Substantial changes in business volume;
- Changes in the local housing market and vacancy rates, particularly with respect to the availability of affordable housing;
- Conflicts with the objectives, policies, or guidance of federal, state, and local plans;
- Disproportionately high and adverse human health or environmental effects on minority or low-income populations; or
- Violations of NOAA Regulations.

Socioeconomic, demographic, and environmental justice data in and around the sanctuary boundaries were examined to determine these resources' sensitivity to proposed action impacts. Also considered was the consistency of the proposed regulatory changes with the objectives and policies of state and county land use and development plans.

The overall methodology, including data sources and assumptions, used to conduct the socioeconomics, demographics, and environmental justice impact evaluation is consistent with the NOAA NEPA guidelines (NAO 216-6).

No impacts on environmental justice are expected under the No Action alternative, and beneficial impacts on environmental justice are expected under the Proposed Action and the alternatives. The Proposed Action and alternatives are expected to improve the quality of life, resulting in long-term beneficial impacts on local residents (including low-income and minority populations), as well as on the health and safety of children. Therefore, impacts on environmental justice are not discussed further in this analysis.

3.13.3 Cross-Cutting Regulations – Environmental Consequences

The Proposed Action

Introduced Species

Reducing the number of introduced species in the sanctuaries could potentially benefit recreation and economic industries. Industries, such as water and power utilities, commercial and recreational fishing could benefit from a reduction in yearly expenditures on preventing the interference of introduced species on operations. Limiting the spread and influence of introduced species also would reduce the competition between introduced and native species, which could increase the numbers of native species available for catch and thus have limited beneficial impacts to recreational fisheries. The regulation exempts the release of striped bass, which was introduced in California over a hundred years ago and is now managed by the state as a recreational fishery. As such, the regulation is not anticipated to negatively impact the recreational fishing industry.

Aquaculture, which is specific to Tomales Bay in GFNMS, would receive some beneficial benefits from the reduction of introduced species that could foul equipment and interfere with operations. All species cultivated by existing mariculture activities in Tomales Bay pursuant to a valid lease, permit, license or other authorization issued by the State of California and in effect on the effective date of the final regulation would be exempt from the proposed introduced species regulations and would not be affected or impacted by the regulation. Future mariculture operations that are not “grandfathered” under the pre-existing leases would be allowed to operate if they cultured native species, however, introduced species would not be allowed. At this time NOAA is not aware of any new or proposed State if California mariculture leases in Tomales Bay, therefore there are no anticipated negative impacts to the mariculture industry.

The proposed prohibition on introducing or releasing introduced species in the sanctuary could have a minor adverse affect on certain socioeconomic resources within the sanctuaries. Prohibition of introduced species and ballast discharges could affect the daily operations of specific industries such as the aquarium, mariculture or seafood industries. The prohibition would prohibit the dumping of imported or nonnative bait, chum, fish, invertebrates, or plants into the sanctuaries. Some industries, such as seafood importers, restaurants, and aquariums, import live plants or animals (usually seafood) and may inadvertently dispose unused stock or

packaging material (such as seawater or seaweed), which in-turn could result in the introduction of live nonnative species into sanctuary waters. Also, live bait operations would need to ensure they do not deposit any excess nonnative live bait into sanctuary waters. This prohibition could create a minor administrative burden on such industries by obligating them to dispose of this material safely; however the sanctuaries' public outreach and education plans would help mitigate this impact by providing guidance and information. This would not result in a significant adverse impact on socioeconomic resources in the ROI.

In summary, as described above, this regulatory change would result in a minor beneficial effect and less than significant adverse impacts on socioeconomic resources.

Discharge Regulations Clarifications

Amending discharge regulations would provide a beneficial impact on socioeconomic resources within the sanctuaries. Limiting pollutants could improve the quality and amount of current recreational, tourism-related, and commercial activities that take place within the sanctuaries. An overall improvement in water quality would result from updated discharge regulations, and prohibiting ballast, bilge, and harmful discharges would benefit recreational users by removing hazards and improving water quality. This could directly improve socioeconomic resources associated with marine recreational activities within the sanctuaries.

However, amending discharge standards and regulations could produce slight adverse socioeconomic effects on boaters within the sanctuaries. Removal of some exceptions to discharge regulations, such as meals on board and some deck washings may increase economic costs for private boaters, or owners of charter vessels used for fishing and wildlife watching. Therefore, this regulatory change would result in both beneficial and less than significant adverse impacts on socioeconomic resources.

Sewage, Marine Sanitation Devices and Graywater

For vessels 300 or more gross tons, sewage discharges/deposits would be prohibited, as the vessels would be required to hold sewage while in the sanctuaries, if they have sufficient holding capacity. The proposed regulations would provide beneficial impacts on socioeconomic resources within the sanctuaries. Stricter regulations could prevent large vessels from discharging pollutants affecting the quality of current water-related recreational, tourist, and commercial activities within the sanctuaries. The proposed regulations are not expected to result in increased costs for large vessels within the sanctuaries since they would not require the purchase of additional equipment or change labor needs.

For vessels less than 300 gross tons, the proposed regulatory language modification clarifies that vessel operators must use a Type I or Type II MSD when discharging sewage, which is what is already required by the Coast Guard. The regulation would allow vessels to have a Type III MSD, but they could not discharge untreated waste into the sanctuary and would have to either discharge this waste at a harbor pump-out facility or outside the sanctuary according to Coast Guard regulations. This regulation essentially clarifies expectations to boaters and does not add any significant burdens beyond what is already required by sanctuary or Coast Guard regulations. Therefore, no adverse socioeconomic effect on vessels is associated with the modification. The requirement to secure marine sanitation devices in a manner to prevent discharge of untreated sewage may pose a minor burden on boat owners who have not purchased a lock or clasp to ensure the effective operation of the marine sanitation device; however, the impact of this addition is negligible.

Cruise Ship Discharge and Definitions

The proposed regulations enforced on cruise ships within the sanctuaries would provide beneficial impacts on socioeconomic resources within the sanctuaries. Stricter regulations could prevent cruise ships from discharging unallowable pollutants that affect the quality of current water-related recreational, tourist, and commercial activities within the sanctuaries. The proposed regulations are not expected to result in increased costs for cruise ships within the sanctuaries since it would not require the purchase of additional equipment or change labor needs. (Impacts on cruise ship operations and economics are further discussed in Section 3.10, Marine Transportation.)

Alternative Regulatory Actions

Cruise Ship Prohibition Alternative

This provision would result in slightly greater economic impacts on the cruise ship industry than the Proposed Action. This alternative requires the industry to have functioning waste treatment facilities on-board that are able to meet the EPA and Coast Guard standards for cruise ships in Alaskan waters. The industry would also need to monitor compliance and produce reports to the sanctuary program. These would impose costs to the cruise ship industry beyond that of the Proposed Action. (Impacts on cruise ship operations and economics are further discussed in Section 3.10, Marine Transportation.)

The No Action Alternative

The No Action alternative would be to continue to manage the sanctuaries as they are currently managed. This would result in no impact on socioeconomics within the sanctuaries and surrounding areas.

3.13.4 Cordell Bank National Marine Sanctuary – Environmental Consequences

The Proposed Action

Wildlife Disturbance

Stricter regulations on the taking or possessing of protected wildlife within CBNMS could have slight beneficial impacts on socioeconomic resources within CBNMS, to the minor extent that the proposed regulation would result in a greater abundance of wildlife and a corresponding increase in tourism within the area. An increase in tourism could lead to a slight increase in local spending and a boost in revenues for local businesses, outfitters, and operations oriented toward popular recreational Sanctuary activities, such as wildlife viewing, hiking, and nature excursions. Overall, this benefit to socioeconomic resources is negligible, as there are existing regulations protecting wildlife and the proposed regulation essentially duplicates existing regulations in terms of what business must do to comply with the prohibition.

Seabed Protection

The proposed regulation would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Additionally, the regulation would prohibit the same activities listed above in the remainder of the sanctuary outside the 50-fathom isobath, with the exception of anchoring. This regulation would have the potential to reduce marine activities within the Sanctuary boundaries; however, since few to no bottom-contact activities (other than fishing) are known to occur within the affected area, this is expected to result in a negligible impact on socioeconomics, as marine-related business activity would not be affected. The proposed regulation would not apply to bottom contact gear used during fishing, which is prohibited

pursuant to 50 CFR part 660 (Fisheries off West Coast States and in the Western Pacific). (Impacts on commercial fisheries are discussed in Section 3.6, Commercial Fisheries.)

Benthic Habitat Protection

The proposed clarifications to the Cordell Bank benthic habitat regulation will have the same amount of protection as the existing regulation and would result in negligible impact on marine-related business activity and therefore negligible effects on socioeconomics.

Alternative Regulatory Actions

The alternatives would have the same negligible impacts as identified in the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on socioeconomics.

3.13.5 Gulf of the Farallones National Marine Sanctuary –Environmental Consequences

The Proposed Action

Wildlife Disturbance

The impact of this regulatory change in GFNMS would be the same as described in CBNMS. This would result in a negligible beneficial impact on socioeconomics.

Deserted Vessels

Prohibiting marine vessel owners from deserting vessels and from leaving harmful matter aboard deserted vessels could indirectly have a beneficial impact on socioeconomic resources. When a vessel is deserted, there is a high risk of discharge of harmful matter (e.g., motor oil or other chemicals) into the marine environment. Although vessel owners would bear the costs of disposing of old vessels and harmful materials, which represents a minor adverse socioeconomic effect, reducing the impacts of oil spills from abandoned vessels and reducing the risks of hazards posed by abandoned vessels would have beneficial impacts on recreation users and recreational fishing operations and activities. Beneficial recreational effects could translate to slight increases in recreational business activity. Thus, the Proposed Action would result in a minor, indirect beneficial socioeconomic impact, and a minor adverse socioeconomic impact.

No-Anchoring Seagrass Protection Zones

As described in the Fisheries (section 3.06), Marine Transportation (section 3.10), and Public Access and Recreation (section 3.11) analyses, minor adverse impacts on recreational boating in general may occur as a result of the proposed prohibition on anchoring a vessel in a designated seagrass protection zones in Tomales Bay, except as necessary for mariculture operations conducted pursuant to a valid lease, permit, or license.

The proposed regulation would allow vessel operators to continue to sail, boat, fish or transit the Bay, and even anchor adjacent to marinas (since these areas are not included in the zones). Though the regulation would prohibit operators from anchoring a vessel in a designated seagrass protection zone, they could still anchor in the remaining 78% of the Sanctuary. Because this regulation does not limit actual vessel use, and provides alternatives for anchoring a vessel outside of designated zones, the adverse impacts on socioeconomics would be less than significant. In addition, the regulation would also help maintain and

protect seagrass and the other species that depend upon seagrass habitat for their own life history or foraging. Therefore, the regulation would have indirect beneficial impacts to those commercial (Pacific herring fishery) and recreational outfitters (wildlife watching, recreational fishing) that depend upon healthy seagrass beds for their own industries.

White Shark Attraction and Approaching

The proposed action would prohibit white shark attraction activities throughout the Sanctuary and prohibit white shark-approaching activities from within 164 feet (50 meters) of any white shark within 2 nm (2.3 miles; 3.7 km) of the Farallon Islands (where the white sharks are most prevalent during feeding). The proposed regulation does not prevent any user, vessel or business from conducting shark viewing activities, however, it may reduce a company's ability to predictably "attract" white sharks to their boat and offer a close encounter with the sharks. As such, this may reduce the number of people willing to pay money to see sharks if viewing them cannot be assured or "guaranteed."

Adverse impacts would be realized by certain shark-related, adventure tourism businesses, such as shark watching, cage diving, filming, and other wildlife watching business operations within the Sanctuary that use decoys and chumming to feed and attract sharks for divers and tourists. Most of this unregulated seasonal activity (September-November) in GFNMS is directed at white shark populations located between Mirounga Bay and Fisherman's Cove in the Southeast Farallon Islands (Absolute Adventures-Shark Diver 2003). As described in the Affected Environment, up to eight shark-related individual or ecotourism groups have operated at the Farallones in the past, but currently only two companies are known to conduct operations. None of these commercial operators currently derives all of its income solely from shark diving operations at GFNMS. During the white shark season in fall 2005, the commercial companies conducting white shark dive trips at the Farallon Islands planned on offering a combined total of approximately 71 full-day trips (NOAA 2005c).

This prohibition could impact the revenues of one company that generates approximately 30 percent of their annual revenue from white shark cage diving operations (NOAA 2005c). The actual impact on this company's revenues would ultimately depend upon their ability to adapt to the new regulations and alter their business plan to conduct activities that do not involve or rely upon the active attraction of white sharks in the GFNMS or actively approaching them within 2 nm of the Farallon Islands. If this cannot be done, then they would have to rely upon other diving or wildlife viewing activities in the Sanctuary or move the operation to outside the GFNMS. The other company currently operating at GFNMS is estimated to generate less than one percent of its revenues from shark diving operations in the sanctuary, and would not experience a substantial adverse impact from the proposed regulations.

The proposed regulations would result in a less than significant impact on socioeconomic resources because neither of the businesses engaged in this activity relies predominantly on white shark viewing for their income and the loss of that income would not constitute a substantial change in total income or business volume within the ROI.

The proposed regulation may also impact other non-cage diving, shark watching, filming, and research activities that approach white sharks. However, some of these activities that have bonafide research or education value, could be allowed through the issuance of a sanctuary permit. Since these activities are very sporadic, the proposed prohibition would not be expected to result in significant impacts on these users.

Oil and Gas Pipeline Clarification

The proposed change in regulations regarding the placement of oil and gas pipelines in GFNMS would have negligible socioeconomic effects. Since pipelines would be permitted only for oil and gas operations that are adjacent to the Sanctuary, rather than oil and gas operations anywhere outside of the Sanctuary, the potential for future pipeline development would be more limited. However, there are no current oil and gas operations in the area and none planned in the near future.

Alternative Regulatory Actions

White Shark Approach Prohibition Alternative

This alternative would provide a variation on the proposed regulations for approaching white sharks. Approaching would be prohibited throughout the Sanctuary rather than just within 2 nm (2.3 miles, 3.7 km) of the Farallon Islands. Like the Proposed Action, this alternative would prohibit attracting white sharks anywhere in the Sanctuary. As under the Proposed Action, this would result in a less than significant adverse impact on socioeconomics, because neither of the businesses engaged in this activity relies predominantly on white shark viewing for their income, and the loss of that income would not constitute a substantial change in total income or business volume within the ROI.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on socioeconomics within the sanctuaries and surrounding areas.

3.13.6 Monterey Bay National Marine Sanctuary—Environmental Consequences

The Proposed Action

Deserted Vessels

The impact of this regulatory change in MBNMS would be the same as in GFNMS. This would result in a minor beneficial impact on recreation-related businesses and a minor adverse impact on vessel owners, as described for GFNMS in Section 3.13.5.

Boundary Changes/Davidson Seamount

By adding Davidson Seamount to the sanctuary, the standard MBNMS disturbance regulations relating to drilling, dredging, seabed alterations, construction, and anchoring would apply, however, no exceptions would be allowed in the Davidson Seamount zone as they are in other areas of MBNMS. Therefore, no disturbance of the seabed would be allowed. In addition, at depths greater than 3,000 feet below the sea surface, the NMSP would prohibit moving, removing, taking, collecting, harvesting, disturbing, breaking, cutting, or other wise injuring Sanctuary resources (or attempting to do those activities), except for taking, catching or harvesting of fish pursuant to the MSA. The NMSP would rely upon the NOAA Fisheries regulatory amendments to the Groundfish FMP to regulate any fishing-related impacts below 3000 feet. These NOAA Fisheries amended regulations prohibit fishing with dredge gear, beam trawl, certain types of bottom trawl, and bottom contact gear or any other gear that is deployed greater than 500 fathoms (3000 feet) (71 FR 27408). Therefore fishing would take place in the water column above 3000 feet but not below it and as such existing fishing activities would not impact the seamount. The only potential socioeconomic resources associated with the Seamount that could be affected are seabed bioprospecting or mineral harvesting. The proposed prohibition could reduce potential future economic benefits that could be derived from

bioprospecting or mineral harvesting opportunities. As none of these activities actually exist or are proposed or planned to be initiated in the foreseeable future, the addition of Davidson Seamount would result in a minor less than significant impact on socioeconomic resources. (Impacts on commercial fisheries are discussed in Section 3.6.)

Motorized Personal Watercraft

Broadening the MPWC definition to include all MPWC would have both beneficial and adverse socioeconomic impacts within the MBNMS area. Minor beneficial socioeconomic impacts would result from broadening the MPWC definition since it would increase the Sanctuary's appeal to specific recreational groups, such as kayakers, paddle-in surfers, swimmers, and wildlife watchers, whose quality of enjoyment is diminished by MPWC users. Indirect beneficial impacts on local economies could be felt by local businesses whose employment and revenues depend on retail sales, manufacturing, and services oriented toward non-MPWC recreationists and tourists.

Adverse socioeconomic impacts could result from decreased harbor revenues and impacts on MPWC businesses. Although harbor revenues could be adversely impacted through the potentially reduced number of MPWC-related boat launches, this impact would be minor. No local businesses have been identified that derive revenue from MPWC rentals within MBNMS waters. Therefore, the overall impact on this socioeconomic resource would be less than significant in the ROI.

The proposed MPWC restrictions would have impacts on particular MPWC recreational user groups such as "tow-in" and "tow-at" surfers. Impacts on recreational users are discussed in Section 3.11, Public Access and Recreation.

A seasonal MPWC zone would be established to accommodate MPWC use at Mavericks, off of Pillar Point. With this seasonal zone, the annual (conditions permitting) Mavericks surf contest should be unaffected. Prize money from the 2004/2005's contest purse was \$75,000 (Sanders 2004). Thousands of spectators and journalists converge at Pillar Point each year to watch the competition, contributing an estimated \$25,000 to \$34,000 to the local economy (Half Moon Bay Chamber of Commerce 2006). The contest itself does not allow the use of MPWC to catch waves, but practice activities for the contest, as well as photographers, observers, and safety personnel during the contest, use MPWC. Given that the contest usually occurs during the winter months in high surf conditions, the seasonal MPWC zone should be in effect. Overall, the proposed regulation would lead to a less than significant adverse impact on socioeconomic resources in the ROI.

White Shark Attraction

MBNMS regulations currently prohibit white shark attraction activities within specific areas of the Sanctuary. Excluding white shark attraction from the entire Sanctuary is unlikely to have the same socioeconomic impacts as those identified above for GFNMS, because there has been little to no documentation of commercial white shark diving in MBNMS. Socioeconomic impacts of this prohibition are therefore considered to be negligible.

Dredge Disposal—SF-12

Redefining and officially locating disposal site SF-12 would reduce the probability of accidental release of dredged material in the nearshore area of the Sanctuary. To the extent that this action would indirectly improve recreational qualities in the vicinity of the disposal site (beaches and nearby harbors and estuaries), it

may result in a minor beneficial impact on socioeconomic resources related to recreation and tourism operations. Overall, the impact is negligible.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following differences.

Motorized Personal Watercraft Alternative

This alternative would eliminate all MPWC use from the entire Sanctuary. In addition to the adverse, but not significant impacts identified for the Proposed Action, there might be limited socioeconomic impacts on businesses that cater to MPWC use in the Sanctuary; however there are no commercial establishments that receive significant revenues associated with MPWC use in these zones. Therefore, the socioeconomic impacts from this alternative prohibition would be less than significant.

No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on socioeconomics within the sanctuaries and surrounding areas.

3.13.7 Cumulative Impacts

Cumulative projects, especially those that affect development onshore, would have both beneficial and adverse impacts on socioeconomic resources in the project area. Increased development activities could lead to growth in population, local economies, tourism, and in the number of trade, retail, and tourism-related services provided in the area, and as a result, employment. Conversely, growth in population and/or tourism resulting from an increase in development projects could also directly lead to a reduction in the quality of biological, recreational, and water resources upon which many socioeconomic resources depend. Increased development also could have adverse impacts on small business owners and local businessmen who could be overrun by larger businesses and companies.

However these development pressures would be restrained by ongoing planning efforts in the ROI, including the action plans contained in the FMPs, designed to preserve and protect the natural resources of the sanctuaries through identification, planning, management, and public education. Cumulative projects that might have a beneficial effect on socioeconomic resources in the project area include revised and updated county general and coastal plans, seawall and armoring projects, and the Bolinas and Big Lagoon restoration projects, as all provide for better county management and support greater protection for those resources that indirectly benefit socioeconomic resources. Updated county general plans are expected to provide a sound basis for making decisions about the amount and location of future growth; this is expected to have beneficial impacts in managing the socioeconomic resources of population, employment, and industry sector growth. Several of the ongoing or planned development projects, such as the Bolinas Lagoon Restoration project, would provide better access to open space, leading to greater use of public open spaces, recreational activities, tourism-related activities, and other local associated services.

The FMPs could further restrict the economic potential of some activities within the sanctuaries. The action plans concerning wildlife disturbance for GFNMS (Wildlife Disturbance) and MBNMS (Marine Mammal, Seabird, and Turtle Disturbance, and Tide Pool Protection) could restrict other economically viable activities that rely on interactions between humans and wildlife.

The Proposed Action

Although the Proposed Action would result in some adverse impacts on socioeconomics, these direct impacts would be less than significant and geographically limited in scope. In contrast, population growth, average income, and socioeconomic development within the ROI would continue to increase. The Proposed Action would not therefore contribute to a cumulatively adverse impact on socioeconomics. In the long term, the Proposed Action would likely support socioeconomic development by way of the increased protection for natural resources within the sanctuaries, as these resources are part of the reason why such development is successful. This would result in a beneficial contribution to cumulative socioeconomic development.

Cumulative impacts of the Proposed Action associated with projects in the ROI such as the updated county general plans habitat restoration projects would provide better access to open space, recreational activities, and other local associated services. Therefore, beneficial impacts are expected to result from cumulative projects on minority and low-income populations.

Alternative Regulatory Actions

Cumulative impacts from regulations under the Alternative Regulatory Actions would be similar to those resulting under the Proposed Action.

The No Action Alternative

The No Action alternative would not implement the proposed regulatory changes (including prohibitions on MPWCs and white shark attracting and approaching), and sanctuary management would remain status quo. There would be no contribution, either beneficial or adverse, to cumulative socioeconomic development in the ROI.

3.14 VISUAL RESOURCES

This section describes the impacts on the visual resources within the ROI. The ROI for visual resources is the area within and immediately surrounding the three sanctuaries, including the Davidson Seamount area proposed to be included in the MBNMS. The visual character of the project area is described, potentially sensitive visual receptors are identified, and policies relating to maintaining visual quality are summarized. The visual character of the project area includes a description of landforms, marine flora and fauna, and human activities. Potentially sensitive visual receptors are typically people within or immediately adjacent to the sanctuaries who would notice changes to the visual environment.

3.14.1 Regional Overview of Affected Environment

Visual resources in the ROI include ocean vistas, offshore islands, coastal landforms (e.g., rocky bluffs), coastal waves, and marine sea life. Many opportunities for nature observation exist in the sanctuaries, including whale, seabird, and marine mammal viewing. Rocky shorelines provide hikers with the opportunity to view flora and fauna associated with the rocky intertidal habitats.

The following human activities are also visible (US Department of Commerce 1989; NOAA 2001a; NOAA 2001b):

- Fishing. Commercial and sport fishing occur in the sanctuaries. A number of mariculture operations in Tomales Bay raise oysters. These topics are discussed further in Section 3.6, Commercial Fisheries, and Section 3.11, Public Access and Recreation.
- Shipping. The sanctuaries are near or within one of the nation's busiest shipping lanes. This topic is discussed further in Section 3.10, Marine Transportation.
- Military Uses. As described in Section 3.9, Land Use and Development, the USCG and US Navy use the ROI for various military training activities.
- Research and education. Research vessels operate within the ROI and are visible to sanctuary users. This topic is discussed further in Section 3.12, Research and Education.
- Recreation. The major coastal and onshore recreational uses include beach-related activities, bird watching, coastal hiking, wildlife viewing, tidepooling, surfing, kayaking, canoeing, boardsailing, clamming, abalone diving, surf fishing, and duck hunting. Whale watching, Farallon Islands wildlife viewing, and oceanic birding excursions account for several thousands of visitors venturing offshore. This topic is discussed further in Section 3.11, Public Access and Recreation.

Marine flora and fauna are also visible in and immediately adjacent to the sanctuary. These resources are described in Section 3.3, Biological Resources.

Cordell Bank National Marine Sanctuary

Visual access to CBNMS from onshore areas is limited because the eastern edge of CBNMS is 6 nm (7 miles; 11 km) from shore and is separated from the coast of Marin and Sonoma counties by the northern arm of GFNMS (NOAA 2001c).

Visitor use of CBNMS waters is limited by weather conditions and by its distance from the nearest port (US Department of Commerce 1989). Since the Sanctuary is completely offshore in open ocean waters, there are no landforms contributing to visual resources. The coastal areas of west Marin and Sonoma counties are

sparsely populated, with ranching, dairy farms, agriculture, and public open space maintaining their rural character (NOAA 2001c). Bodega Bay is an active fishing port that harbors the closest marinas to the Sanctuary. This harbor also serves as the departure point for charter vessels that provide recreational fishing and wildlife viewing opportunities in the Sanctuary. Although Bodega Bay provides the base for most of the commercial and recreational fishing, Drakes Bay at Point Reyes, 20 miles (32 km) east of Cordell Bank, is the closest anchorage.

In addition to Bodega Bay, there are several smaller communities in the vicinity, including Dillon Beach, Marshall, Inverness, and the village of Point Reyes Station (US Department of Commerce 1989).

Visual resources within CBNMS include a wide variety of seabirds and marine mammals. Wildlife viewing is an increasingly popular activity at Cordell Bank. The oceanic water borne by the California current is clean, cold, and exceptionally clear. The clarity of the water is the result of low particulate loading, which allows sunlight to penetrate much greater depths than would be normal along the nearby California coast. Visibility on the upper reaches of the Bank is almost always greater than 65 feet (19.8 meters) during the fall. At times it can be greater than 100 feet (30.5 meters).

Gulf of the Farallones National Marine Sanctuary

The Farallon Islands provide a unique natural scenic resource in the ROI. Many points in Sonoma, Marin, San Francisco, and San Mateo counties provide direct access and views of the Sanctuary (NOAA 2001b). Most of these access points are located in federal, state, county, and local parks. Access for private and chartered recreational vessels destined for the Sanctuary is found at marinas in San Francisco Bay, Bodega Harbor, Tomales Bay, and Half Moon Bay.

In addition to the Farrallon Islands, the Sanctuary's main visual resources are the several bays, points, and heads that line its coastline. The most notable of these features are Bolinas Lagoon, Drakes and Bodega Bays, Duxbury Point, Point Reyes, and Bodega Head. Key estuaries within the Sanctuary that also contribute to visual resources include Estero Americano, Estero de San Antonio, and Tomales Bay.

Monterey Bay National Marine Sanctuary

The Sanctuary's spectacular coastal scenery, accessibility, moderate climate, abundance of marine life, and relatively clean ocean waters all draw large numbers of divers, kayakers, boaters, fishermen, surfers, tidepoolers, and bird and mammal watchers. One of the main reasons given for travel to the coastal region is its natural and scenic beauty. With nearly 300 miles (500 km) of shoreline, there are many viewing opportunities of the Sanctuary and the scenic coastline that serves as its boundary. Coastal topography varies greatly, encompassing steep bluffs, pocket beaches, long stretches of sandy beaches, sand dunes, rocky cliffs and both low- and high-relief mountain ranges. The varied terrain contributes to the scenic qualities of the Sanctuary.

3.14.2 Regulatory Environment

California Coastal Act

The California Coastal Act Section 30251, Scenic and Visual Qualities, states that "the scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding

areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.”

California Scenic Highway Program

Highway 1 follows the coastline throughout the ROI (through Sonoma, Marin, San Francisco, San Mateo, Santa Cruz, Monterey, and San Luis Obispo Counties), and provides scenic views of the sanctuaries in many locations. Parts of Highway 1 are official designated as a state scenic highway (in San Mateo, Monterey, and San Luis Obispo counties), and portions of it are eligible for designation in all the other counties in the ROI (California Department of Transportation 2004). Additionally, part of Highway 1 in Monterey is also designated as an All-American road (California Department of Transportation 2004). One aspect of what makes Highway 1 eligible for this status is the location of the road, adjacent to the ocean in many places, and providing expansive views of the sanctuaries. The purpose of California’s Scenic Highway Program is to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways (California Department of Transportation 2004). While Highway 1’s designation as a scenic highway does not directly affect sanctuary management activities, such designation does encourage local jurisdictions to support protection of scenic resources within the viewshed of the highway, including within sanctuary boundaries.

Sanctuary Management Plans

Current management plans in place in the three sanctuaries do not have any visual resource-specific management efforts; however ongoing sanctuary resource protection regulations and programs have the additional effect of protecting valuable visual resources that contribute to the visitor experience in the ROI. Additionally, protection of sanctuary visual resources can result in increased levels of visitor support for sanctuary resource management in other areas.

3.14.3 Significance Criteria and Impact Methodology

Factors considered in determining whether a proposed or alternative action would have a significant impact on visual resources include the extent or degree to which its implementation would result in the following:

- Introduce physical features that are substantially out of character with local surroundings;
- Alter a site so that a sensitive viewing point or vista is obstructed or adversely affected, or if the scale or degree of change appears as a substantial, obvious, or disharmonious modification of the overall view; or
- Be inconsistent with visual resource policies.

Since the proposed action involves changes in regulations rather than a physical “project,” it would not result in any direct physical changes or construction of physical structures. For this proposed action, the analysis focuses on the potential for change in the amount of potential operations of activities and the frequency of operations or activities, which in turn could affect existing visual resources. The overall methodology is consistent with CEQ guidance and NOAA NEPA guidelines (NAO 216-6).

3.14.4 Cross-Cutting Regulations–Environmental Consequences

The cross-cutting regulations and proposed regulatory alternative identified in Table 2-1 include similar changes to the regulations in all of the three sanctuaries. The proposed actions and alternatives would not affect any scenic views, so no adverse impacts on visual resources associated with the cross-cutting regulations would occur. Reducing discharges from vessels and cruise ships may result in cleaner water. The improvement in water quality may be slightly visible to sanctuary users, providing a minor beneficial visual effect.

3.14.5 Cordell Bank National Marine Sanctuary –Environmental Consequences

The Proposed Action

The only proposed action that would have any potential for visual impacts is the proposed seabed protection regulation. The proposed benthic habitat protection regulation would not affect visual resources.

Seabed Protection

The proposed regulation would prohibit drilling, dredging, or altering, constructing, placing, or abandoning any structure material or matter on the submerged lands within the line representing the 50-fathom isobath surrounding Cordell Bank. Additionally, the regulation would prohibit the same activities listed above in the remainder of the sanctuary outside the 50-fathom isobath, with the exception of anchoring. As such, the Proposed Action would prohibit the introduction of any visible structures or features that are substantially out of character with the local surroundings. However, it is highly unlikely that any visible structures would be constructed under the current regulations, due to the remote offshore location and existing prohibitions (e.g., oil and gas facilities are not permitted). Visitors would continue to see some anchored vessels and ongoing lawful fishing activity. As a result of this proposed regulation, there would be the potential for very minor beneficial impacts on visual resources.

Alternative Regulatory Actions

The seabed protection alternative would have the same impacts as identified in the Proposed Action.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed; this would result in no impacts on visual resources within CBNMS.

3.14.6 Gulf of the Farallones National Marine Sanctuary –Environmental Consequences

The Proposed Action

Deserted Vessels

A proposed regulation would prohibit deserting a vessel in the Sanctuary and would prohibit leaving harmful matter aboard a grounded or deserted vessel. This would prohibit the introduction of physical features that are substantially out of character with local surroundings, because visitors to the Sanctuary would not see discarded vessels, damaged habitats, or debris and potential spills resulting from vessel groundings. As a result of this proposed regulation, there would be beneficial impacts, such as maintaining the natural seascape of the ocean.

Alternative Regulatory Actions

There is no alternative that would impact visual resources.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on visual resources within GFNMS.

3.14.7 Monterey Bay National Marine Sanctuary–Environmental Consequences

The Proposed Action

Deserted Vessels

The impacts of this proposed regulation would be the same as those described for the proposed GFNMS deserted vessel regulation. Implementation of this regulation in MBNMS would result in a minor beneficial impact on visual resources.

Boundary Changes - Davidson Seamount

The Proposed Action would add Davidson Seamount to MBNMS. This would expand MBNMS prohibitions on drilling into, dredging, or otherwise altering the seabed of Davidson Seamount. It also would prohibit constructing, placing, or abandoning any structure, material, or other matter on the seabed except as incidental to and necessary to six predetermined activities in certain areas. This would prohibit the introduction of physical structures and features that are substantially out of character with local surroundings, because visitors to the Sanctuary would not see physical features above and below the surface of the water. While Davidson Seamount is far offshore and not within a sensitive viewshed, the Proposed Action would result in a slight beneficial impact by maintaining the natural seascape of the ocean.

Motorized Personal Watercraft

The Proposed Action would revise the definition of motorized personal watercraft in order to minimize disturbance of marine wildlife by MPWC and minimize user conflicts between MPWC operators and other recreationists within MBNMS. At the same time, a new seasonal MPWC zone would be established off of Pillar Pt. Although changing the definition of MPWC would change certain types of watercraft activities, it would not prevent watercraft activities entirely. Watercraft activities would still be permitted within five designated areas. Restricting MPWC use to the five zones would not have an adverse effect on the sanctuary's visual resources, as four of these zones already exist and are being used for MPWC and the fifth zone is in an area where larger MPWC (that are not within the definition of MPWC) are currently used. Very minor beneficial effects may occur to the extent that existing MPWC activity outside of the MPWC zones currently intrude on or adversely affect sensitive viewing points or viewsheds. Impacts on recreational MPWC use are addressed in Section 3.11, Public Access and Recreation.

Dredge Disposal

Redefining and properly locating the SF-12 dredge disposal site would reduce the amount of material brought back into the surf zone during high-energy events resulting in less turbidity for ocean recreationists. Reduced material (i.e., decomposing biotic matter) in the beach area will also result in beneficial impacts on visual resources.

Alternative Regulatory Actions

The alternatives would have the same impacts as identified in the Proposed Action, with the following differences.

Motorized Personal Watercraft Alternative

This alternative would prohibit MPWC in MBNMS entirely by redefining MPWC and removing the MPWC zones in various locations along the coastline. This would not prevent other types of watercraft activities in MBNMS. No adverse effect on existing scenic resources would occur. Slight beneficial effects may occur as a result of removing MPWC use from nearshore scenic areas.

The No Action Alternative

The No Action alternative would be to continue to manage the Sanctuary as it is currently managed. This would result in no impact on visual resources within MBNMS.

3.14.8 Cumulative Impacts

The ROI for cumulative impacts is the same as the ROI described above. Generally speaking, coastal populations and ocean-based recreational activities are increasing. As a result, coastal housing and development and use of coastal and oceanic resources are increasing, causing a loss of natural visual resources.

Coastal housing, development, and armoring projects would affect natural visual resources. These impacts would primarily involve the sanctuaries with coastline boundaries. Increased recreation activities are cumulative actions that would also affect natural visual resources in all three sanctuaries.

Implementation of the FMPs will contribute to the ROI's regional ecosystem health by applying the various action plans in CBNMS, GFNMS, and MBNMS. Cross-cutting ecosystem management measures as well as Sanctuary-specific ecosystem action plans will ensure an aesthetically pleasing view of the sanctuaries by protecting and preserving habitats and wildlife. A coastal armoring program coordinated with the California Coastal Commission and other agencies, under the MBNMS action plan, could affect visual resources along the coastline. However, it is assumed that guidelines and alternatives to armoring developed through agency coordination would keep this impact to a minimum.

The Proposed Action

Ongoing coastal development is likely to have adverse impacts on visual resources, although implementation of the action plans would help to protect those resources. Because the proposed actions would result in beneficial impacts on visual resources, the Proposed Action would not contribute to an adverse cumulative impact on visual resources, and would help mitigate for ongoing cumulatively adverse impacts.

Alternative Regulatory Actions

Cumulative impacts under the Alternative Regulatory Actions would be the same as those resulting under the Proposed Action.

The No Action Alternative

Ongoing coastal development is likely to have adverse impacts on visual resources, although implementation of the action plans would help to protect those resources. The No Action alternative would not contribute to an adverse or beneficial cumulative impact on visual resources.

CHAPTER 4

ALTERNATIVES SUMMARY

SECTION 4

ALTERNATIVES SUMMARY

4.1 INTRODUCTION

This chapter presents a summary comparison of the overall potential environmental impacts of the Proposed Action and Alternative Regulatory Actions. Chapter 3 addresses the individual impacts associated with each separate proposed and alternative regulatory change, including the No Action alternative. Cumulative impacts are also presented in Chapter 3.

The alternatives, as described in Chapter 2, are the Proposed Action, the Alternative Regulatory Actions, and No Action. No Action may best be described as the continuation of existing management activities and regulatory structure (see Section 2.3 for additional details of the No Action alternative).

4.2 IMPACT SUMMARY

4.2.1 The Proposed Action

Table 4-1 provides an overview of the expected environmental impacts from each regulatory change associated with the Proposed Action under the JMPR. Most of the regulatory changes proposed by NOAA result in beneficial impacts on resources within the ROI. Those changes that result in adverse impacts primarily involve regulatory burdens on human uses within the sanctuaries, such as commercial fisheries, marine transportation, or recreation.

No significant adverse impacts were identified.

Less than significant adverse impacts were identified in Commercial Fisheries, Land Use and Development, Marine Transportation, Public Access and Recreation, and Socioeconomics.

Beneficial impacts were identified in Air Quality, Biological Resources, Ocean/Geological Resources, Water Quality, Commercial Fisheries, Cultural Resources, Hazardous Materials, Land Use and Development, Marine Transportation, Public Access and Recreation, Research and Education, Socioeconomics, and Visual Resources.

**Table 4-1
Summary of Impacts under the Proposed Action**

Location	Proposed Regulatory Change	Air Quality	Biological Resources	Ocean/ Geological	Water Quality	Fisheries	Cultural	Hazards	Land Use/ Development	Marine Transportation	Public Access/ Recreation	Research and Education	Socio-economics	Visual	Summary
CC	Cruise Ship Definition and Discharges	+	+	○	+	+	○	+	○	⊙	+	+	+	+	⊙+
CC	Discharge - MSDs and Graywater	○	+	○	+	⊙+	○	+	⊙+	⊙	+	+	⊙	+	⊙+
CC	Discharge Regulations Clarifications	+	+	○	+	⊙+	○	+	⊙+	⊙	+	+	⊙+	+	⊙+
CC	Introduced Species	○	+	○	+	⊙+	+	+	⊙+	⊙	+	+	⊙+	○	⊙+
CB	Benthic Habitat Protection	○	+	+	○	+	+	○	○	○	+	○	○	○	○+
CB	Seabed Protection	○	+	+	○	+	+	+	○	○	+	○	○	+	○+
CB	Wildlife Disturbance	○	+	○	○	○	○	○	○	○	+	○	+	○	○+
GF	Cultural Resources	○	○	○	○	○	+	○	○	○	+	○	+	○	○+
GF	Deserted Vessels	+	+	○	+	⊙+	+	+	○	○	+	+	⊙+	+	⊙+
GF	Manager Permit	○	○	○	○	○	○	○	○	○	○	○	○	○	○
GF	Oil and Gas Clarification	○	+	+	+	○	○	+	○	○	+	○	○	○	○+
GF	Discharge From Outside the Sanctuary	○	+	○	+	+	○	+	⊙+	⊙+	○	+	○	○	⊙+
GF	No-Anchoring Seagrass Protection Zones	○	+	○	+	+	○	○	○	⊙	⊙	○	○	○	⊙+
GF	White Shark Attraction and Approaching	○	+	○	○	○	○	○	○	○	⊙	○	⊙	○	⊙+
GF	Wildlife Disturbance	○	+	○	○	○	○	○	○	○	+	○	○	○	○+
MB	Boundary Changes – Davidson Seamount	+	+	+	+	⊙+	+	+	○	○	○	+	⊙	+	⊙+

Table 4-1
Impacts of Proposed Action *(continued)*

Location	Proposed Regulatory Change	Air Quality	Biological Resources	Ocean/ Geological	Water Quality	Fisheries	Cultural	Hazards	Land Use/ Development	Marine Transportation	Public Access/ Recreation	Research and Education	Socio-economics	Visual	Summary
MB	Cultural Resources	○	○	○	○	○	○	○	○	○	○	○	○	○	○+
MB	Deserted Vessels	+	+	○	+	⊙+	+	+	○	○	+	+	⊙+	+	⊙+
MB	Dredge Disposal – Santa Cruz and Monterey Harbors	○	○	○	○	○	+	○	○	○	○	○	○	○	○+
MB	Dredge Disposal – SF-12	+	+	+	+	○	+	○	○	○	+	+	○	+	○+
MB	Motorized Personal Watercraft	+	+	○	+	○	○	+	○	○	⊙+	+	⊙+	+	⊙+
MB	White Shark Attraction and Approaching	○	+	○	○	○	○	○	○	○	○	○	○	○	○+
MB	Wildlife Disturbance	○	○	○	○	○	○	○	○	○	○	○	○	○	○
All	Cumulative Impacts	+	+	+	+	⊙+	+	+	○	⊙	+	+	+	+	⊙+
	Summary	+	+	+	+	⊙+	+	+	⊙+	⊙	⊙+	+	⊙+	+	

Notes:

○ – No impact

+ – Beneficial impact

⊙ – Less than significant adverse impact

⊖ – Significant mitigable impact

● – Significant unavoidable impact

CC – Cross-Cutting Regulation

CB – Cordell Bank NMS

GF – Gulf of the Farallones NMS

MB – Monterey Bay NMS

Cumulatively adverse impacts were identified in Commercial Fisheries and Marine Transportation; cumulative beneficial impacts were identified in Air Quality, Biological Resources, Ocean/Geology, Water Quality, Commercial Fisheries, Cultural Resources, Hazardous Materials, Public Access and Recreation, Research and Education, Socioeconomics, and Visual Resources.

4.2.2 Alternative Regulatory Actions

Table 4-2 summarizes environmental impacts associated with the Alternative Regulatory Actions. As noted in Chapter 2, there are not alternatives for each individual proposed regulatory change. The alternatives would result in similar impacts as discussed under the Proposed Action, with minor differences that are noted in Chapter 3. One significant adverse impact was identified on Public Access and Recreation in MBNMS, as a result of the preemption of the use of MPWC throughout the entire Sanctuary. This impact could be mitigated by providing for special use permits for competitions and training at Mavericks.

The Alternative Regulatory Actions would result in less than significant adverse impacts on Commercial Fisheries, Marine Transportation, Public Access and Recreation, and Socioeconomics; and beneficial impacts on Air Quality, Biological Resources, Ocean/Geology, Water Quality, Commercial Fisheries, Cultural Resources, Hazardous Materials, Public Access and Recreation, Research and Education, Socioeconomics, and Visual Resources.

Cumulative adverse impacts associated with the alternatives were identified in Commercial Fisheries and Marine Transportation, and cumulative beneficial impacts were identified in Air Quality, Biological Resources, Ocean/Geology, Water Quality, Commercial Fisheries, Cultural Resources, Hazardous Materials, Public Access and Recreation, Research and Education, Socioeconomics, and Visual Resources.

4.2.3 The No Action Alternative

Table 4-3 summarizes impacts associated with No Action. Failure to implement the Proposed Action is generally considered to have minimal impact on resources within the ROI. Implementation of the No Action alternative would result in less than significant adverse impacts on Biological Resources (resulting from the water quality impact, continued impacts on white sharks in GFNMS, and continued MPWC use in MBNMS) and less than significant adverse impacts on Water Quality (from continued discharge into the sanctuaries). No cumulative impacts were identified under No Action.

Table 4-2
Summary of Impacts under the Alternative Regulatory Actions

Location	Proposed Regulatory Change	Air Quality	Biological Resources	Ocean/ Geological	Water Quality	Fisheries	Cultural	Hazards	Land Use/ Development	Marine Transportation	Public Access/ Recreation	Research and Education	Socio-economics	Visual	Summary
CC	Cruise Ship Prohibition Alternative	+	+	○	+	+	○	+	○	⊙	+	+	+	+	○+
CB	Benthic Habitat Protection Alternative	○	+	+	○	⊙+	+	○	○	○	+	○	○	○	⊙+
CB	Seabed Protection Alternative	○	+	+	○	⊙+	+	+	○	○	+	○	○	+	⊙+
GF	White Shark Approach Prohibition	○	+	○	○	○	○	○	○	○	⊙	○	⊙	○	⊙+
MB	Davidson Seamount Circular Boundary Alternative	+	+	+	○	⊙+	+	+	○	○	○	○	○	+	⊙+
MB	Davidson Seamount NMSA Alternative	○	+	+	○	⊙+	+	+	○	○	○	○	○	○	○+
MB	Motorized Personal Watercraft Alternative	+	+	○	+	○	○	+	○	○	⊙+	+	⊙	+	⊙+
All	Cumulative Impacts	+	+	+	+	⊙+	+	+	○	⊙	+	+	+	+	⊙+

Notes:

○ – No impact

+ – Beneficial impact

⊙ – Less than significant adverse impact

⊗ – Significant mitigable impact

● – Significant unavoidable impact

CC – Cross-Cutting Regulation

CB – Cordell Bank NMS

GF – Gulf of the Farallones NMS

MB – Monterey Bay NMS

**Table 4-3
Summary of Impacts under the No Action Alternative**

Location	Air Quality	Biological Resources	Ocean/ Geological	Water Quality	Fisheries	Cultural	Hazards	Land Use/ Development	Marine Transportation	Public Access/ Recreation	Research and Education	Socio-economics	Visual	Summary
CC	○	⊖	○	⊖	○	○	○	○	○	○	○	○	○	⊖
CB	○	○	○	○	○	○	○	○	○	○	○	○	○	⊖
GF	○	⊖	○	○	○	○	○	○	○	○	○	○	○	⊖
MB	○	⊖	○	○	○	○	○	○	○	○	○	○	○	⊖
All (Cumulative)	○	○	○	○	○	○	○	○	○	○	○	○	○	

Notes:

- – No impact
- + – Beneficial impact
- ⊖ – Less than significant adverse impact
- ⊗ – Significant mitigable impact
- – Significant unavoidable impact

- CC – Cross-Cutting Regulation
- CB – Cordell Bank NMS
- GF – Gulf of the Farallones NMS
- MB – Monterey Bay NMS

CHAPTER 5

OTHER NEPA ANALYSES

SECTION 5

OTHER REQUIRED NEPA ANALYSES

This chapter addresses other considerations required by NEPA, including the following:

- Unavoidable significant adverse impacts;
- The relationship between short-term uses and long-term productivity;
- Any irreversible or irretrievable commitment of resources;
- Environmental health and safety risks to children; and
- Impacts found to be not significant.

Each of these impacts is discussed below.

5.1 UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

An EIS must describe any significant unavoidable impacts for which either no mitigation or only partial mitigation is feasible. The environmental impacts of the Proposed Action and alternatives are described in Chapter 3 and are summarized in Section 4. No unavoidable significant adverse impacts were identified for the Proposed Action or the Alternative Regulatory Actions.

5.2 RELATIONSHIP BETWEEN SHORT-TERM USES AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA requires that an EIS consider the relationship between short-term uses of the environment and the impacts that such uses may have on the maintenance and enhancement of long-term productivity of the affected environment (40 CFR 1502.16). The proposed regulatory actions would have long-term effects, rather than short-term ones. Benefits of the Proposed Action include enhancing long-term productivity of the natural environment of the sanctuaries. As described in Chapters 1 and 2, the regulatory changes are designed to protect Sanctuary resources and to improve management of the area. Therefore, any minor short-term effects incurred from these regulatory updates would be minimal when compared to the long-term benefits under both the Proposed Action and alternatives.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA (40 CFR 1502.16) requires that an EIS analyze the extent to which the proposed project's primary and secondary effects would commit nonrenewable resources to uses that future generations would be unable to reverse. No irreversible or irretrievable commitment of sanctuary resources would occur with the implementation of the proposed regulatory changes under the Proposed Action or alternatives. The primary focus of these regulations is to enhance and improve management of the sanctuaries and their natural resources, thereby preventing irreversible or irretrievable resource use.

5.4 ENVIRONMENTAL HEALTH AND SAFETY RISKS TO CHILDREN

None of the proposed or alternative regulations would result in adverse environmental health or safety risks to humans. Proposed regulations related to prohibiting vessel discharges would benefit marine water quality and would provide beneficial effects for sanctuary users who come into contact with the water, such as when swimming, windsurfing, or diving.

5.5 IMPACTS FOUND TO BE NOT SIGNIFICANT

Review of the analysis in Chapter 3 and summary in Chapter 4 indicates that the majority of potential impacts associated with the proposed regulatory changes would not be significant. In addition to the resource areas evaluated in Chapter 3, NOAA determined that the following environmental topics would not have the potential to result in significant adverse impacts and, therefore, are not evaluated in detail in this EIS:

- Agriculture – Proposed regulations would not affect agriculture in the counties adjacent to the three sanctuaries.
- Public Safety – None of the proposed regulations would cause public safety risks.
- Military Uses – None of the proposed regulations would prohibit current military activities.
- Public Services and Utilities - None of the proposed regulations would cause adverse effects on public services or public service/utility providers in the study area.
- Population and Housing – Proposed regulations would not impact population and housing.
- Growth-inducing Effects – None of the proposed regulations would result in direct or indirect effects that would induce changes in population density or growth rate.
- Noise - The sanctuaries are not proposing any new noise regulations at this time. The proposed Management Plans include provisions in the wildlife disturbance action plans for addressing noise. None of the proposed changes in the sanctuary regulations would result in significant increased noise impacts on wildlife in the sanctuaries.

CHAPTER 6

FINDINGS AND DETERMINATIONS

SECTION 6

FINDINGS AND DETERMINATIONS

6.1 INTRODUCTION

Under the NMSA the Secretary of Commerce may designate an area as a national marine sanctuary. The Secretary can promulgate regulations implementing the designation after making a set of determinations and findings, considering factors, and conducting consultations described in the NMSA (16 U.S.C. § 1433[a] and [b]). Although CBNMS, GFNMS, and MBNMS were designated in 1989, 1981, and 1992 respectively, the NMSA states that terms of designation may be modified only by the same procedures by which the original designation was made. Because this action proposes to revise the terms of designation for all three sanctuaries, relevant determinations and findings based on required factors and consultations are described here. In addition, NEPA requires the NMSP explain how actions described in this document relate to existing law and executive orders. This section meets these NMSA and NEPA requirements by describing the consultations in Section 6.2, making proposed determinations and findings and factors in Section 6.3, and discussing the relation of the proposed action to existing laws and executive orders in Section 6.4.

6.2 CONSULTATIONS AND RESULTS UNDER THE NMSA

Under Section 303(b)(2) of the NMSA, the NMSP is required to conduct a series of consultations with Congress, federal and state agencies, and other interested parties. Per this requirement, NMSP sent consultation letters in October 2004 to the following federal, state, and local agencies:

Federal Agencies

Federal Aviation Administration, Office of Commercial Space Transportation

Pacific Fishery Management Council

US Department of Agriculture

 Forest Service

 Natural Resource Conservation Service

US Department of Commerce, National Oceanic and Atmospheric Administration

 National Marine Fisheries Service

 National Ocean Service

US Department of Defense

 Undersecretary for the Environment

 Army Corps of Engineers

 Secretary of the Navy (Environment)

Secretary of the Air Force (Environment, Safety and Occupational Health)
US Department of Energy
 Office of Environmental Policy and Guidance
 General Counsel
US Department of Homeland Security - Coast Guard
US Department of Interior
 Office of Environmental Policy and Compliance
 Bureau of Land Management, California Coastal National Monument
 Fish and Wildlife Service, Farallon National Wildlife Refuge
 Geological Survey
 Minerals Management Service
 National Park Service
 Pacific Region
 Golden Gate National Recreation Area
 Point Reyes National Seashore
US Department of Transportation, Governmental Affairs
US Department of State - Oceans and Fisheries
US Environmental Protection Agency
 Office of Ocean, Wetlands, and Watersheds
US Senate
 California Senate Delegation members
 Committee on Commerce, Science and Transportation
US House of Representatives
 Central and Northern California House of Representatives Delegation members
 Resources Committee

State of California

Office of the Governor
Coastal Commission
Department of Conservation
Department of Fish and Game
 Marine Region
 Elkhorn Slough National Estuarine Research Reserve
Fish and Game Commission
Department of Fish and Game, Oil Spill Prevention and Response
Department of Transportation
Department of Boating and Waterways
Environmental Protection Agency
Resources Agency
State Lands Commission
State Parks
State Water Resources Control Board
Central Coast Regional Water Quality Control Board
San Francisco Bay Regional Water Quality Control Board
California State University
 San Francisco National Estuarine Research Reserve

Local Agencies

Association of Monterey Bay Area Governments
Bolinas Lagoon Technical Advisory Committee
County of Marin
 Marin County Board of Supervisors

County of Monterey
Board of Supervisors
Planning Commission
Planning Department
County of San Luis Obispo
County Board of Supervisors
County of San Francisco
Department of Public Works
City and County Board of Supervisors
County of San Mateo
Board of Supervisors
Parks Department - Fitzgerald Marine Reserve
County of Santa Cruz
Board of Supervisors
County of Sonoma
Planning Department
Board of Supervisors
Tomales Bay Watershed Council

Ports and Harbors

Bodega Bay Harbor District
City of Monterey - Monterey Harbor
Moss Landing Harbor District
San Mateo County Harbor District/Pillar Point Harbor
Santa Cruz Port District Commission

The comments and ideas received in response to the consultation letters were considered in the preparation of the DMP/DEIS. The results of these consultations were used to help make the findings and determinations described in Section 6.3.

An additional set of consultations is also required by the NMSA and other laws and was conducted after the DMP/DEIS was released for public review. These additional consultations include the following:

- Section 7 Endangered Species Act consultation with NOAA Fisheries and the US Fish and Wildlife Service (required under the ESA);
- Essential Fish Habitat with NOAA Fisheries (required under the MSA);
- Federal consistency consultation with the California Coastal Commission (California’s coastal zone management agency because state waters are involved or an activity outside state waters may have an effect on resources within state waters (required by the CZMA); and
- NHPA Section 106 consultation with the State Historic Preservation Office and the Advisory Council on Historic Preservation.

NOAA’s NMSP concluded these consultations as required.

6.3 NMSA AND NEPA FINDINGS AND DETERMINATIONS

6.3.1 Determinations Required Under Section 303 of the NMSA

Section 303(a) of the NMSA (16 U.S.C. § 1433[b][1]) states the Secretary of Commerce may designate any discrete areas of the marine environment as a national marine sanctuary and promulgate regulations implementing the designation if the Secretary determines:

1. *The designation will fulfill the purposes and policies of the NMSA.*
2. *The area is of special national significance due to—*
 - A. *its conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or esthetic qualities;*
 - B. *the communities of living marine resources it harbors; or*
 - C. *its resource or human-use values.*

The original determinations and findings for each sanctuary were made when CBNMS, GFNMS, and MBNMS were designated in 1989, 1981, and 1992 respectively. The rationale for each of the determinations and findings remain valid. Although there are proposals to modify the terms of designation for each of the three sanctuaries, all of the changes are consistent with and further support the original determinations and findings. The waters and submerged lands of the three sanctuaries, and their associated marine life and historic resources, possess exceptional value in all categories (conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, and aesthetic qualities). The proposed changes to terms of designation would provide additional protection to bottom habitats, water quality, living resources, and historical resources within the Sanctuary.

3. *Existing state and federal authorities are inadequate or should be supplemented to ensure coordinated and comprehensive conservation and management of the area, including resource protection, scientific research, and public education.*
4. *Designation of the area as a national marine sanctuary will facilitate the objectives stated in paragraph 3.*

The preparers of the original FEISs for each of the three sanctuaries came to a similar conclusion about the adequacy of existing state and federal authorities. While certain federal and state authorities did provide some degree of protection for specific marine resources, no single program or authority provided a comprehensive, ecosystem-based management mechanism to address the variety of resource management issues that exist in any one of the sanctuaries. The proposed changes to the terms of designation in each of the sanctuaries would further supplement and provide consistency for the existing federal and state authorities relating to marine resource management, water quality protection, and marine species protection within each of the three sanctuaries. The proposed changes would also allow for a more comprehensive and coordinated management, including scientific research and public education, of living and nonliving resources in the Sanctuary.

5. *The area is of size and nature that will permit the comprehensive and coordinated conservation and management.*

The only significant change to existing boundaries for the three sanctuaries is the addition of Davidson Seamount to the existing MBNMS boundary. This increases the MBNMS area by 585 square nm, or 14.6 percent. Davidson Seamount lies completely in federal waters, and no single federal authority, or combined authorities, can provide comprehensive ecosystem-based protection for the benthic resources on and near

Davidson Seamount like the NMSA. It is physically near though not adjacent to the MBNMS and can be comprehensively managed complementary with the MBNMS resources..

6.3.2 Section 303(b)(1) Discussion

Section 303(b)(1) of the NMSA (16 U.S.C. § 1433[b][1]) requires the following factors be considered when determining if an area of the marine environment meets the standards set forth in Section 303(a). Each factor is discussed below:

1. The area's natural resource and ecological qualities, including its contribution to biological productivity, maintenance of ecosystem structure, maintenance of ecologically or commercially important or threatened species or species assemblages, maintenance of critical habitat or endangered species, and the biogeographic representation of the site.

2. The area's historical, cultural, archaeological, or paleontological significance.

The exceptional natural and ecological qualities for each sanctuary are fully described in their original FEISs, including CBNMS, pages 15 to 33; GFNMS, pages E-1 to E-26; MBNMS II-4 to II-62. In addition, an updated description for the resources of each sanctuary is provided in Chapter 3 of this document and in Section 1.0 within each of the newly revised management plans (Volumes I, II, and III). The proposed changes to terms of designation for each sanctuary recognize the significance of maintaining the water quality, protecting sensitive species and habitats, and protecting historical resources within the Sanctuary.

3. The present and potential uses of the area that depend on maintenance of the area's resources, including commercial and recreational fishing, subsistence uses, other commercial and recreational activities, and research and education.

4. The present and potential activities that may adversely affect the factors identified in subparagraphs 1, 2, and 3.

The human uses of each sanctuary are fully described in their original FEISs, including CBNMS, pages 33 to 42; GFNMS, pages E-26 to E-56; MBNMS II-63 to II-103. In addition, an updated description of some of the human uses in each sanctuary is provided in Chapter 3 of this document. The changes to the terms of designation would allow for increased protection for some sanctuary resources, while still allowing such activities as different types of commercial and recreational fishing, diving, boating, wildlife watching, research and education to occur within the sanctuaries.

5. The existing state and federal regulatory and management authorities applicable to the area and the adequacy of those authorities to fulfill the purposes of the NMSA.

The management authorities and associated laws and regulations applicable to each sanctuary are described in their original FEISs, including CBNMS, pages 126 to 134; GFNMS, pages F-1 to F-42; MBNMS C-3 to C-24. In addition, an updated description of many of the federal and state authorities is provided throughout Chapter 3 of this document. Existing management authorities were also considered in the final rules designating CBNMS, GFNMS, and MBNMS in 1989, 1981, and 1992, respectively.

6. The manageability of the area, including such factors as its size, its ability to be identified as a discrete ecological unit with definable boundaries, its accessibility, and its suitability for monitoring and enforcement activities.

The only significant change to the boundaries for the three sanctuaries is the proposed addition of Davidson Seamount to the MBNMS boundary. This discrete ecological unit would increase the MBNMS sanctuary area by 585 square nm, or 14.6 percent. Davidson Seamount lies completely in federal waters approximately 75

miles southwest of Monterey, California. Although Davidson Seamount is separated from the MBNMS boundary, its location adjacent to MBNMS would allow sanctuary staff to efficiently expand their research, education, and enforcement programs to encompass this area.

7. The public benefits to be derived from sanctuary status, with emphasis on the benefits of long-term protection of nationally significant resources, vital habitats, and resources which generate tourism.

The public benefits from sanctuary status for each sanctuary were described in the original FEISs, including CBNMS, pages 6 to 8; GFNMS, pages D1-1 to D-2; MBNMS I-19 to I-20, and in the final rules. The changes to the terms of designation proposed by this FEIS will enhance public benefits by providing for increased protection to water quality, seabed habitats, marine life, sensitive marine species, and cultural and historic resources in the Sanctuary while still allowing for continued public use and enjoyment, education, and research of the Sanctuary environment.

8. The negative impacts produced by management restrictions on income-generating activities such as living and nonliving resources development.

9. The socioeconomic effects of sanctuary designation.

An analysis of the socioeconomic impacts of proposed regulatory changes for all three sanctuaries is included in Chapter 3 of this FEIS. The preparers of the socioeconomic analysis concluded impacts of the proposed regulatory changes would be minimal and not significant.

10. The area's scientific value and value for monitoring the resources and natural processes that occur there.

The area's scientific value and value for monitoring the resources and natural processes are described in the original FEISs, management plans, and the final rules designating each of the sanctuaries. The changes to each of the terms of designation proposed by this FEIS enhances the area's scientific and monitoring value by allowing for increased protection of seabed habitats and features, water quality, and living resources in the Sanctuary.

11. The feasibility, where appropriate, of employing innovative management approaches to protect sanctuary resources or to manage compatible uses.

The changes to the terms of designation, along with other regulatory and management changes proposed by this FEIS, represent an appropriate mechanism to manage and protect sanctuary resources, and management proposes many innovative approaches to education, research, and resource protection.

12. The value of the area as an addition to the System.

CBNMS, GFNMS, and MBNMS were designated in 1989, 1981, and 1992, respectively, and have been actively managed as individual sites within the larger system of marine protected areas. The addition of Davidson Seamount is important for science to study how the seamount is linked ecologically with the coastal waters, nearshore canyons, and species currently protected in the MBNMS. Protecting it will help facilitate research to understand how the Monterey Bay and Big Sur canyon complexes have an effect on the Davidson Seamount and what the migration pattern of species is between the seamount and nearshore. Less than 0.1 percent of the world's seamounts have been explored for what species live on them, and many species found on the seamounts that have been explored are new to science. Studies indicate that seamounts function as

deep-sea "islands" of localized species distributions, dominated by suspension feeders, like corals, that grow on rock in an otherwise flat, low biomass, sediment-covered abyssal plain. Seamounts create complex current patterns that can influence sea life above them. Commercially valuable fish species often concentrate around relatively shallow seamounts. Conservation issues relevant to seamounts revolve around endemism, harvest, and the low resilience of species. A survey in the southwest Pacific suggests that up to one-third of the species on seamounts can be endemics. No seamounts and habitats of this type are currently designated in the National Marine Sanctuary System.

6.3.3 Resource Assessment

1. Present and potential uses of the area, including commercial and recreational fishing, research and education, minerals and energy development, subsistence uses, and other commercial, governmental, or recreational uses.

Chapter 3 of this FEIS (Affected Environment and Impact Analysis) provides a full description of the current and potential uses of the area.

2. Any commercial, governmental, or recreational resource uses in the areas that are subject to the primary jurisdiction of the Department of the Interior.

The Department of the Interior has been contacted at various times in the JMPR, including the notification of an intent to prepare an EIS and conduct a public scoping meeting, to prepare issue-based action plans, and to consult under NMSA Section 303. The DOI will also receive copies of the final management plans and environmental impact statement for review and comment. Coordination and consultation with the National Park Service, Fish and Wildlife Service, Minerals Management Service and Geological Service has occurred and will continue with regard to management and public uses of these three sanctuaries.

3. Information prepared in consultation with the Secretary of Defense, the Secretary of Energy, and the Administrator of the Environmental Protection Agency, on any past, present, or proposed future disposal or discharge of materials in the vicinity of the proposed sanctuary

As is the case above, the agencies listed above were contacted on several occasions during the JMPR and were given formal opportunities to consult on the proposed changes to the modified terms of designation (NMSA Section 303 consultation). In addition, MBNMS worked closely with the USEPA and the Defense Department's US Army Corps of Engineers during the JMPR as part of an action plan to relocate the existing dredge disposal sites at Moss Landing, California.

6.4 RELATION TO EXISTING LAWS AND EXECUTIVE ORDERS

Coastal Zone Management Act

The CZMA creates a partnership between the federal and state governments and allows states to develop coastal zone management programs within a set of federal guidelines but tailored to their individual needs. The act also requires each federal agency activity within or outside the coastal zone affecting any land or water use or natural resource of the coastal zone to be carried out in a manner, to the maximum extent practicable, consistent with the enforceable policies of the federally approved state coastal zone management program.

Both GFNMS and MBNMS are located partially within state waters. The managers of both sanctuaries (including CBNMS) work closely with several State of California resource management departments and commissions. The NMSP consulted with the California Coastal Commission on the federal consistency of the original proposed action with the California Coastal Zone Management Program. The California Coastal Commission conditionally concurred with NOAA's determination of consistency.

Magnuson-Steven Fishery Conservation and Management Act

The MSA governs the management and conservation of fisheries in federal waters of the United States and created the PFMC, along with seven other regional fishery management councils. Managers of all three sanctuaries worked closely with the PFMC and NOAA Fisheries on matters pertaining to federally managed fisheries within the Sanctuary.

This act also requires federal agencies to consult with NOAA Fisheries on any action the agencies authorize (such as issuing permits), fund, or undertake that may adversely affect EFH. The NMSP consulted with NOAA Fisheries on the impact of this proposed action on EFH.

National Historic Preservation Act

The NHPA was enacted to help protect and preserve the historic heritage of the United States. Section 106 of the NHPA requires that federal agencies take into account the effects of their activities and programs on historic properties (which are defined as any district, site, building, structure, or object that is included on or eligible for inclusion on the National Register of Historic Places) by providing the Advisory Council on Historic Preservation with the opportunity to comment on proposed actions. The NMSP consulted with Advisory Council on Historic Preservation on the impact of this proposed action on any historic or cultural resource in the Sanctuary.

Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) requires federal agencies to consider the effects of their regulatory actions on small businesses and other small entities and to minimize any undue disproportionate burden. If the regulations will have a significant economic impact on a substantial number of small businesses, then a sanctuary must prepare an initial regulatory flexibility analysis and final regulatory flexibility analysis. The NMSP has not prepared an initial regulatory flexibility analysis for this proposed action because the Chief Counsel for Regulation with the Department of Commerce has certified to the Small Business Administration the rules will not have a significant impact on a substantial number of small entities.

Executive Order 12866 Cost-Benefit Analysis

Under Executive Order 12866, if a rule is determined to be significant, then a socioeconomic impact study (i.e., an assessment of the costs and benefits of the regulatory action) must be conducted. Under 12866 a regulatory action is significant if the rule could result in any of the following:

- Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

- Materially alter the budgetary impacts of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order.

The NMSP concluded the rules are not significant and the Office of Management and Budget concurred with this conclusion.

Executive Order 13132 Federalism

Under Executive Order 13132, each agency must consult, to the extent practicable and permitted by law, with state and local officials early in the process of developing proposed regulations. In these consultations the agency should seek comment on the compliance costs or preemption, as appropriate to the nature of the rulemaking under development.

When an agency submits a draft final regulation to OMB for review under Executive Order 12866 prior to promulgation of the final regulation, the agency must include a separately identified portion of the preamble to the regulation as a "federalism summary impact statement" that must include the following:

- A description of the extent of the agency's prior consultation with state and local officials;
- A summary of the nature of their concerns and the agency's position supporting the need to issue the regulation; and
- A statement of the extent to which the concerns of state and local concerns have been met.

The NMSP worked with partner agencies within California, local jurisdictions in the vicinity of the three sanctuaries, and the federal government in the development of this FEIS. A federalism summary impact statement will be prepared for the final rule.

CHAPTER 7

RESPONSES TO COMMENTS

SECTION 7

RESPONSE TO COMMENTS

NOAA summarized the comments according to the content of the statement or question put forward in written statements or oral testimony regarding the proposed actions. NOAA also made changes to the FEIS and Sanctuary Management Plans in response to the comments, where appropriate, including updates to socioeconomic and ecological data where the comments affect the impact analysis or are relevant to the sanctuary action plans. Several technical or editorial comments on the DEIS and Management Plans were also taken under consideration by NOAA and, where appropriate, applied to the FEIS and/or Management Plans. These comments are not, however, included in the list below.

Alteration of or Construction on the Seabed

Anchoring on Cordell Bank

Comment: The Cordell Bank regulation regarding anchoring outside the 50 fathom line should be edited to make clear that anchoring is only allowed in conjunction with lawful fishing activities, with the assumption that allowances/regulations for other cases (such as anchoring in emergency situations) are handled elsewhere as needed.

Response: The regulation would not prohibit anchoring of any type outside the 50-fathom depth contour around Cordell Bank. Anchoring for both lawful fishing and other uses is allowed outside the 50 fathom line. The intent of the proposed prohibition is consistent with the wording as drafted and no changes are necessary.

Coastal Armoring

Comment: The MBNMS Coastal Armoring Action Plan should include a guidance statement acknowledging that the implementation of this Action Plan may involve costs, which are not feasible for the landowner.

Response: The Coastal Armoring Action Plan in the MBNMS Management Plan provides programmatic guidance and no additional regulations for landowners. NOAA understands development of additional structures to protect existing structures involves certain market and non-market costs for landowners and the public. Loss of natural resources also represents costs to landowners and the public.

Comment: The Coastal Armoring Action Plan should be more neutral in tone and discuss the circumstances in which the benefits of projects might outweigh potential environmental impacts.

Response: NOAA recognizes coastal armoring may have benefits in certain situations. The MBNMS Management Plan and Action Plans were written to describe the issues that MBNMS is addressing – in the case of coastal armoring, NOAA is concerned about damage to the seafloor, wildlife impacts, loss of habitat, aesthetic impacts, and loss of recreational opportunities.

Comment: I strongly support regulations to restrict coastal armoring along MBNMS's coastline. The proliferation of structures such as seawalls and breakwaters is having a damaging effect on intertidal habitats and is blocking public access to beaches.

Response: NOAA recognizes coastal armoring can involve adverse impacts to coastal habitats and users. The action plans for the MBNMS Management Plan were written to address these issues as part of a comprehensive program including existing sanctuary regulatory prohibitions regarding alteration of the seabed and discharging into the sanctuary.

Artificial Reefs

Comment: How would the vessel abandonment prohibition affect proposals to sink ships as artificial reefs? Some people are interested in doing this in MBNMS and areas north of San Francisco.

Response: The proposed regulation prohibiting deserting a vessel is primarily designed to address vessels posing a threat of discharge or seabed alteration but that have not yet submerged. However, existing regulations for the sanctuaries prohibit discharge and abandonment of any matter onto the seafloor within the sanctuary. The existing and new prohibitions would not apply, however, if a person/entity conducting an otherwise prohibited activity has a valid permit or authorization from the appropriate sanctuary superintendent issued pursuant to the regulations for that sanctuary. Anyone wishing to establish an artificial reef within one of the sanctuaries could apply for a permit or authorization. NOAA's review of such a project would include a consideration of all relevant environmental issues, such as contaminant discharges/leaching/flaking, entrapment hazards, loss of natural habitat and displacement/loss of natural species assemblages, alteration of local trophic relationships, fisheries interactions, physical stability and long-term impacts, monitoring and liability.

Ocean Drilling

Comment: An offshore oil drilling ban should be expanded.

Response: There is currently a regulatory prohibition on exploring for, developing, or producing oil, gas, or minerals in the three national marine sanctuaries (with the exception of mineral extraction in MBNMS, these prohibitions are also statutory for the MBNMS and CBNMS); this ban on oil drilling activities does not extend beyond the boundaries of the sanctuaries. Other regulatory authorities including the Minerals Management Service and the State of California have regulatory authority for oil drilling, e.g., outside of national marine sanctuaries.

Comment: Offshore drilling for oil and gas should be permitted.

Response: The current regulations prohibit exploring for, developing or producing oil, gas or minerals in all three sanctuaries. The MBNMS Designation Document also contains such a prohibition. NOAA has not modified these prohibitions because it believes they are appropriate. In addition, in the MBNMS and CBNMS there are statutory prohibitions on certain oil and gas activities NOAA cannot change. Public Law

101-74 (August 9, 1989) prohibits “the exploration for, or the development or production of, oil, gas, or minerals in any area of the” CBNMS. Similarly, Public Law 102-587 (November 4, 1992 at section 2203) prohibits “any leasing, exploration, development, or production of oil or gas” within the MBNMS.

Comment: There is concern with the MBNMS ‘alteration of submerged lands’ prohibition, as it relates to the sanctuary permitting process for a potential large-scale research project associated with the Integrated Ocean Drilling Program.

Response: The general permitting process, protocols, and guidelines have not changed in response to the updated language used to describe the prohibition on the alteration of submerged lands within the sanctuary. NOAA will continue to review any proposal to conduct an otherwise prohibited activity, whether it is a commercial or research project, and evaluate proposals on a case-by-case basis, to determine whether the project is consistent with the NMSA and MBNMS regulations.

Research and Fishing Exceptions

Comment: The bottom trawling exception for alteration of submerged lands in GFNMS, 922.82 (5)(B), should be modified to allow “setting fish traps or longlines” and “permitted research vessel.”

Response: The proposed regulatory text has been revised to use language consistent with MBNMS regulations. The exception to altering submerged lands for "bottom trawling from a commercial fishing vessel" will be changed to "while conducting lawful fishing operations." This change did not necessitate modification to the environmental analysis. However, the regulations would not provide an exception for permitted research vessels. The Director, at his or her discretion, may issue a permit, subject to certain conditions, to allow otherwise prohibited activities if they further research related to Sanctuary resources and qualities.

Submerged Cables

Comment: Should the Submerged Cables Action Plan in the MBNMS Management Plan also be incorporated into the Gulf of the Farallones and Cordell Bank management plans?

Response: The siting of submerged cables was not identified as a priority issue in the GFNMS and CBNMS scoping meetings and is thus not addressed in the GFNMS or CBNMS management plans. NOAA reviews permit applications to install submerged cables in those sanctuaries pursuant to the NMSA and applicable sanctuary regulations in 15 CFR Part 922. NOAA would also consider how similar applications were addressed by the NMSP for other sanctuaries.

Comment: NOAA is wrong in distinguishing between submarine cables for scientific purposes and those for commercial purposes. Both have nearly identical environmental impacts and pose a conflict for other lawful users of a sanctuary. Although NOAA’s special use permit policy on submarine cables does not distinguish among the reasons for the “maintenance of submarine cables beneath or below the seabed,” MBNMS recently issued a permit for a research cable not subject to the special use permit restrictions in the National Marine Sanctuaries Act. In 2000, Congress added language waiving “fees for any special use permit” for a non-profit activity but did not authorize waiving the requirement for the permit. This issue must be clarified in a manner confirming that any submarine cable operator must first obtain a special use permit and file an appropriate bond to protect other users of a marine sanctuary. Also, research cables may have commercial benefits to the owners, so an assessment needs to be made as to whether fees are appropriate.

Response: Submarine cables for scientific and commercial purposes could have similar impacts to marine resources. Both types of cable projects are required to undergo thorough environmental review. The NMSP has distinct authorities (prescribed by law and regulations) to allow the conduct of specific otherwise prohibited activities within national marine sanctuaries. The most commonly used authority is found in NMSP regulations (15 CFR Part 922) to allow certain types of activities, such as research, education and resource management, to occur in instances where it would otherwise be prohibited by the NMSP regulations. In addition, NMSP regulations applicable to MBNMS allow “authorization” of other agency permits for prohibited activities not qualifying for a research or other permit. Another authority derives from Section 310 of the National Marine Sanctuaries Act (16 U.S.C. 1441), regarding “Special use permits” for activities requiring access to or non-injurious use of sanctuary resources. To date, the NMSP has issued few special use permits for various commercial activities not injuring sanctuary resources. NOAA would issue special use permits for submerged cables only for continued presence of commercial submarine cables already on or beneath the seafloor and likely in conjunction with an authorization for the installation and removal components of any project. The NMSP clarified special use authority for commercial submarine cables in the Federal Register (Vol. 71, No. 19, Monday, January 30, 2006). As stated therein, “The NMSP does not consider intrusive activities related to commercial submarine cables such as installation (*e.g.*, burial), removal, and maintenance/repair work to qualify for a special use permit. When such activities are subject to NMSP regulatory prohibitions, they will be reviewed and, if appropriate, approved through the NMSP’s regulatory authority (and not through the special use permit authority).” Currently, only special use permits are subject to fees.

Comment: The MBNMS Draft MP should not include reference to allowing a special use permit for submarine cables for commercial purposes within sanctuary waters. Many of the activities inherent to submarine cable installation, operation, repair and removal are generally incompatible with the National Marine Sanctuaries Act’s statutory objective of resource protection and violate existing MBNMS prohibitions against “drilling into, dredging, or otherwise altering the submerged lands of the sanctuary; or constructing, placing or abandoning any structure, material or other matter on the submerged lands of the sanctuary...” Although exceptions may be made for cable projects designed to enhance scientific understanding of the sanctuary, no such exception exists for purely commercial projects. Special use permits are designed for activities that have a short-term duration (no more than five years). Therefore, the MBNMS Draft MP should be revised to clarify that submarine cables for commercial projects will not be permitted.

Response: The MBNMS Superintendent has the discretion to issue appropriate permits or authorizations allowing specific activities otherwise prohibited in the sanctuary and NOAA’s regulations do not limit this discretion in the manner recommended by the commenter. See previous response regarding special use permits. The National Marine Sanctuaries Act states that special use permits shall not authorize the conduct of any activity for a period of more than 5 years unless they are renewed. Consideration of any permit or authorization for commercial cables requires extensive information and analyses as outlined in detail in the MBNMS Submerged Cables Action Plan. The MBNMS will continue to evaluate projects and proposals on a case-by-case basis to ensure compatibility with protection of sanctuary resources.

Aquaculture & Kelp Harvesting

Aquaculture

Comment: Commercial fish farming poses tremendous risk to native species and the environment from food additives, fecal contamination, interbreeding / genetic pollution, pharmaceuticals, food colorings and

pathogens. Consider a ban or subject these activities to rigorous regulation and monitoring. Aquaculture should be restricted to native species only.

Response: Permitting decisions for aquaculture involving any species other than native species will consider the risk of harm from escape or predation. Certain activities associated with aquaculture operations are already regulated. Discharges from a future aquaculture operation, if allowed, is also regulated under prohibitions against discharge or depositing from within or into the sanctuary as well as any discharge or deposits from beyond the boundary of the sanctuary that enter the sanctuary and injure a sanctuary resource. If NOAA determines additional aquaculture regulation is necessary for the protection of sanctuary resources and qualities in the future, NOAA could issue regulations as appropriate.

Comment: Mariculture operations should be part of the sanctuary's education component, in terms of educating public/children during tours of facilities about this sustainable food system, its impacts, and the marine ecosystem as a whole.

Response: Ocean-based commerce and industries are important to the maritime history, the modern economy, and the social character of this region. The GFNMS Maritime Heritage Action Plan includes activities to cultivate partnerships with local and state programs and communities to help educate the public about maritime economic activities and human interaction with the ocean. NOAA's implementation of the MBNMS Fishing Related Education and Research Action Plan will educate the public about fishing issues, including mariculture operations in the MBNMS, to increase public education about sustainable fisheries and food systems.

Comment: The proposed regulations prohibit new piers and docks in the GFNMS. There had been some exemption for coastal dependent uses in the past because these facilities are important to mariculture industry, in terms of being able to land shellfish in the GFNMS.

Response: NOAA is not issuing a new prohibition on piers and docks in these regulations. The construction of docks and piers has been prohibited within the GFNMS since its original designation in 1981. The exception to this prohibition in Tomales Bay remains in the regulations. New language clarifies existing regulations and all current exemptions. This regulation also does not prohibit mariculture operations from using existing piers and docks.

Comment: The proposed regulations include a provision about a moratorium on laying any pipeline. This may be an issue for mariculture in terms of intakes.

Response: The regulations do not include a moratorium on laying pipelines for water intake. The new language in the GFNMS regulations would clarify the existing regulation and prohibit installing pipeline in the GFNMS related to hydrocarbon operations outside the GFNMS.

Kelp Harvesting

Comment: The kelp beds surrounding Pleasure Point (Santa Cruz) that used to clean and calm the surf under windy/choppy conditions have been over-harvested. There is a noticeable effect on the water quality involving lack of kelp and the oils that the kelp provides for calming the surface conditions. The kelp is cut at low tide and is reducing the protection it provides to the eroding cliffs. The kelp is nine feet under water at high tide. The effects on aquatic life have not been researched adequately. Kelp beds that are adjacent to surf areas should be left in their natural state as a control and compared to those areas that are being harvested.

Response: Kelp harvesting is currently regulated by the California Department of Fish and Game (CDFG) under the authority of the Fish and Game Commission. CDFG has conducted extensive research on impacts of kelp removal and prescribes restrictions for kelp harvesting by permitted parties. NOAA will continue to work with CDFG to implement the kelp harvesting policies adopted by the Commission in 2000.

Boundaries

Davidson Seamount

Comment: NOAA should prohibit deep sea trawling at Davidson Seamount.

Response: On June 12, 2006, NOAA prohibited use of any gear that could contact the bottom, including trawl gear, at a depth of greater than 3,000 feet in the Davidson Seamount Management Zone. This prohibition was included in management measures to implement Amendment 19 to the West Coast Groundfish Fishery Management Plan. See Federal Register Docket No. 051213334-6119-02; I.D. 112905C].

Comment: There is no reason at this time for including the Davidson Seamount within the Monterey Bay sanctuary, since there are no threats currently on the horizon to that area.

Response: Sanctuary designation or expansion is premised upon setting aside areas of the marine environment that have nationally, and sometimes internationally significant living or non-living resources. Sanctuary designation provides authority for comprehensive protection and management, including research, education, and outreach. Thus, designation does not require an existing or imminent threat. The MBNMS Management Plan, however, describes threats to the Davidson Seamount in the Davidson Seamount Action Plan. In addition to resource protection, other management interests warrant including the Davidson Seamount in the National Marine Sanctuary System. There is currently no comprehensive conservation and management scheme in place to protect the organisms on the seamount or the surrounding ecosystem. While resource protection is the primary purpose for designation as a national marine sanctuary, NOAA also seeks to increase national awareness and public understanding of seamount systems.

Comment: The addition of Davidson Seamount to the sanctuary will certainly provide additional protection for this area. Will there be considerations for researchers who may want to study the seamount and its ecology?

Response: NOAA's goals in incorporating the Davidson Seamount into the MBNMS are to increase understanding and protection of the seamount through characterization and ecological process studies. NOAA encourages researchers to study the seamount and to share the gained knowledge about this important area. However, if the research involves collection of resources or involves prohibited activities such as disturbance of the seafloor or discharge of matter, the researchers must seek a permit from NOAA prior to engaging in those activities.

Comment: Can you provide supporting references regarding the uniqueness of Davidson Seamount?

Response: Davidson Seamount is the largest seamount in the western Pacific Ocean and is one of the largest seamounts in the world. It may have unique links to the nearby Partington and Monterey submarine canyons. The seamount is home to fragile coral colonies estimated to be more than 100 years old. It provides habitat for many rare and endemic species. Davidson Seamount is home to previously undiscovered species (i.e., 15 species are currently being described as new to science) and large patches of corals and sponges provide an opportunity to discover new ecological processes. The high biological diversity of these assemblages may be

found on other central California seamounts; however, we currently do not have enough scientific information. The seamount habitat of Davidson Seamount would be unique to the MBNMS and National Marine Sanctuary System as there are no other seamounts within the current sanctuary boundaries. The Davidson Seamount description in the Designation Document has been clarified to describe the national significance of the resources and qualities of the Davidson Seamount.

(Davis et al. 2002; GSA Bulletin 14(3):316-333)

(DeVogelaere et al. 2005; In: A. Freiwald and J.M. Roberts (eds), Cold-water Corals and Ecosystems. Springer-Verlag Berlin Heidelberg, pp 1189-1198.)

(Planet Earth DVD 2007; British Broadcasting Corporation)

Comment: Use NMSA to protect Davidson Seamount if MSA protections are reduced or eliminated.

Response: NOAA has two statutory authorities relevant to this comment: the National Marine Sanctuaries Act (NMSA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSA). NOAA considers both the NMSA and MSA as tools that can be used exclusively or in conjunction to protect sanctuary resources. NOAA evaluates the regulatory options on a case by case basis to determine which mechanism is most appropriate to meet the stated goals and objectives of a sanctuary. In the case of the Davidson Seamount Zone, NOAA chose to use both authorities to prohibit fishing and other extractive activities below 3,000 feet. If, in the future, the goals and objectives of the Davidson Seamount Zone are not met because of the reduction or removal of MSA protections in the Davidson Seamount Zone, the NMSP will re-evaluate impacts on the zone. If additional regulations on fishing are warranted, the NMSP will follow the process set forward in Section 304(a)(5) of the NMSA.

Comment: How does the circular designation match the EFH designation? Which one more closely matches the EFH designation – the circle or the square? Perhaps a depth contour approach or lines based on a contour would be more appropriate.

Response: NOAA selected the rectangular boundary based on input from the Sanctuary Advisory Council and the Pacific Fishery Management Council for ease of understanding and enforcement of regulations. The rectangular shape matches the designation of the area as Essential Fish Habitat and a Habitat Area of Particular Concern, as well as associated fishing regulations.

Expansion

Comment: NOAA should expand the Cordell Bank and Gulf of the Farallones National Marine Sanctuary boundaries north to cover the entire Sonoma County Coast to the Mendocino County line including the rivers and estuaries.

Response: NOAA is not proposing to expand the Cordell Bank and Gulf of the Farallones Sanctuary boundaries as part of the Joint Management Plan Review process. However, the CBNMS and GFNMS management plans include strategies to develop a framework for identifying and analyzing boundary alternatives.

Comment: Bodega Harbor should be included in GFNMS.

Response: At this time, NOAA is not considering adding Bodega Harbor to GFNMS and is not considering any expansion of the Sanctuary boundary.

Comment: The Santa Cruz City Council unanimously voted to support a boundary adjustment to include the nearshore waters of the City of Santa Cruz within the MBNMS. In addition to the technical corrections to the boundary, specific mention of this area should be included in the Final EIS.

Response: Consistent with the request of the Santa Cruz City Council, NOAA has adjusted the MBNMS boundary to include within the sanctuary the outer harbor waters of the City of Santa Cruz, but exclude Santa Cruz Small Craft Harbor. This boundary change is now explicitly referenced in Section 2.6 of the Final EIS.

Comment: Expand the MBNMS boundary south to Pt. Sal to encompass San Luis Obispo County.

Response: During the scoping and prioritization process, NMSP determined there was support for and opposition to a boundary expansion of MBNMS to include additional waters offshore of San Luis Obispo County. There were also various suggestions on how far south to extend the boundary. The NMSP, in consultation with elected officials in this region, determined not to expand the boundary to allow the local community to work towards a consensus on boundary expansion. For this management plan review process, the NMSP has not included or expanded the boundary off San Luis Obispo coastline, but could reconsider this in the future.

Internal Boundaries

Comment: The Marin coastline in the Sanctuary System is divided between MBNMS (5%) and GFNMS (95%), which has no basis in science and is simply a historic attribute. There is unnecessary confusion, and the Marin coastline should be part of the GFNMS. Also, the current “fixed boundary” proposed between GFNMS and National Park Service (NPS) is unworkable and should be amended to be a flexible boundary that follows the NPS boundary or the Mean High Water Line, whichever is further from land. NPS has authority and protections that meet or exceed those of GFNMS, so there is no reason for joint jurisdiction.

Response: The MBNMS and GFNMS contain a Northern Management Plan Cross-Cutting Action Plan to provide consistent management of the resources. NOAA is fixing the GFNMS boundaries in Tomales Bay to the coordinates established during the original designation of the Sanctuary in 1981 to avoid confusion and allow for accurate mapping. The boundaries would return to the mean high water line except in the Point Reyes National Seashore (PRNS) where the GFNMS boundary follows the seaward extent of the PRNS. Establishing fixed points for the boundaries of the GFNMS in Tomales Bay would not affect the National Park Service’s authority to extend the PRNS boundaries into the Sanctuary. Fixing the boundaries to a set coordinate avoids confusion of affected agencies and the public. Having National Seashore and National Marine Sanctuary protection strengthens the safeguards for resources in the area. If the National Park Service proposes to remove a shoreline parcel from its boundaries, the NMSP may conduct the appropriate review for inclusion in the Sanctuary.

Comment: The management of the San Mateo coast by the GFNMS should be made permanent.

Response: The management of sanctuary waters off San Mateo County (and San Francisco and Marin County) will remain as defined by the NMSP Director in 2004. The GFNMS will be the lead for most issues, including those related to enforcement of MBNMS regulations. The MBNMS will be the lead to implement the Water Quality Protection Program. Both sanctuaries’ staff and the NMSP West Coast Regional Office coordinate closely in this management regime.

Depositing and Discharging Activities

Desalination

Comment: Consideration of whether or not desalination facilities may provide for environmental enhancement, such as restoring coastal stream flows or overdrafted groundwater basins (and appropriate regulatory mechanisms) should be added to the list of comprehensive potential impacts.

Response: NOAA recognizes desalination technologies potentially address water shortages and may, in some cases, be a preferred alternative to further overdrafting of groundwater basins or damming of coastal streams. This consideration is added to the list in Activity 2.3 of the Desalination Action Plan in the MBNMS Management Plan .

Comment: A comprehensive water resource management plan should be included as an information requirement under Activity 4.2 of the Desalination Action Plan.

Response: A water resource management plan may be necessary for other agency review of a potential desalination project. However, at this time, NOAA believes the existing list of submittal requirements is adequate to review a project for potential impacts on sanctuary resources and qualities. If additional information is necessary, NOAA may request information from the project applicant.

Comment: NOAA should provide exemptions to MBNMS prohibitions on exploring for, developing, or producing oil, gas or minerals within the Sanctuary and drilling, dredging or otherwise altering submerged lands to allow for desalination exploration and construction, repair, or maintenance of seawater desalination systems.

Response: NOAA will continue to work with desalination plant owners and operators as well as other relevant management authorities to consider projects on a case-by-case basis. NOAA is concerned with negative effects of desalination activities, both individually and cumulatively, on the health of the ecosystem and will continue to review projects for impacts from discharges, alterations of the seabed, and the taking of marine mammals, turtles, and seabirds.

Comment: We understand MBNMS has proposed changes that refer to “beach wells” as an alternative source of water for new desalination plants. We object to the MBNMS proposals to consider, support, recommend, or approve beach wells for the purposes of desalination and exporting groundwater from our Salinas Valley groundwater aquifers to the Monterey Peninsula. The MBNMS has no authority to advocate, support, promote or adopt policies, or grant approval of any project that relies on the illegal taking of groundwater that belongs to the overlying landowners of the Marina / Castroville / Moss Landing areas.

Response: NOAA makes no reference to or recommendations regarding beach wells as a source of water for desalination facilities in the proposed rule or DEIS/draft management plan.

Comment: NOAA should develop regional oversight and guidelines for proposed desalination plants to eliminate piecemeal and inconsistent reviews.

Response: There is a need to take a regional approach to reviewing the need for and siting of desalination facilities. The MBNMS Desalination Action Plan includes a strategy to encourage development of a regional program.

Comment: The Desalination Action Plan should not apply to previously submitted applications for desalination projects.

Response: The Desalination Action Plan outlines NOAA's role within the regulatory framework – the plan does not include additional regulations. NOAA's review of any application for desalination projects will include, but not be limited to: 1) pipeline construction on the seabed; 2) degradation of water quality from chemicals in the discharge brines and their potential impacts on the resources and qualities of the sanctuary; and 3) discharge treatment methods utilized to reduce the injury to sanctuary resources and qualities.

Comment: Reductions in urban runoff and increased use of porous surfaces, retention ponds and cisterns would reduce the need for desalination facilities.

Response: The GFNMS and MBNMS Management Plans include water quality programs encouraging reductions in urban runoff.

Dredged Material Disposal / Ocean Dumping

Comment: Several agencies and organizations oppose or do not understand NOAA's involvement, oversight or regulation of disposal of dredged material in the MBNMS.

Response: NOAA reviews the composition of the sediment, volumes, grain size, and contaminant load to determine if the dredged sediments are appropriated for disposal in the MBNMS and comply with the provisions of the National Marine Sanctuaries Act. NOAA works closely with the Army Corps of Engineers and Environmental Protection Agency to determine the need for additional measures in the regulatory program necessary to ensure protection of sanctuary resources and qualities. The Harbors and Dredge Disposal Action Plan includes a more complete description of the role of the MBNMS in regulating discharges of dredged material and resulting disturbance of the seabed. In 1992, the designation of the MBNMS prohibited use of new ocean dredged material disposal sites within the Sanctuary.

Comment: Beneficial use / beach nourishment sites are recognized at Santa Cruz, Moss Landing and possibly Pillar Point. We urge NOAA to be open to future beach nourishment sites. Loss of sand and beach value is a national issue, as well as a California issue. Opportunities of all types should be recognized and nurtured.

Response: NOAA does not regulate disposal of matter above the mean high water line on beaches adjacent to the sanctuary, except as regards discharges that enter the sanctuary and injure a sanctuary resource. NOAA has included a strategy in the MBNMS Management Plan (HDD-5) to address alternatives to ocean disposal, particularly beneficial uses such as beach nourishment. NOAA deleted language in this strategy regarding the lack of need for additional beach nourishment sites in response to comments.

Comment: California Coastal Commission staff notes the increasing number of incremental requests for changing permitted harbor dredging operations in the region. NOAA and the Commission should work with the harbors and require them to conduct a more systematic and longer review of their operation needs and materials management. Commission staff recommends additional text for Strategy HDD-5 Alternative Disposal Methods to explore a long-term approach with harbors and deletion of text that characterized a lack of need for additional beach nourishment sites within the MBNMS since this characterization may be premature.

Response: NOAA has also received requests to increase amounts of dredged material to be disposed in the MBNMS. NOAA is considering a variety of potential modifications in the approach to dredged material

disposal, including additional use of multiyear authorizations, an ongoing interagency workgroup to review permits and a small relocation of one of the designated disposal sites at Moss Landing. NOAA also considers various means to reduce dredging requirements through source reduction or bypasses, and options for potential beneficial uses. NOAA has added additional language to the MBNMS Management Plan to reflect the need for long term planning, similar to the approach to coastal armoring, and has deleted the language in Strategy HDD-5 regarding lack of need for additional beach nourishment sites.

Comment: EPA guidelines do not state that dredged material for ocean disposal must be at least 80 percent sand.

Response: The Clean Water Act guidelines for disposal of dredged material state that material should be “predominantly” sand for the purpose of applying the testing exclusion criteria of the ocean dumping regulations in Section 404. The EPA has provided guidance stating “predominantly” should be interpreted as 80%.

Marine Debris

Comment: The sanctuaries need stronger comprehensive action plans and implementation to halt marine debris and litter, including more staffing. Also, there is a concern that none of the water quality platforms deal with the prevalence of marine debris in the MBNMS. Marine debris is a separate important facet of urban run off. NOAA should ask restaurants to use biodegradable take-out containers, employ more cleanup crews, and install more recycling bins (e.g., there are no recycling bins on Fisherman’s Wharf in Monterey). Other recommended measures include: installing filters for all the drains to the bay, in order to catch large debris; employing crews to clean up the marine environment like on the highways; working with companies to change the shape of items that become debris so that the items don’t look so much like food that animals eat; and educating the population about the dangers of marine debris, regarding ingestion, entanglement, etc. There are laws requiring public outreach and education regarding storm drains, but very little effort/attention is given to this important issue.

Response: NOAA will work closely with the State to address issues identified in the February 2007 resolution passed by the Ocean Protection Council to reduce and prevent marine debris. There are also opportunities to partner with the recently created NOAA Marine Debris Program to address issues related to marine debris in sanctuaries. The NOAA Marine Debris Program has awarded grants to reduce and remove marine debris from the sanctuaries on the central California coast. NOAA has incorporated monitoring of marine debris into monthly monitoring activities to better understand sources and timing of debris in sanctuaries. This information will help NOAA design targeted outreach and education messages to reduce marine debris. The MBNMS’s existing Urban Runoff Water Quality Action Plan addresses the problem of land based runoff including “marine debris.” NOAA has also developed restoration projects to remove submerged entanglement hazards and debris from the MBNMS.

Radioactive Waste

Comment: There is nuclear waste sitting on the ocean floor of GFNMS. Please do something about the nuclear waste.

Response: The GFNMS Management Plan includes Strategy RP-11 (Radioactive Waste Dump) to evaluate the condition of, and actual impacts on, sanctuary resources and qualities from the Farallon Islands radioactive waste dump site.

Comment: The GFNMS Resource Protection Action Plan strategy for radioactive waste should begin year one instead of year four. Also this strategy should include a proposal for the designation and demarcation of the approximate area of the dump site on the nautical charts.

Response: GFNMS Management Plan Strategy RP-11 (Radioactive Waste Dump) has been amended to seek to include an update to the NOAA nautical charts of the known area with radioactive waste containers. The timeline has been modified to implement strategy RP-11 starting in Year 1.

Use of Dispersants

Comment: A coordinated sanctuary emergency plan should include coordination and decision-making responsibilities on use of dispersants.

Response: Any sanctuary emergency response plan will include identification of decision-making responsibilities on use of dispersants. Use of dispersants in national marine sanctuaries is discussed in the Sector San Francisco Oil Spill Area Contingency Plans for northern and central California coastal counties.

Water Quality

Comment: Ensure that the final management plans contain strong goals, regulations and implementation strategies for improving water quality in our oceans, particularly regarding the land-sea connection.

Response: The Water Quality Protection Program Implementation Action Plan in the MBNMS Management Plan summarizes five action plans developed through a collaborative stakeholder process to address a variety of water quality issues related to the land-sea connection, including urban and agricultural runoff, microbial contamination of beaches, and regional monitoring. The GFNMS Management Plan also contains a water quality Action Plan with an emphasis on watershed and water quality issues affecting bays and estuaries. These plans contain a wide range of implementation strategies including management measures, improved monitoring, and outreach and education. In addition, existing regulations for MBNMS prohibit discharges from outside the boundary of the sanctuary that enter and injure a sanctuary resource or quality, and identical regulatory language is proposed as a new regulation for GFNMS and as a modification of the existing CBNMS regulation.

Comment: Urban runoff needs to be addressed by reducing impervious surfaces. In that way, pollutants into the sanctuary would be minimized and groundwater could be recharged. This will reduce the need for desalinization plants and their detrimental environmental effects.

Response: NOAA promotes reduction of impervious surfaces in outreach and technical training programs, and also ensures these techniques are addressed in the National Pollutant Discharge Elimination System (NPDES) storm water management plans developed by local cities with the state's Regional Water Quality Control Boards. Cities are required as part of these state-regulated plans to implement best management practices reducing permeable surfaces at new construction sites as well as addressing water flowing off new developments. In addition, NOAA added a strategy to the MBNMS Water Quality Protection Program Implementation Plan addressing the need for more permeable surfaces in watersheds bordering the sanctuary. This strategy identifies measures to replace impermeable surfaces with permeable surfaces and to promote Low Impact Development strategies in new developments. These efforts will help to recharge ground water and improve the quality of water flowing to the sanctuary.

Comment: The San Lorenzo River has some water quality problems and is being tested, at great cost to the water company. There are several agencies involved, all specifying different things, which is not helping. The problems might be solved if a lead agency could work on this river and coordinate agency efforts.

Response: Several management plans have been developed and implemented in the San Lorenzo River watershed by local agencies and organizations; notably the 1979 San Lorenzo River Watershed Management Plan and the 1995 Wastewater Management Plan for the San Lorenzo River Watershed. Each of these plans contains detailed recommendations that address water supply, water quality, erosion and sedimentation, instream flows, fishery resources, and aquatic habitat, among many others. These programs have resulted in improvements in water quality of the San Lorenzo River and reductions in septic system failures and nitrate concentrations. More work remains, particularly for sediment reduction, and the Santa Cruz County Environmental Health Services Department is the lead on implementation of these plans. Specific concerns mentioned in the comment are best addressed by working directly with Santa Cruz County. In addition, NOAA has a long standing partnership with the County, as the County is an active participant on the Water Quality Protection Program's Committee.

Comment: The Monterey County Board of Supervisors wants to increase population by 50 percent within 20 years. Is this going to create more pollution in the ocean (e.g., more oil runoff)?

Response: Population projections in all counties adjacent to the three sanctuaries indicate that population growth will increase in the future. NOAA regulates discharges into all three sanctuaries through various prohibitions. The GFNMS and MBNMS Management Plans include Water Quality Action Plans addressing discharges through runoff from land-based sources. The NMSP will continue to work with local governments and government associations to reduce pollutant discharges.

Comment: The GFNMS may want to look beyond traditional pollutants and focus on emerging contaminants like pharmaceuticals, pesticides and chemicals that are found in treated and untreated wastewater and agricultural and urban runoff. Land based water quality problems are passed on to the oceans and the Sanctuary must vigorously advocate for aggressive study and regulation of all pollutants.

Response: Treated and untreated wastewater, agricultural and urban runoff, and various land based water quality issues are addressed in the Water Quality Action Plan of the GFNMS proposed Management Plan. Specific reference to pharmaceuticals and other micropollutants has been added to Activity 3.1 of the Water Quality Action Plan.

Comment: Beach closures and postings are also due to microbial contamination from wildlife in and around the ocean. The goal of the Beach Closure and Microbial Contamination Action Plan should be modified to include "eliminate beach closures by reducing microbial contamination caused by human activities."

Response: Beaches are closed only when a known sewer spill has occurred. Beach postings are due to high *E.coli* and *Enterrococcus* concentrations from unknown sources. The Action Plan includes references to the fact there are many sources of microbial contamination that may trigger a posting. There are many contributors of microbial contamination in the ocean, of which anthropogenic sources are just one. The Beach Closure Action Plan explains the difficulty in distinguishing the source of the *E. coli*. The first three strategies address the use and need for new technology to both pinpoint sources of *E.coli* and to find alternative indicators identifying the pathogens causing harm to both humans and marine organisms.

Comment: Marine mammals and birds are a significant source of bacterial contamination yet this section is heavily biased toward sewers as the main source of the contamination. The City of Monterey has inspected all of the sewer lines and has not found any illicit connections.

Response: Because the Action Plan is intent on reducing beach closures, the discussion and strategies focus on the source of beach closures - known sewer spills or overflows. The reasons for potential overflows and the strategies to reduce them are discussed. NOAA is aware warm blooded animals contribute to microbial contamination in the environment. This is a natural phenomenon, and it is unfortunate the technology is not readily available to distinguish between the different sources. The Action Plan addresses this and the need to support research to find a real time indicator identifying contamination sources. NOAA values the City of Monterey's partnership and recognizes the leadership role it has taken in regard to proactive responses to water quality conditions flowing into the Bay. This Action Plan addresses the entire sanctuary including other urban areas that have not yet addressed these issues.

Comment: Is there local data to back up the assertion that public sanitary sewers are a significant source of anthropogenic bacterial contamination?

Response: Strategy 5 in the MBNMS Beach Closures Action Plan states that sewer systems, septic systems and urban runoff are a significant pathway of anthropogenic bacterial contamination. Sewers and septic systems carry bacteria. Because they carry sewage, which contains bacteria, they present a risk of discharge of bacteria into the environment. The plan includes strategies to minimize this risk.

Comment: Regarding the Beach Closure & Microbial Contamination Action Plan, since these are already required by the sewer system Waste Discharge Requirements (WDRs), how is the MBNMS going to encourage those of us with WDRs to do what is already mandated?

Response: NOAA will promote adequate ongoing maintenance of sewer systems with a diversity of approaches including assisting local jurisdictions whenever possible to access grant funding to implement the strategies that are identified in /strategy 5 of the Beach Closures Action Plan.

Comment: It is not clear what criteria for the certification of an approved vendor would be to address sewer system upsets. How would a voluntary lateral inspection program be encouraged?

Response: Currently, in certain cities on the Monterey Peninsula, plumbers that attend workshops designed to educate the industry on prevention of sewer spills are put on a list and are recommended by the public works department. This is one way to create an "approved vendor list." Regarding the voluntary lateral inspection, there are cities on the peninsula already implementing a sewer lateral program. NOAA will look to those programs for guidance and to determine what incentives work.

Comment: Why are the coordination and outreach efforts only being aimed at the Phase II communities?

Response: Phase II communities were specifically identified because there is only one Phase I city within the Sanctuary watersheds and that city, while updating its SWMP, has had a plan in effect for over 5 years. The focus currently is on Phase II cities that are developing their plans and need more assistance for regional outreach coordination. However, reference to Phase I cities has been added to Activity 7.2 in the MBNMS Beach Closure Action Plan.

Comment: The sanctuary should work through the state to get notifications via the state's notification system. Notifying the sanctuary of all spills appears to be overly burdensome.

Response: Strategy 9 in the MBNMS Beach Closures Action Plan identifies the need to have a single 24 hour number to call for sewer spill emergencies. This number has been created for the Monterey Peninsula cities by calling 1-800-CLEANUP. The strategy does not require that the sanctuary be notified directly.

Comment: The Monterey Chapter of the Surfriders requests more money be allocated to water quality testing and offers their organization as a partner to develop a comprehensive educational program that increases the public's awareness of the issue.

Response: NOAA encourages Surfrider Foundation members to participate in the Citizen Watershed Monitoring Network volunteer monitoring programs. There is identified capacity to enhance these programs by adding monitoring sites or expanding the duration of the monitoring possibly into the winter months.

Comment: Do red tides in nearshore waters relate to the level of nutrients in urban runoff?

Response: Excess nutrients contribute to the formation of algal blooms that can be red in color. There are also recent laboratory studies that have been conducted at UCSC directly correlating the amount of urea to domoic acid in algal blooms. Urea is a form of nitrogen found in fertilizer and animal waste. Domoic acid is known to be harmful to both humans and marine organisms.

Comment: The sanctuaries need to pursue an aggressive, coordinated water quality program by working closely with the U.S. EPA and California State Water Resources Control Board. Also, the sanctuaries need to work closely with local, regional, state and federal agencies in rigorous monitoring regulation of all toxics and pathogens. These policies must be frequently revised in view of rapidly advancing scientific evidence of toxicity for many man-made chemistries that have heretofore not been adequately evaluated for biological impacts.

Response: NOAA and its partners created the MBNMS Water Quality Protection Program in 1994 with twenty-five federal, state and local agencies, public and private groups in order to protect and enhance water quality in the sanctuary and its watersheds. There is a long history of multiple agencies collaborating on water quality issues, and NOAA is also pursuing these same relationships for the watersheds of the Gulf of the Farallones and Cordell Bank NMS. Currently, the MBNMS is synthesizing and assessing major water quality monitoring programs within the sanctuary to determine the state of water quality, trends over time, effectiveness of management measures and appropriate recommendations to improve a regional monitoring program. To address emerging water quality issues associated with anthropogenic sources, the Beach Closure and Microbial Contamination Action Plan in the MBNMS Management Plan identifies four activities to investigate indicators that provide real time information on pollutants, and to develop indicators that correspond directly to disease causing agents and are able to pinpoint sources of the pathogens.

Comment: The NMSP needs to partner with local water quality groups (e.g., Bodega Bay Watershed Council and others) to address the problem of runoff from erosion and sedimentation (non-point source pollution). The whole system needs to be evaluated to understand what is flowing into the estuaries, as the health is deteriorating. There is a need to look "upstream" to address the problem.

Response: It is important to investigate sources of pollution upstream and partner with local water quality groups and other agencies to address the problems.

Comment: Shouldn't there be one governmental authority that would be in charge of pollution on the beaches? Greater water quality monitoring is needed in the winter season, when runoff can most likely bring e-coli and toxins into the bay and surfing areas.

Response: California Assembly Bill 411, passed in 1997, gave responsibility to county environmental health departments along the coast to monitor at public beaches with more than 50,000 visitors a year and that are adjacent to storm drain outfalls. AB 411 also set uniform health standards for those monitoring programs and requires health officials to close beaches when pollution levels exceed the established limits. It also set up a hotline for beach closure information. Counties monitor pollution levels weekly from April through October and then monthly from November through March. In addition, the Beach Closures and Microbial Contamination Action Plan in the MBNMS Management Plan contains strategies to address microbial contamination on beaches throughout the sanctuary. These strategies include more real time detection, source tracking, infrastructure improvements, increased monitoring, enhanced notification, technical training, public outreach, enforcement and emergency response.

Comment: The sanctuaries are restricted in their ability to limit toxic runoff, and correct deficits in antiquated treatment systems. More effective regulation of pollution is still needed, especially where public health is often put at risk by bacterial contamination at beaches. The NMSP needs to look for authority to regulate runoff into the ocean from land-based sources, which is the source of a lot of pollution.

Response: The NMSP is able to address sources of water pollution through both regulatory and non-regulatory means, and partners with other federal, state and local agencies and organizations to address these issues (see above response). In addition, the Beach Closures and Microbial Contamination Action Plan in the MBNMS Management Plan contains multiple strategies to address microbial contamination at beaches.

Comment: NOAA should address cleaning storm drain runoff, which is the worst thing that is polluting our oceans.

Response: The Sanctuary Management Plans contain detailed Water Quality Action Plans that include provisions to address stormwater runoff. The Action Plans include many measures such as working with relevant jurisdictions to reduce contaminants in stormwater runoff and implementing extensive education programs. For additional details see the three Draft Management Plans. The NMSP has worked closely with local municipalities over the last ten years to implement these strategies.

Comment: The NMSP should evaluate the feasibility of creating a program in cooperation with the coastal cities and operators of proposed desalination facilities to bring one or two historic lakes (specifically Merritt and Espinosa Lakes, historic water bodies that are still surrounded by rural lands with large watersheds, both of which must be mechanically drained and which empty into the existing Tembladero Slough) and marsh lands back into existence adjacent to the MBNMS. These water bodies historically collected and filtered runoff.

Response: In recognition of the important roles of these types of water bodies, the Water Quality Protection Program Implementation Action Plan in the MBNMS Management Plan includes a recommendation to develop a new plan focused on protection of wetland and riparian corridors. It addresses the need for wetland inventory, assessment and restoration. The Action Plan includes a strategy to identify historic wetlands that might be restored and used for multiple benefits such as ground water recharge, water quality improvements and possibly water reuse.

Comment: The NMSP needs to expand the non-point source pollution water quality issue into pathogen pollution and address the land/sea connection (e.g., feral cats and the parasite being shed by cats into the watershed and sanctuary, which kills otters). Pathogen pollution and non-point source pollution are going to become more critical as the landscape continues to be used by humans.

Response: The NMSP is very concerned about the decline of the Southern Sea Otter population. Research has shown nearly 40 percent of sea otter deaths were due to protozoal parasites and bacteria spread by fecal contamination of nearshore marine waters by terrestrial animals or humans. The Beach Closure and Microbial Contamination Action Plan in the MBNMS Management Plan includes numerous strategies to address this issue. NOAA also has a long term program monitoring bacterial contamination discharging from urban storm drains and works closely with cities to identify sources of the bacteria.

Comment: There needs to be horse manure management education. A lot of manure is not composted or managed and there is nitrogen and sediment going into the creeks.

Response: The Water Quality Protection Program Action Plan in the MBNMS Management Plan contains various strategies to educate ranchers and rural homeowners about best management practices that can be implemented on ranches and ranchettes to improve water quality. NOAA coordinates with partners such as the Natural Resources Conservation Service, the Resource Conservation Districts and local Farm Bureaus to implement the agricultural aspects of the plan through numerous strategies such as improved communications among ranchers, provision of technical expertise, and funding incentives. These partners identify specific ranches having manure management issues and help them mitigate sources of manure entering local streams.

Comment: The management plans should address acid pollution effects on marine life, as research indicates that crustaceans will be harmed to the point of extinction in about 25 years, if acidification continues. The main source of acid pollution in the area is woodburning – fireplaces and fire pits.

Response: In its response to comments regarding global warming and in the implementing additions to the Management Plan action plans, NOAA will continue to evaluate and address global warming impacts on a number of factors including ocean chemistry, including acidification as the key chemical change being projected. The management actions at this time, however, do not address the sources the commenter mentions. NOAA believes this type of point source pollution is out of its scope of authority, better managed by relevant federal, state, and local authorities.

Comment: The “enter and injure” discharge rule should be worded to include discharge from land-based sources, thus allowing similar prosecution and enforcement.

Response: The regulation includes material or other matter from land-based sources. The prohibition is broad and includes discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the sanctuary and injures a sanctuary resource or quality including land-based sources of discharge.

Comment: The Sanctuary needs an “enter and injure” clause to its regulations to protect the Sonoma coast from pollution and mining discharges. There was also concern expressed about proposed and current mining operations in Sonoma County causing sedimentation, siltation, a need for dredging in Bodega Harbor, and damage to fish from dynamite blasting.

Response: NOAA’s regulations would prohibit discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality. (This regulation is already in effect for the MBNMS.) Although this regulation by itself would not prevent activities beyond the Sanctuary boundary (e.g., coastal development, dredging, mining or other resource extraction activities) including in Bodega Harbor, it can be used to prevent injury to sanctuary resources from these activities.

Vessel Abandonment

Comment: The proposed prohibition against abandoning a vessel would make it a federal penalty to leave: “... a vessel at anchor when its condition creates potential for a grounding, discharge, or deposit, and the owner/operator fails to secure the vessel in a timely manner.” This language does not make sense. The regulation states that the vessel in question would be anchored. Normally, if a vessel is anchored, it is secured. Thus, the phrase “secure the vessel in a timely manner” would not be germane in this situation. NOAA should re-write this section for clarity. Also, the phrase “potential for grounding” is overly broad and would be subject to arbitrary law enforcement standards.

Response: There have been many situations in the sanctuaries where a vessel has been either left adrift, left partially submerged at anchor, or is dragging anchor in such a way as to create an imminent threat of a grounding or sinking. Previously, NOAA had to wait until these imperiled vessels went aground or sank in order to take action, as no discharge or disturbance of the seabed had yet occurred. This regulation would allow NOAA to be more proactive in preventing harm to marine resources. The proposed regulation clearly states that an anchored vessel is not considered secure if it is in such a state that it creates the potential for a grounding, discharge, or deposit and the owner / operator fails to remedy the situation. NOAA believes the regulation as drafted provides sufficient guidance to enforcement personnel to assess environmental threats and scale their response to the circumstances in a given incident.

Comment: The proposed prohibition regarding deserted vessels lacks clear standards and is too broad. The Coast Guard should be consulted on this issue. The standard for issuing a civil penalty of any size should be spelled out and should only be issued for a condition that everyone agrees is grossly negligent and imminently dangerous. The protocols established by the sanctuary must include consultation with the Coast Guard and any applicable local port authority. With a lack of a complete network of harbors of refuge, a sailboat with an outboard engine with two gallons of gasoline could sink and be fined for failing to salvage the vessel. Also, a vessel adrift from a boating accident should not be penalized, especially when the occupants may have lost their lives due to a disastrous situation beyond their control.

Response: The proposed definition for “deserting” a vessel lists clear and specific qualifying standards, including the physical state of the vessel, notification protocols, specific time requirements, and required hazard remediation actions. The U.S. Coast Guard has had an opportunity to review the draft regulation and has forwarded no objections or comments to NOAA regarding this issue. Coast Guard regulations about vessel abandonment primarily center on obstruction of navigable waterways and public safety issues, so the Coast Guard’s definition and timelines for addressing abandoned vessels are designed for an intent other than natural resource protection. The sanctuary definition for a deserted vessel is designed to address the risk of natural resource injury from an unattended vessel through its potential grounding, sinking, discharging of hazardous materials and marine debris. Thus, a deserted vessel presents a more immediate concern to natural resource managers tasked with protecting marine habitat and wildlife. NOAA civil penalties are assessed based upon Federal law and the particular facts of a case, including aggravating and mitigating circumstances.

The proposed regulation would in no way limit the authority of the Coast Guard or local port districts to manage the marine waters within their jurisdictions. NOAA enforcement officials consider aggravating circumstances and mitigating circumstances in all vessel casualty incidents and assess penalties appropriately.

Comment: Local and state enforcement agencies should be the point of contact regarding deserted vessels.

Response: Deserted vessels that pose a threat to sanctuary resources and qualities require immediate attention before being rapidly destroyed by open ocean forces. State and local enforcement agencies have limited resources and mandates to address derelict vessels on short notice or to compel immediate corrective action by a vessel owner / operator. State and local jurisdictions overlay less than 20% of sanctuary waters. Also, State and local governments must often give first priority to derelict vessel removal from inland waterways due to navigational obstruction issues or constituent concerns. Vessel casualties can present a significant threat anywhere in the Sanctuaries and at any time. The MBNMS and GFNMS need consistent regulations that compel immediate action by vessel operators/owners to remediate threats to protected national resources.

Comment: The proposed prohibition regarding deserted vessels could be a detriment to safety of life at sea, in that the threat of penalty may cause a master to delay abandonment of a sinking vessel beyond what is prudent. This regulation should be much more narrowly drafted to allow for a master's judgment in extremis.

Response: Sanctuary regulations include exceptions for otherwise prohibited activities when conducted in response to an emergency threatening life, property, or the environment. Thus evacuation of crew members whose lives are in immediate danger would constitute an exception to the prohibition. A vessel master's primary duty is to safeguard the lives of his/her crew and passengers, in all circumstances. Further, NOAA considers mitigating circumstances when reviewing vessel casualty incidents for potential legal action. However, the prohibition against deserting a vessel could apply, for example, where the crew has been removed to safety and the vessel owner or operator fails to take immediate action to prevent environmental damage from a vessel casualty or where other circumstances warrant such application.

Vessel Discharges

Note: For the purposes of the responses below, "discharge" is intended also to encompass "deposit."

Comment: The regulations for the MBNMS should prohibit large cargo vessels from operating within Areas of Special Biological Significance (ASBSs).

Response: The ASBSs in the MBNMS are nearshore and do not need protection from transiting cargo ships. Vessel traffic lanes were established in offshore waters of the MBNMS for the movement of cargo vessels through the sanctuary. These lanes are well outside of ASBS areas. The ASBSs within the MBNMS are protected by the same sanctuary discharge prohibitions that apply throughout the Sanctuary.

Comment: The proposed cross-cutting vessel discharge regulations, which allow the discharge of "biodegradable effluent incidental to vessel use and generated by an operable Type I or II marine sanitation device..." regardless of the size of the vessel, may be inconsistent with State law. Recently enacted State regulations (SB 771, Ch. 588 of the Statutes of 2005, titled "The California Clean Coast Act of 2005") prohibit sewage and graywater discharges (including oily bilgewater, hazardous waste and other waste – photographic, dry-cleaning and medical waste) from vessels of 300 gross registered tons or more if vessels have holding tank capacity (rather than allowing discharge from Type II MSD). NOAA should consider

whether it is appropriate to change the management plans and regulations to reflect these State standards or if this current proposal can be complementarily implemented with the State standards.

Response: The regulations would prohibit discharging any matter from a cruise ship other than engine or generator cooling water and anchor wash. For vessels other than cruise ships, the regulations clarify that discharges/deposits allowed from marine sanitation devices apply only to Type I and Type II marine sanitation devices, and vessel operators are required to lock all marine sanitation devices in a manner that prevents discharge of untreated sewage. In response to the comment, the NMSP proposes prohibiting sewage and graywater discharges from vessels of 300 gross tons or more, consistent with SB771. Similar to the State regulation, the prohibition would only apply if vessels have sufficient holding tank capacity when in sanctuary waters.

Comment: MARPOL Annexes should provide a benchmark for “minimum” standards for compliance by vessels operating within a national marine sanctuary.

Response: MARPOL Annexes are the original minimum standards for compliance for vessels operating in a national marine sanctuary. The national marine sanctuaries include additional regulations and higher standards for discharges and use of marine sanitation devices, which are desirable to protect sanctuary resources and qualities from marine pollution. The regulations are enforced in accordance with international law..

Comment: The need and intent of the proposed regulation for locking marine sanitation devices are not entirely clear. The proposal to lock all sanitation devices on small vessels in sanctuary waters has neither a factual basis nor extensive analysis.

Response: The MBNMS regulations have included a prohibition against discharge of untreated sewage from vessels since 1992; however, detection and identification of unlawful sewage discharges from vessels at sea and/or underway has proven to be impractical. The requirement that MSDs be locked in a manner that prevents overboard discharges (e.g., locking closed an overboard discharge valve) provides a practical compliance element for enforcing this prohibition and helps prevent both intentional and unintentional overboard discharges of untreated sewage within the MBNMS.

Comment: Vessels 300 GRT or greater with insufficient holding capacity for treated sewage from a Type I or II MSD may not be able to “lock” the system, yet would still only discharge treated sewage above and beyond their holding capacity. NOAA should substitute the term “operate” for the term “lock” to avoid confusion and provide protection sought by the regulation.

Response: The intention of the regulation for restricting discharges of treated sewage from vessels 300 GRT or greater is to minimize discharges from these large vessels while in the sanctuary. If the vessel does not have sufficient holding capacity while operating in the sanctuary, the vessel may discharge sewage treated by a Type I or II MSD. The term “lock” only refers to ensuring the device is operational and not in a mode bypassing the treatment device. NOAA understands the determination as to whether a vessel has sufficient holding tank capacity to provide for no discharge of treated sewage or graywater will vary depending on a number of factors and must be determined by each vessel at the time it enters the boundaries of the National Marine Sanctuary. A vessel with adequate holding capacity must retain those discharges to the extent possible in designated waters. Vessels without holding capacity, either because of a lack of holding tanks or lack of excess capacity within their tanks, may discharge treated sewage and graywater in designated waters.

Comment: Adequate education about these discharge restrictions will ensure the ocean going fleet retains all discharges to the greatest extent possible within these sanctuaries.

Response: NOAA will continue to educate vessel operators about existing and new regulations regarding discharge of matter in National Marine Sanctuaries. NOAA will also seek assistance from the various marine shipping representatives such as the World Shipping Council and Pacific Merchant Shipping Association to educate its member companies about operational restrictions in National Marine Sanctuaries.

Comment: More consideration and discussion should be devoted to the need to control microbial pathogens from anthropogenic onshore sources that may affect the marine habitat, as well as from vessel discharges. These are highly significant water quality problems that are expected to increase with population growth and increases in vessel traffic. This issue needs more explicit attention in order to plan for the protection of both humans visiting the sanctuaries as well as the veterinary medical implications of current research in the survival of waterborne microbial pathogens in marine ecosystems. Viruses are a concern due to their high survival rates in marine waters and their capacity for causing infection in much lower doses than are generally required in the case of bacterial pathogens. They can pose both a public health hazard and veterinary medical hazard to various species, as implicated in various studies. Some of the implications of these findings strongly suggest that current federal performance standards for MSDs, based as they are on fecal coliforms, are insufficiently protective of both human water-contact activities and marine mammals. Graywater discharges from vessels are generally untreated, yet may also contain a similar range of microbial pathogens, in particular those associated with galley waste (e.g., Salmonella), hand-washing facilities, laundry services, and bathing facilities. NOAA should prohibit discharges of graywater and treated sewage from vessels in each sanctuary in the following areas: all State waters, other locations where there are resident colonies of protected marine mammals, shellfish beds, and areas in which the public has significant contact with either marine waters and/or resources harvested in the sanctuaries, and other locations which NOAA determines there is a significant likelihood that wildlife, fisheries, and/or the public could be harmed from exposure to microbial pathogens.

Response: NOAA recognizes microbial contamination is a significant issue for health of living marine resources. These contaminants from anthropogenic land based sources and from vessels are addressed in the management plans and regulations. Proposed regulations prohibit discharge of sewage and graywater from cruise ships and vessels 300 gross tons or more in all three sanctuaries. Discharge of sewage from other types of vessels is prohibited except for effluents free from harmful matter and incidental to vessel use and generated by an operable Type I or Type II marine sanitation device. Discharge of graywater from other types of vessels is prohibited under existing and proposed regulations in GFNMS and CBNMS, while the proposed regulation for MBNMS would allow the discharge of graywater only if it does not contain harmful matter. For land-based sources of microbial contamination, the MBNMS Beach Closures and Microbial Contamination Action Plan includes strategies for working with partners improving analyses and reducing microbial contamination, including enhanced research and monitoring, notification programs, source control, technical training, public outreach and enforcement. In addition, NMSP staff review, comment on and authorize National Pollutant Discharge Elimination System (NPDES) permits ensuring sewage treatment plants and municipal stormwater systems are adequately addressing microbial contamination.

Comment: What benefit would be gained from a prohibition on discharges from small vessels (with small crew or passenger loads) through all of the sanctuary waters, given both the *de minimus* impact of such discharges on water quality and the vast size of the combined waters of the three sanctuaries? That a

transiting recreational boater unfamiliar with sanctuary regulations would be subject to fairly considerable penalties for using a non-biodegradable cleaning agent while washing his deck or dishes demonstrates the unfortunate consequences of excessive regulation.

Response: The purpose of requiring deck wash down and graywater to be biodegradable was to prevent boaters from washing their decks down with solvents, or discharging harmful chemicals in their graywater. However, NOAA agrees use of the term “biodegradable” potentially raises enforcement and compliance issues. It is not a term that has a recognized legal definition and products are labeled as “biodegradable” without reference to a fixed set of standards. NOAA could define the term; however, it would not be reasonable to expect a boater to know which of the wide spectrum of products labeled as “biodegradable” meet NOAA’s definition. For all three sanctuaries, NOAA plans to replace the requirement that deck wash down and graywater be “biodegradable” with the requirement that they be free of detectable levels of “harmful matter” as defined in the regulations. This facilitates compliance by providing boaters a definition of what is prohibited, and will be more focused on the type of contaminants that pose the greatest threat to water quality.

Comment: The DEIS frequently cites recreational boating as a source of water contamination, which presumably underlies its proposed requirements with respect to graywater, bilge, deck wash and sewage discharges. Yet, the DEIS provides little in the way of specific data regarding the extent of potential water contamination associated with recreational boating or the impact such contamination would have on marine life.

Response: The changes to the discharge regulations with respect to use of marine sanitation devices on vessels are meant to clarify existing prohibitions. The FEIS does not distinguish discharges from commercial or recreational vessels, only a vessel’s size and the material or other matter discharged. Discussions of those discharges and impacts on marine life are discussed in the Biological Resources section of the FEIS. New prohibitions with respect to cruise ships and vessels 300 gross tons or more address impacts associated with discharges from large vessels.

Comment: The proposed rule that prohibits discharge or depositing of any material or other matter from beyond the boundary of the Sanctuary that subsequently enters the sanctuary should be deleted. It is absurd to the extreme for the NMSP to seek to impose its civil and criminal authorities to activities conducted outside of any sanctuary boundaries.

Response: Activities taking place beyond sanctuary boundaries are only subject to this regulation if the discharge injures a sanctuary resource or quality within the sanctuary. This is not a new regulation for MBNMS, where it has been in place since 1993. The proposed regulation does not change the boundaries of the sanctuary except for the addition of the Davidson Seamount to the MBNMS. The regulation has two additive elements. In order for a violation to occur, the material discharged or deposited from beyond the boundary of the sanctuary subsequently entering the sanctuary must also injure a sanctuary resource or quality, except for the exclusions listed in the regulations.

Comment: The proposed cruise ship discharge prohibition should be extended to all ocean-going vessels. While the volume of discharge is considerably smaller per ship, relative to cruise ships, the total volume has the potential to harm sanctuary resources. Under the proposed regulations, “biodegradable” graywater and vessel deck wash, and “clean” bilge water could be discharged, but the regulations do not define biodegradable, and provide no means for actually enforcing these limitations. Graywater can contain pollutants such as oil, grease, ammonia, detergents, metals, and pesticides. Even in minuscule amounts, oil in

bilge water or graywater has the potential to harm sanctuary resources. The best way to ensure that sanctuary resources are protected is to prohibit discharges completely. Without significant enforcement efforts, the ability to distinguish “clean” discharge from harmful effluent is nearly impossible. In addition, the sanctuaries should implement an education, monitoring and enforcement program similar to those proposed for cruise ships.

Response: Regulations for each of the sanctuaries prohibit the discharge of most matter; however, prohibiting discharges completely would be nearly impossible given the size of the sanctuaries, use of the sanctuaries by commercial and recreational vessels, and proximity to coastal development. NOAA included additional regulations restricting treated waste and graywater discharges from vessels 300 gross registered tons or greater with sufficient holding capacity while in the sanctuary. See the response in this section regarding graywater and the term “biodegradable.”

Comment: Discharge from advance wastewater purification (AWP) systems on cruise ships should be permitted. These systems provide tertiary treatment resulting in an effluent quality cleaner than a Type II MSD and a majority of shoreside treatment facilities. Extensive study in Alaska has shown these systems to be acceptable for discharge and the US EPA is evaluating these systems. NOAA should consult closely with the EPA and Alaska Department of Environmental Conservation as they have both done substantive work on this issue.

Response: The DEIS evaluated an alternative regulation allowing cruise ships to discharge from advanced wastewater systems (see DEIS Section 2.2.1 for a description of this alternative). NOAA is aware of the work done by EPA and the Alaska Department of Environmental Conservation regarding AWP systems. The program adopted in Alaska is a complex arrangement requiring issuance of a permit, prior demonstration that the ships can meet water quality standards based on independent contractor evaluation, environmental compliance fees, wastewater sampling and testing protocols, record keeping and reporting protocols, on-board observers, and a tax per passenger to fund the administration of the program. Such a program is inherently difficult to monitor and enforce, and the NMSP has no mechanism in place for recouping the necessary funds needed to administer it (see below for additional information regarding the Alaska regulations). Also, the EPA studies indicate that although AWP systems remove most of the priority pollutants of concern, they do not adequately reduce discharge of ammonia and metals.

Comment: The DEIS analyzes an “alternative prohibition” that would allow discharge from AWP systems on cruise ships, in compliance with minimum effluent water quality standards established by the Coast Guard in Alaska at 33 CFR 159. There are serious concerns about the feasibility of administering, monitoring and enforcing such a program. The Alaska regulations have been widely recognized to lack adequate monitoring and enforcement prohibitions and the Alaska program has significant administrative costs. The DEIS does not provide this important information about recent changes to the Alaska regulations. The new Alaska regulations prohibit the discharge of any treated sewage, graywater, or other wastewater from a large passenger vessel unless the owner or operator obtains a permit and discharges may not violate any applicable effluent limits or standards under state or federal law. Unlike Alaska, the NMSP does not have a mechanism in place to recover the administration costs. The alternative prohibition is not feasible, is inconsistent with state law, and should not be adopted.

Response: The EIS has been revised to reflect the current cruise ship regulations in Alaska, as summarized in the comment. See FEIS Section 3.5.4. The referenced alternative prohibition that would allow discharge from AWP systems was analyzed in the DEIS, but it is not NOAA’s preferred alternative.

Comment: The Cruise Ship Discharges Action Plan's stated goal "to prevent impacts...from cruise ship discharges" is not consistent with proposed regulations. The proposed regulation prohibits any discharge. Ships have been outfitted with treatment units that convert all black and graywater into potable water, which can then be discharged. Several ships that visited Monterey with advanced treatment systems spent approximately 5 million dollars per ship to install such a system. There is no scientific basis to prohibit all discharges and no reason why material from this advanced treatment could not be discharged.

Response: By only allowing certain types of discharge from a cruise ship, NOAA has in effect targeted the discharges that have the potential to be harmful to sanctuary resources. Effluent monitoring would be cost prohibitive and infeasible, particularly for vessels underway. Additionally, ship discharge audits often reveal a discharge occurred but do not contain information on contaminant levels. Advanced waste water treatment systems (AWPs) on cruise ships do not always function properly and when they do, they may not effectively remove all contaminants. Therefore NOAA believes prohibiting discharge with specified exceptions is the most effective and enforceable regulation.

Comment: Didn't the California Governor recently sign a bill to prevent all cruise ship dumping?

Response: California law imposes restrictions on cruise ships operating in state waters or calling on state ports. These restrictions prohibit the burning of wastes and the discharging of graywater and sewage. However the national marine sanctuaries off of central California are predominantly federal waters (beyond 3 nautical miles) and not protected by the State's laws. The proposed regulations would be complementary to the State's laws and would provide comprehensive protection from the threat of cruise ship discharges throughout the three national marine sanctuaries.

Comment: Anchor wash and cooling water for all engines, whether main propulsion or electrical power generation should be permitted in GFNMS and CBNMS. This change will match the MBNMS regulation, which contains exemptions for vessel engine cooling water, vessel generator cooling water, or anchor wash.

Response: NOAA has incorporated revised wording in the draft final regulations allowing discharge of cooling water for engines and generators and anchor wash in all three sanctuaries.

Comment: Prohibiting discharge of any material from a cruise ship, other than the noted exceptions, could be interpreted to prohibit deck runoff during a rainstorm or high seas.

Response: The proposed regulations would not prohibit routine runoff of rainwater or ocean spray/water from vessels.

Comment: The preamble discussion in the proposed rule affecting cruise ships states that "...such discharged effluent associated with cruise ships may not adequately disperse to avoid harm to marine resources." This statement is inaccurate and misleading and is not supported by scientific evaluation. Numerous studies of discharged effluent dispersion from cruise ships indicate that both the near-field and far-field dispersion of discharged effluent is significantly high when a ship is underway at moderate speed. Please see the US EPA report on Cruise Ship Plume Tracking Survey (July 30, 2001). This report concludes that "...discharges from cruise ships undergo a dilution that is much greater than the initial dilution predicted by a model...Measure dilutions ranged from 195,000:1 to 666,000:1. Secondary dilution, as the effluent passes through the propellers is an important factor when considering the ambient concentrations of discharge effluents, as the effluent will undergo a dramatic and rapid dilution after mixing with ambient water in the prop wash. See additional studies by the State of Alaska, the US Navy and M. Rosenblatt and Sons. These

studies should be fully evaluated before enacting the proposed prohibition. The drafters of the proposed regulations consider the dilution from a moving source that is mixing its effluent in the propellers as inadequate and completely ignore fixed point discharges from municipal waste water treatment plants.

Response: NOAA reviewed these studies. Dilution may help reduce impacts; however, dilution rates vary with the speed of a vessel, and dilution does not change the volume of sewage, graywater, and bilge water discharged from the vessel. The NMSP also addresses discharges from wastewater treatment plants. These facilities are regulated by the state's Regional Water Quality Control Boards under the National Pollutant Discharge Elimination System (NPDES). The NMSP tracks and evaluates NPDES permit applications for these facilities, coordinates with the State on development of appropriate permit and monitoring conditions to ensure protection of sanctuary resources, and—for MBNMS-- issues a sanctuary authorization of the permit. The NMSP coordinates with State and local agencies to track and follow up on spills or other compliance violations at these facilities.

Comment: The proposed rule affecting cruise ships states, "Due to their sheer size and passenger capacity, cruise ships can cause serious impacts to the marine environment." It goes on to state that cruise ships generate sewage (blackwater), graywater from showers and sinks, oily bilge, hazardous waste, solid waste, toxic waste from dry cleaning and photo processing laboratories, and millions of gallons of ballast water containing potentially invasive species. The next sentence implies to the reader and public that cruise ships discharge all these byproducts and waste from a "single source" that is not regulated. This is misleading at best. Waste onboard cruise ships is fully regulated and very carefully handled. Hazardous waste is carefully segregated, packaged onboard and discharged ashore in accordance with very stringent Resource Conservation and Recovery Act requirements. Other waste is disposed of as permitted by law and regulation. The preamble should be rewritten to accurately reflect cruise industry environmental management practices and procedures.

Response: NOAA recognizes many cruise ship waste products are regulated, and has added clarifying language to the FEIS Section 2.2.1 and the three management plans indicating that many cruise ship discharges are regulated in some form by state or federal law and/or by international treaties.

Comment: Discharge from Type II MSD units onboard cruise ships should be permitted.

Response: NOAA is not proposing to allow discharge from Type II MSD units for cruise ships because Type II MSDs can fail to meet applicable federal standards. Also see section 3.5 of the FEIS, which contains a discussion of sewage and other discharges from cruise ships. Further, allowing Type II MSD discharge would be inconsistent with State of California discharge law for cruise ships.

Comment: Cruise ships should be permitted to discharge effluent oil content at 15 parts per million with no visible sheen.

Response: To ensure a heightened level of protection for the resources and qualities of the national marine sanctuaries, the oil discharge prohibition for all vessels is more restrictive than standards for areas outside of national marine sanctuaries.

Fishing Activities

Bottom Trawling

Comment: Trawling indiscriminately takes all ages and species in the trawl nets' paths, as well as damaging/destroying habitat. Bottom trawling should be prohibited in the three national marine sanctuaries.

Response: Bottom trawling is currently banned, with limited exceptions, in State waters. With the implementation of Amendment 19 to the Pacific Coast Groundfish Fishery Management Plan, NOAA provided a program to describe and protect essential fish habitat (EFH) for Pacific Coast Groundfish. The measures include fishing gear restrictions and prohibitions, areas that are closed to bottom trawling, and areas that are closed to all fishing that contacts the bottom.

Comment: Because bottom trawling impacts are in no way limited to the MBNMS, the MBNMS Bottom Trawling Action Plan should be made cross-cutting and apply to all three central coast sanctuaries. Some of the strategies described under the MB Action Plan are currently underway in GFNMS and CBNMS. Also, this Action Plan should include a more definitive commitment to pursue additional regulation of bottom trawling within sanctuary waters because bottom trawling is a destructive fishing practice that is inconsistent with the primary objective of the NMSP of resource protection.

Response: While the GFNMS and the CBNMS do not have an action plan focused specifically on the effects of bottom trawling on benthic habitats, they have plans that more broadly address the impacts from fishing on the ecosystem. In addition, NOAA proposes to prohibit bottom trawling in waters less than 50 fathoms on Cordell Bank itself. If NOAA determines additional regulations are necessary to prevent harm to the ecosystem from trawling, it will work with fishery managers and industry to develop regulations under the authority of the Magnuson Stevens Fishery Conservation and Management Act, the National Marine Sanctuaries Act, or both, as appropriate.

Comment: Commercial harvesting heavily impacts many species of fish. The sanctuary managers must have strong statutory authority to protect endangered fish stocks. Similarly, the sanctuaries should have strong voice in the supervision and enforcement in international fishing treaties as well as local regulation of both commercial and sport harvesting.

Response: The National Marine Sanctuaries Act provides strong authority to address and manage all sanctuary resources and qualities, including endangered fish stocks that are important to the health of a sanctuary ecosystem. NOAA's Ocean Service, National Marine Fisheries Service, Office of Law Enforcement and Office of International Affairs coordinate supervision and enforcement of international fishing treaties as well as local fishing activities affecting national marine sanctuaries.

Exceptions for Lawful Fishing Activities

Comment: NMSP should use the word 'lawful fishing' as opposed to 'traditional fishing' in the proposed discharge and seabed disturbance regulatory exceptions for MBNMS in order to be consistent with language in the GFNMS and CBNMS regulations.

Response: To use consistent terminology and avoid unnecessary confusion, NOAA proposes incorporating the term 'lawful fishing' into the regulations for all three national marine sanctuaries. This change does not affect the environmental impact analysis in the EIS, although references in the EIS to traditional fishing have been changed.

Fishing Gear

Comment: There is a problem with the use and definition of the term “bottom contact gear” in the alternative CBNMS seabed protection prohibition. Any fishing line with a weight at the end could be considered as bottom contact gear. A weighted line is necessary even for fishing off the bottom, as occurs with salmon or schooling rockfish and thus the prohibition would prevent commercial or recreational hook-and-line fishing. Also, the definition of bottom contact gear does not include pot or trap gear. Even though the definition is not meant to be inclusive, traps and pots constitute a primary gear type and should be added.

Response: For consistency, NOAA used the definition for bottom contact gear developed by the Pacific Fishery Management Council (PFMC) in Amendment 19 (Essential Fish Habitat) of the Pacific Coast Groundfish Fishery Management Plan. NOAA has inserted additional language in the EIS from the PFMC definition for clarification of this alternative. Additional EIS language states: *Other gear, midwater trawl gear for example, although it may occasionally make contact with the sea floor during deployment, is not considered a bottom contact gear because the gear is not designed for bottom contact, is not normally deployed so that it makes such contact, nor is such contact normally more than intermittent. Similarly, vertical hook-and-line gear that during normal deployment is not permanently in contact with the bottom, would not be considered bottom-contact gear.* NOAA has added pots and trap gear to the list of prohibited gear types for clarity.

Comment: Evidence from recent submersible surveys document a prevalence of entangled fishing gear on Cordell Bank suggests that additional prohibitions targeting longlines on Cordell Bank may also be warranted; NOAA is urged to address this issue.

Response: CBNMS staff completed a three-year process working with the Pacific Fishery Management Council and NOAA Fisheries to address gear impacts and determined additional regulations targeting longlines are not necessary at this time.

Comment: The proposed rule may impact commercial and recreational fishing through loss of fishing area within the 50-fathom isobath surrounding Cordell Bank. The exception for fishing is not well defined. As written, the proposed action may be misinterpreted to indicate that fishing in a location that is not regularly fished is not “normal fishing operations.” A more clear definition is needed.

Response: The wording has been revised for the Benthic Habitat Protection prohibition. See FEIS Section 2.2.2 and Table 2-1.

Comment: An official large whale disentanglement team should be established in Monterey Bay to respond to accidental entanglement in fishing gear or other entanglement. There is such a program developed by the Center for Coastal Studies on the East Coast.

Response: In the fall of 2006 and spring of 2008, NOAA offered public outreach events and conducted trainings in whale rescue techniques in conjunction with other partners to demonstrate techniques and gear used to disengage large whales from fishing gear and non-fishery equipment and marine debris. Training efforts were extended to a group of invited professionals who received special instruction consisting of classroom sessions and vessel-based training and exercises. Next steps would include establishing a large whale disentanglement team network. NOAA has added this as an action item to the Wildlife Disturbance: Marine Mammal, Seabird and Turtle Action Plan under Strategy MMST-4.

Comment: Make sure that the current regulations closing sanctuary waters to drift gillnetting during the fall each year remain in place to protect the endangered Pacific leatherback sea turtles. Federal fishery managers

are seriously considering reopening the area to drift gillnetters. MBNMS waters are among the most important on the west coast to turtle feeding. MBNMS managers have the authority and responsibility to protect endangered species in sanctuary waters regardless of what management measures are put into place by others.

Response: The NMFS is consulting with the NMSP regarding the potential issuance of an Exempted Fishing Permit for a single permittee to deploy drift gillnets during the fall. The NMSP will work closely with NMFS to ensure that any permitted drift gillnetting does not pose a threat to endangered species and birds in the Sanctuary.

Fishing Regulations

Comment: It was guaranteed in writing – known as ‘the promise’ - in the original designation documents that there would be no regulation governing fishing coming from the sanctuaries.

Response: The comment misunderstands and misstates the statement provided by NOAA in the 1992 MBNMS FEIS and Management Plan (FEIS/MP) and in similar documents for other national marine sanctuaries. In a response to comments published at page F-41 of the 1992 FEIS/MP, NOAA stated the sanctuary was not regulating fishing at that time but added that if sanctuary fishing regulations were necessary later to protect sanctuary resources and qualities, NOAA would take the steps required by section 304(a)(5) of the NMSA and applicable law. At page F-42 of the same document, NOAA explicitly stated certain fish species in the Sanctuary may eventually need to be regulated. NOAA did not and would not publish a statement promising not to ever use resource protection authority that Congress had provided.

Comment: Clarification is necessary on the term ‘resource’, which by definition could include fish species in Article IV. Scope of Regulations, Part D & F of the MBNMS designation document. Clarification is also necessary regarding the scope of these proposed regulations and whether or not they apply to fish species and/or the closure of federally regulated or state managed fisheries.

Response: The term “resource,” as it is used in the terms of designation for MBNMS, includes the fish and other living and non-living resources of the sanctuary. The regulations do not, however, restrict the take of fish species as part of legal fishing activities. If in the future, NOAA determines additional sanctuary fishing regulations are necessary, it would follow the promulgation and coordination processes required by Section 304(a)(5) of the NMSA.

Comment: The proposed fishing regulations, as written, would have the dire effect of destroying the commercial fishing industry which is the economic life blood of the Monterey peninsula.

Response: The regulations do not contain prohibitions directly affecting or targeting fishing activities. Specific fisheries are also managed by other agencies, including the California Fish and Game Commission and NMFS in consultation with PFMC. See also previous responses to comment regarding fishing regulations.

Comment: The Sanctuary Program should remain vigilant and continue to work with PFMC to ensure that fishing regulations are not modified or eliminated in the future to the detriment of protection of the Cordell Bank. If such changes do occur, we urge the NMSP to act expeditiously to adopt regulations, as authorized under section 304(a)(5) of NMSA, to protect the Bank from bottom contact fishing gear.

Response: The NMSP will continue to work with NMFS and PFMC on the Cordell Bank EFH closure area and all other closures in National Marine Sanctuaries affecting fishing activities. If in the future existing EFH

protections for Cordell Bank from bottom contact fishing gear are modified, NMSP would examine potential impacts to the CBNMS environment relative to its goals and objectives. NOAA would determine if additional closures are warranted under either MSA and NMSA or a combination of both authorities. The JMPR EIS analyzes an alternative seabed protection regulation, in which bottom contact fishing gear is prohibited. This alternative was developed and evaluated in the event regulations protecting the seabed from bottom-contact fishing gear were not implemented through the MSA or did not meet the Sanctuaries' goals and objectives for protection of the Bank.

Fishery Management

Comment: NMSP should draft an integrated fishery management plan that addresses the San Francisco Bay and perimeters of the Sanctuary.

Response: NMSP works with the Pacific Fishery Management Council (PFMC) and the California Fish and Game Commission when appropriate to help meet sanctuary goals and objectives. San Francisco Bay, while providing important hydrologic and ecological connections to the sanctuaries, is not within any national marine sanctuary.

Marine Reserves / Marine Protected Areas

Comment: NOAA should pursue marine protected areas (MPAs) action plans in CBNMS and GFNMS similar to the MBNMS MPAs action plan. The sanctuaries must address marine protected areas as a management tool to achieve sanctuary goals related to ecosystem protection and research. Sanctuaries have both the legal authority and legal obligation to review changed conditions and adopt management plan changes, as necessary.

Response: NOAA does not believe there is a need for separate action plans to address MPAs in CBNMS and GFNMS. CBNMS Management Plan strategy EP-4 addresses impacts on sanctuary resources and area-based restrictions are proposed as one of the potential management actions, if needed in the future. The GFNMS Management Plan contains action plans on Impacts from Fishing Activities (Strategy FA-4) and Ecosystem Protection (Strategy EP-1), addressing the need to provide special areas of protection for sensitive habitats, living resources, and other unique sanctuary features. It considers a variety of tools, including area-based restrictions, to protect sanctuary resources.

Comment: NMSP should not be involved in creating no-take marine reserves. Fishing regulations should only be promulgated by the Pacific Fishery Management Council and State authorities. The Sanctuary designation documents should not be changed to allow fishing regulations.

Response: NOAA is not proposing to create any no-take MPAs as part of this rulemaking. NOAA has two relevant statutory authorities, the National Marine Sanctuaries Act (NMSA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSA). NOAA considers both the NMSA and MSA as tools that can be used exclusively or in conjunction to regulate fishing activities to meet sanctuary goals and objectives. Regulatory options are evaluated by NOAA on a case by case basis to determine the most appropriate regulatory approach to meet the stated goals and objectives of a sanctuary.

Comment: The use of an MPA working group would be appropriate to evaluate the utility of MPAs if the working group process was fairly constituted and science-based. However, it is the perception of the fishing community that the current MBNMS MPA working group is seriously flawed as a public/science-based process.

Response: The working group meeting from 2002-2007 included a broad mix of stakeholders including recreational and commercial fishermen, divers, scientists, environmentalists, and agency personnel. The working group includes preeminent local MPA scientists who help provide scientific guidance to the working group during deliberations. NOAA's decisions regarding if and where to create new MPAs will be grounded in the best available information and science.

Comment: There is lack of specificity in the strategies and associated activities in the MBNMS MPA Action Plan. There will be a rush by the sanctuaries to do something without a clear understanding of all the habitats within such a large coastal area, nor the ability to develop an integrated and adaptive management system.

Response: The MBNMS MPA Action Plan is intended to be a framework document that outlines the general types of evaluations, criteria, and programs for considering and effectively implementing MPAs. This framework identifies the areas where specific information will need to be developed, such as in habitat characterization, research and monitoring, enforcement, and education and outreach. The consideration of MPAs has been ongoing for five years and continues to move forward in a very deliberate and informed manner.

Comment: Monterey Bay should not close waters off for anadromous or pelagic fishing. These species cannot be protected by closing off one area or another to fishing, except where they spawn. And, the continuation of long-term sustainable fishing in the region requires that no marine reserves should be placed in areas important to the salmon fishery, the crab fishery and certain types in the rockfish fishery.

Response: NOAA is not proposing to create any marine reserves as part of this rulemaking. However, the Management Plan for the MBNMS includes an action plan with strategies for the consideration of new MPAs in the Sanctuary. This MPA Action Plan recognizes the value of full no-take MPAs. It also recognizes that allowing certain types of "take" within an MPA may be appropriate depending on the location and the objectives of the site.

Comment: The NMSP should adopt MPAs, including no-take reserves, within federal waters of the sanctuaries to complement the efforts of the State of California. The NMSP should move forward on creating MPAs in federal waters using NMSA if necessary.

Response: NOAA believes additional MPAs are needed in federal waters of the MBNMS to address ecosystem objectives, possibly including no-take marine reserves. As such, NOAA has initiated a process to consider how best to address this need through a collaborative public process that involves all affected stakeholders. NOAA has not determined there is a need for additional no-take marine reserves in the federal waters of CBNMS or GFNMS at this time. NOAA may take action in the future if there is a determination additional fishing regulations, possibly including no-take marine reserves, are necessary to protect sanctuary resources.

Comment: Limitations on noise should be included in the definition of an MPA.

Response: The Management Plan for the MBNMS includes strategies to reduce the threat of acoustic impacts on marine mammals and other species but not as part of the regulatory scheme for MPAs addressing fishing activities. See responses to comments in "Noise Impacts" section.

Comment: The proposed MPA Action Plan timeline is too slow. The plan should make implementation of marine protected areas – specifically fully protected marine reserves – much higher priority, and give it a more ambitious timeline.

Response: As is true with many community based initiatives, the process for considering and potentially siting MPAs in the MBNMS takes time. This does not mean that the issue is not a priority for NOAA. While the management plan review process has been progressing, NOAA convened a multi-stakeholder group to consider new MPAs.

Spearfishing

Comment: Do not prohibit free-dive spearfishing.

Response: NOAA is not regulating spearfishing at this time. Other regulatory authorities, including California Fish and Game Commission, have regulations prohibiting spearfishing in certain zones in State waters of the MBNMS and are developing regulations for zones that could affect spearfishing in the GFNMS. See also responses to comments regarding fishing regulations.

Working With Fishing Community

Comment: The National Marine Sanctuary Program should consider a larger role for the fishing community whose goodwill is important to long-term support for sanctuary programs and whose livelihoods depend on the protection of the sanctuary’s resources.

Response: The fishing community is important and provides opportunities for involvement in Sanctuary research, education, and resource protection activities. Moreover, NOAA believes appropriate fisheries within a national marine sanctuary are an indication of a healthy ecosystem protected by that Sanctuary. The Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries Joint Management Plan Cross-cutting Maritime Heritage Action Plan states ocean-based commerce and industries (e.g., fisheries) are important to the maritime history, the modern economy, and the social character of this region. The Action Plan states “there is the potential to cultivate partnerships with local, state, and federal programs and identified communities and that these partnerships could aid in the design and implementation of studies of living maritime heritage and folk life to help educate the public about traditional cultures and practices including fishermen and economic activities reflecting historic human interaction with the ocean.” The MBNMS Management Plan includes the Fishing Related Education and Research Action Plan, whose goal is to involve fishermen in research activities to add to the body of research available for fishery-related decision-making processes. The GFNMS Management Plan includes strategy FA-5: Develop public awareness about the value and importance of the historical and cultural significance of maritime communities and their relationship and reliance on healthy sanctuary waters. The recreational and commercial fishing communities also hold seats on the advisory councils for the sanctuaries and provide input into education, research and resource protection activities.

Comment: The plan allowing fishermen to participate in fisheries research may be a conflict of interest.

Response: Allowing fishermen to participate in research activities adds to the body of research available to decision-makers and increases the fishing community’s understanding of ongoing research projects. In many cases, fishermen possess experience and knowledge that can be particularly helpful in research activities.

Comment: Consider the impacts on fishermen. There is a lack of compassion for fisher folk; get them jobs on the water, or buy their boats and offer them jobs.

Response: The proposed actions have been found to have no adverse impact on fishing communities and do not include regulation of fishing activities; however, the management plans include activities to involve fisherman in research and outreach programs. See the previous response for ways the management plans involve fisherman in sanctuary management activities.

Introduced Species

Agency Coordination

Comment: It appears that the sanctuary wishes to grant itself unlimited authority to accomplish the task of preventing and managing the spread of introduced species. Regulations, permit requirements, or other enforcement oriented actions associated with the Introduced Species Action Plan affecting public agencies should be coordinated with, and agreed to by those agencies before they become federal law.

Response: NOAA considers the threat of introduced species to be a high priority. The strategies in the management plans to address this issue include research, education, and enforcement activities each including coordination with federal, state and local agencies. The regulation of introduced species involves various agencies, and NOAA is adopting a comprehensive program coordinated throughout the three sanctuaries in northern and central California.

Definition and Regulation

Comment: The proposed Introduced Species prohibition would prohibit any new leases for the Pacific oyster, which would impact the mariculture industry in Tomales Bay. NOAA states that there hasn't been interest in additional leases, but that's due to the existing regulatory framework, which is very restrictive and cumbersome.

Response: The regulation would restrict new leasing of areas to native species but would not impact any existing mariculture activities in Tomales Bay. Introduced species currently allowed by the State of California as of the date of this regulation, including Pacific Oysters, may continue to be farmed.

Comment: Will a list be provided of native species in each Sanctuary to allow the Sanctuary to determine if in fact a species introduced is non-native?

Response: NOAA does not have a comprehensive inventory of species introduced into the sanctuaries. If a species is documented as native to the ecosystem, it would not be considered an introduced species.

Comment: The proposed Introduced Species prohibition would prevent the introduction of genetically modified species (DEIS page 3-51), but there is no definition provided. Triploid oysters are commonly used by Tomales Bay oyster growers to avoid the oysters spawning, and thus avoid the resultant poor condition of oysters for sale. Would this proposed rule ban these oysters which are a more desirable nonnative, due to their lack of spawning, versus normal oysters which spawn but do not successfully establish?

Response: The rule would not prohibit triploid oysters currently used by Tomales Bay oyster growers and cultivation of them would be allowed to continue. Future leasing of undeveloped lands in Tomales Bay would be restricted to oysters not meeting the definition of an introduced species (i.e., where altered genetic matter or genetic matter from another species, has been transferred in order that the host organism acquires the genetic traits of the transferred genes).

Comment: Currently the gross leased mariculture areas authorized by CDFG are 10-20% net usable for mariculture. New growing techniques and/or new CDFG policies could expand the size of the area currently under cultivation out to the boundary of the lease area, which would result in a 500% -1000% net increase. The area under cultivation should be limited to the current net usable footprint. Consideration should be made for the possibility of Drake Bay Oyster Company moving into Tomales Bay.

Response: NOAA acknowledges an increase in mariculture activities could occur within existing leases since most of the leases are not fully developed. The new regulation for introduced species would not prohibit mariculture operations in Tomales Bay conducted pursuant to an existing valid lease, permit, license or other authorization issued by the State of California. The regulation does not prohibit the transfer of current valid leases in Tomales Bay to new owners within existing lease areas or future leasing of areas in Tomales Bay provided the new leased areas do not include introducing a species not native to the ecosystem.

Comment: The exceptions would not allow existing leases to fully utilize lease acreage for which they pay the State to the degree authorized by their lease, Army Corps permit, and their Coastal Development permit. The prohibition conflicts with State policy and limits the existing authority of the CDFG to engage in additional bivalve shellfish aquaculture leases, with existing state environmental impact review in place. To address these concerns, the designation documents and proposed Introduced Species prohibition exceptions for all three sanctuaries should be revised to allow mariculture and research pursuant to a valid lease, permit, license or other authorization issued by the State of California.

Response: The restrictions on introduced species do not restrict any areas currently leased by the State of California so long as the species were being cultivated in those areas prior to the new prohibition taking effect. See previous responses to comments regarding the scope of this regulation. A complete exception is not provided for mariculture of introduced species and associated research activities because NOAA cannot accurately predict impacts that might result from introduced species that have not been previously cultivated in these areas. Please see the response to the next comment below.

Comment: The basis for the proposed Introduced Species prohibition cites information that is more related to finfish culture and net-pen culture than shellfish mariculture. These issues do not relate to shellfish mariculture in terms of the way it's conducted now or with existing CDFG regulations, which should be acknowledged (CDFG Title 24 regulations). The industry is heavily scrutinized in terms of seed pathogens; five years of pathology and cytology go into the CDFG review. Increasing the footprint is not going to increase potential impacts. Science has proven that there are more positive impacts (e.g., sustainability) than negative impacts from shellfish mariculture.

Response: There are some positive impacts from shellfish mariculture, and this regulation would not restrict mariculture of native species and would allow cultivation of introduced species currently authorized under State of California law in existing leases. However, past introduction of foreign shellfish has brought diseases, parasites, and predators that have damaged ecosystems and associated native species. Moreover, the potential exists ecologically for non-native shellfish to be accidentally released and established in sanctuary ecosystems.

Comment: The civil penalty of up to \$100,000 is too onerous for a recreational boater who could unintentionally or unknowingly violate the proposed Introduced Species prohibition by releasing a nonnative seaweed or barnacle. This prohibition should be deleted and attention should be focused on education and on major sources of introduction such as ballast water exchange. Education is a more appropriate tool to

address invasive species; NOAA could partner with Department of Boating and Waterways to educate boaters about precautions.

Response: The National Marine Sanctuaries Act establishes a limit on the maximum civil penalties that can be charged for violations of sanctuary regulations and law. Currently, that limit is set at \$130,000 per day for any continuing violation. However, the act does not require application of the maximum allowable penalty in any enforcement case. The amount of any penalty is generally determined by the nature of a violation and a variety of aggravating/mitigating circumstances, such as gravity of the violation, prior violations, harm to protected resources, value of protected resources, violator's conduct, and degree of cooperation. NOAA prosecutors generally scale proposed penalties to fit the nature of a particular violation. Recreational boating is a common method for spread of non-native species in California. However, this prohibition extends beyond small-scale introduction by a recreational boater. Introduced species could be discharged into a sanctuary on a large-scale, systematic basis through many vectors, such as commercial shipping, aquaculture, aquaria, or fishing operations. Further, there are circumstances in which introduced species could be willfully and intentionally discharged with full knowledge of the potential negative consequences. In such instances, education alone could not address the problem. Education is an important part of this issue and NOAA has included education components in its Action Plans regarding Introduced Species. NOAA coordinates with the California Department of Boating and Waterways already, and welcomes expanded interagency cooperation to reduce movement and introduction of non-native species from recreational boating.

Comment: The broad nature of the Introduced Species Action Plan may result in controls on the fishing fleet that would require all vessels to be inspected and cleaned before every trip in sanctuary waters. Vessels routinely enter and exit sanctuary waters. There is no scientific evidence that this activity has caused any environmental problem regarding non-resident species. Additional regulations, without any basis and without any evaluation of the pros and cons, should not be adopted.

Response: The proposed Action Plan does not mandate vessel inspections and cleaning before every entry to the sanctuary, and such activities are not required by the regulation. Multiple studies document the spread of non-native species by recreational and commercial vessels (e.g., Zebra mussels and quagga mussels). NOAA is also concerned about the spread of invasive algae such as *Undaria* which have been found in the Santa Barbara Harbor and Monterey Harbor and could easily be transmitted by vessels as they transit the coastline.

Use of an Introduced Species as Bait

Comment: Bait used while fishing is an exception to the discharge rule but often times bait can be an introduced species, so the discharge exception needs to be clarified.

Response: The exception for the bait used in or resulting from lawful fishing activities from the prohibition on discharge of materials or other matter would not exempt the activity from the prohibition on the introduction of non-native species. Specific exceptions in one prohibition do not except the activity from other regulations. There is no need to further clarify this in the regulation as NOAA's intent in this matter is clearly articulated in the FEIS and will be in the final rule.

Motorized Personal Watercraft

Action Plan Review

Comment: There needs to be some mechanism for periodic review of the MBNMS MPWC Action Plan to allow the action plan to be periodically adjusted according to the effectiveness of the program.

Response: The National Marine Sanctuaries Act requires NOAA to review the management plans and action plans therein every five years.

Agency Coordination

Comment: NOAA should work with state and local jurisdictions with authority to regulate uses or activities causing concern rather than creating new authorities.

Response: NOAA has regulated MPWC use in the MBNMS since 1993 and in GFNMS since 2001. State and local jurisdictions overlay less than 20% of MBNMS waters. Local governments have no mandates or authority to issue MPWC regulations throughout State and Federal waters of the MBNMS. Where local marine jurisdictions exist, they seldom extend seaward of the 60-ft depth line and are geographically constrained. In addition, regulation of MPWC is often inconsistent between local jurisdictions within the MBNMS. State and local regulations pertaining to MPWC are usually designed primarily for public safety purposes, not natural resource conservation purposes. MPWC operations present unique threats to marine resources of the sanctuary due to their relative size and weight. See the MBNMS Motorized Personal Watercraft Action Plan for a description of uniqueness and subsequent impacts. By limiting use of the MPWC to certain areas, NOAA can ensure uniform and consistent management of this activity to minimize threats to protected national resources throughout the MBNMS.

Comment: NOAA should clarify what agency will enforce the provisions of the proposed regulations.

Response: Primary law enforcement responsibilities for NOAA regulations are assigned to NOAA's Office for Law Enforcement (OLE). Other federal and state agencies are also capable of enforcing NOAA regulations. For a complete description of enforcement responsibilities and partnerships see the responses to comments under the heading "Sanctuary Management - Enforcement."

Economic Impacts

Comment: The new definition of MPWC for MBNMS will have significant negative economic impacts.

Response: NOAA's socioeconomic assessment in the Draft and Final EIS found that the proposed change in the definition of MPWC for the MBNMS would have both beneficial and adverse socioeconomic impacts, and it concluded that overall negative socioeconomic impacts would be less than significant.

Prohibition and Exceptions

Comment: The proposed MPWC definition change to include "any other vessel that is less than 20 feet as manufactured, and is propelled by a water jet pump or drive" is very vague and significantly over-broad.

Response: The proposed revisions to the definition provide readily visual cues for determining if a vessel qualifies as an MPWC, and focus on a very specific group of small, powered vessels. The agency has been specific in describing the vessels of concern and believes the proposed definition is sufficiently clear to identify them.

Comment: NOAA should consider alternative regulatory language such as that used by the State of Hawaii which requires training and certification and a fixed speed of 5 miles per hour when within 300 – 1000 feet of the shoreline.

Response: Vessel training curricula and certification requirements are boating safety and registration issues which are more appropriately managed by State and Federal boat licensing agencies. NOAA is not proposing licensing requirements. Rules implemented by the State of Hawaii to regulate MPWC were developed

specifically to resolve boater safety and user conflict issues that had arisen in state coastal waters. The rules were amended in 1994 to make provisions for tow-in surfing activities and resolve mounting conflicts between traditional and tow-in surfing interests. The Hawaii rules were not developed in response to natural resource protection threats, nor are they specifically designed to ensure protection of nationally significant marine resources or sensitive habitat areas. No environmental studies were conducted as part of the rulemaking process for Hawaii MPWC regulations. Further, NOAA is not proposing a change to the MPWC regulation itself, but rather a revision to the definition

Comment: NOAA should develop a program to allow MPWC use in designated areas for tow-surfing activities.

Response: NOAA considered a permit program in the MBNMS Draft Management Plan and concluded no MPWC recreational activity could meet the required criteria for issuance of a Special Use Permit (see 15 CFR Sec. 922.133). NOAA will continue to allow MPWC use for all activities in four designated MPWC use zones, plus, per the draft final regulation (i.e., the FEIS preferred alternative), an additional zone specifically designed to accommodate big wave tow-in surfing.

During NOAA public scoping meetings in 2001, NOAA received comments that the Mavericks surf break at Half Moon Bay was a unique big wave tow-in surfing location in the continental United States, accessible only by MPWC tow-in techniques and should be given special consideration for MPWC access. Based upon the evidence that Mavericks was such a special national sporting venue, NOAA investigated whether allowing MPWC operations at that location could be accomplished in a manner compatible with the Sanctuary's primary goal of marine resource protection. As a result of the review, NOAA's draft final regulation would establish a new MPWC zone off Pillar Point Harbor that will allow for recreational access via MPWC to the Mavericks surf break during National Weather Service high surf warnings issued for San Mateo County during December, January, and February. During the course of management plan development, NOAA also received public comment requesting that MPWC access be granted for big wave tow-in surfing at a surf break known as Ghost Trees, located off Pescadero Point in Carmel Bay. NOAA examined this venue, but due to several factors (including sensitive wildlife resources, distant launch sites and lengthy transit corridors, and impacts on marine protected areas), determined that authorization of MPWC activity at this location would not be consistent with the sanctuary's primary goal of resource protection. NOAA also received public comments that broad access to sanctuary waters should be granted to MPWC to support tow-in surfing at virtually any location within the sanctuary and under any surf conditions. NOAA has thus in the draft final regulation made a limited provision for MPWC assisted tow-in surfing at the unique big wave site known as Mavericks, but would continue to prohibit MPWC use outside of the designated riding zones that have been in place since 1993. Many professional and recreational surfers access breaking surf up to 20 feet in height within the sanctuary without the use of MPWC and have done so for decades.

Comment: The existing MPWC zones are not used and should be removed.

Response: The existing MPWC zones are used in some areas of the MBNMS, although the volume of use is currently low. As the definition of MPWC is extended to encompass larger MPWC models currently in use within the sanctuary, the larger models of MPWC not currently regulated will be restricted to the five zones. Therefore, use of sanctuary MPWC operating zones is expected to increase. NOAA is not proposing to close any zones at this time. See above for additional discussion of zones.

Comment: NOAA should allow MPWC use for emergencies such as rescue operations or vessel assistance and provide a method for emergency response training.

Response: NOAA continues to allow use of MPWC for emergency response purposes. The prohibitions listed in the regulations at 15 CFR Section 922.132 (a)(2)-(11) do not apply to any activity necessary to respond to an emergency threatening life, property, or the environment. NOAA has made provisions in the final management plan to support MPWC rescue and training operations by government search and rescue agencies operating within the MBNMS. Search and rescue personnel specialize in public safety, and their training and operations are primarily focused on that mission priority. NOAA will coordinate with government agency partners to ensure that training operations are conducted in a manner, and at times and locations, that minimize risk of disturbance or harm to protected resources and habitats within the Sanctuary.

User Conflicts

Comment: The MPWC issue is a user conflict between traditional paddle surfers and those who engage in tow-in and or tow-at surfing. NOAA should not discriminate between recreational activities.

Response: NOAA has regulated MPWC within the MBNMS since 1993, prior to any significant use of MPWC by surfers within the sanctuary. NOAA is not regulating surfing activity and does not promote one style of surfing over another. NOAA is concerned with threats posed by current and future MPWC activity within the sanctuary (not surfing) and is updating an existing 15-year-old restriction of MPWC to specific areas in the sanctuary. In response to comments and staff analysis of various alternatives, NOAA's draft final regulation adds a new zone to allow use of MPWC at Pillar Point (Mavericks) due to the unique geographic, oceanographic, and seasonal characteristics of that site. The zone would be in effect during National Weather Service high surf warnings issued for San Mateo County in December, January, and February.

Wildlife Disturbance

Comment: NOAA should update the MBNMS MPWC definition to protect wildlife and reduce user conflicts consistent with the original intent of the regulation.

Response: MPWC have special maneuver, thrust, and buoyancy capabilities distinguishing them from other watercraft, enabling sustained intrusion by MPWC into wildlife areas. See the response immediately below regarding protective measures by NOAA.

Comment: MPWC should be regulated in the same manner as other small vessels.

Response: MPWC have several characteristics distinguishing them from other small vessels. MPWC are small, fast, and highly maneuverable craft that possess unconventionally high thrust capability and horsepower relative to their size and weight. This characteristic enables them to make sharp turns at high speeds and alter direction rapidly, while maintaining controlled stability. Their small size, shallow draft, instant thrust, and "quick response" enable them to operate closer to shore and in areas that would commonly pose a hazard to conventional craft operating at comparable speeds. Many can be launched across a beach area, without the need for a launch ramp. Most MPWC are designed to shed water, enabling an operator to roll or swamp the vessel without serious complications or interruption of vessel performance. The ability to shunt water from the load carrying area exempts applicable MPWC from Coast Guard safety rating standards for small boats. MPWC are often designed to accommodate sudden separation and quick remount by a rider. MPWC are not commonly equipped for night operation and have limited instrumentation and storage space compared to conventional vessels. MPWC propelled by a directional

water jet pump do not commonly have a rudder and must attain a minimum speed threshold to achieve optimal maneuverability. Most models have no steerage when the jet is idle.

These characteristics enable MPWC to conduct sustained operations in sensitive habitat areas where other vessels cannot routinely operate, thus posing serious disturbance threats to marine wildlife in those areas. In addition, NOAA has received comments that operation of these craft in a manner that optimizes their design characteristics (i.e., normal operation) poses unique threats to other human uses of Sanctuary nearshore areas. Further, see the 1995 U.S. Court of Appeals decision unanimously upholding NOAA's regulation of MPWC in the MBNMS, Personal Watercraft Industry Association v. Department of Commerce, 48 F.3d. 540.

Comment: NOAA lacks adequate data regarding endangerment or harassment to wildlife from MPWC.

Response: Local observations and documentation of MPWC disturbance of marine birds and mammals elsewhere, provide sufficient information identifying the risks of MPWC. The regulation of MPWC within the Sanctuary in 1993 stemmed partially from complaints of endangerment and harassment of marine mammals, including highly publicized claims that a MPWC operator was observed running over a sea otter, a species protected under the Endangered Species Act, near Monterey. Again, the adequacy of NOAA's administrative record for regulation of MPWC has already been upheld in court. (See previous responses.) NOAA has received written and oral reports of MPWC users harassing sea otters, harbor seals, porpoise, dolphin and other wildlife in various areas of the sanctuary since implementation of the regulation in 1993. Sometimes, due to high surf conditions, operators are unaware of their impacts on wildlife. For example, sea otter biologists have observed MPWC/sea otter interactions during high surf events. In the first incident, a sea otter biologist observed an MPWC tow a skier across the course of an otter swimming perpendicular to them in Stillwater Cove. Due to high swell conditions, the MPWC team never saw or responded to the otter as it crossed their path. In a second incident, Monterey Bay Aquarium volunteers observed an MPWC drive directly through a group of otters at Otter Point in Monterey Bay during high surf conditions. U.S. Fish and Wildlife Service biologists also report flushing of Common Murres from the Devil's Slide Common Murre restoration project due to MPWC use. Scientific research and studies across the United States (e.g. California, New Jersey, Florida) have produced strong evidence that MPWC present a significant and unique disturbance to marine mammals and birds different from other watercraft. Though some other studies have found few differences between MPWC and small motor-powered boats, they have not presented evidence to invalidate the studies detecting significant impacts.

In 1994, NOAA commissioned a review of recreational boating activity in the MBNMS. The review provided statistics on MPWC use and operating patterns in the Sanctuary at the time and identified issues of debate from the research community regarding MPWC impacts on wildlife, but it made no formal conclusion or recommendation. A poll of Sanctuary harbormaster offices by NOAA in 2003 provided updated estimates on MPWC use in the Sanctuary that are discussed in the JMPR DEIS.

Comment: Improvements in MPWC technology have reduced pollution and noise.

Response: NOAA acknowledges that MPWC technology has improved to reduce noise and pollution. However, MPWC have also become larger, faster, and more powerful, with extended ranges, and retain the maneuverability characteristics that increase the potential for disturbance of wildlife, including acute turns at high speeds, rapid course alterations, and ability to operate closer to shore and in areas that would commonly pose a hazard to conventional craft operating at comparable speeds. Though newer MPWC are quieter than

older models under normal displacement conditions, such improvements are largely irrelevant when MPWC launch into the air off of waves or breaking surf. Also, lower sound intensity (decibel level) does not equally reduce the effects of oscillating sound caused by persistent throttling (revving) of the engine during repeated acceleration/deceleration within the surf zone (which is often necessary to avoid capsizing and pitch polling). Research and observations have shown that this frequent oscillating sound pattern of irregular intensities can be particularly disruptive to wildlife and humans. This is the very sound pattern that often elicits complaints from coastal residents and beachgoers. Many newer MPWC models have 4-stroke engine technology or cleaner 2-stroke engine technology required to meet increased governmental emissions standards. While cleaner emissions are welcomed, this improvement has little bearing on the primary reasons for regulating MPWC within the MBNMS.

User Education

Comment: NOAA should work with the MPWC industry to develop user education programs.

Response: The MBNMS Management Plan includes *Strategy MPWC-3: Conduct Educational Outreach to MPWC Community*, which identifies the Personal Watercraft Industry Association and American Watercraft Association as potential education and outreach partners. These organizations, as well as agencies such as the California Department of Boating and Waterways, conduct user education programs throughout the State. NOAA will continue to work with these agencies and organizations to increase understanding of MPWC etiquette as well as the regulations regarding MPWC use in a national marine sanctuary.

Noise Impacts

Comment: Provisions in the MBNMS Marine Mammal, Seabird and Turtle Disturbance Action Plan regarding Acoustics (Strategy MMST-6) should be expanded and addressed in all three sanctuary management plans. Increased use of military high-intensity active sonar systems, undersea warfare training zones, shipping lanes, and increases in large vessel traffic can be expected to result in substantial levels of anthropogenic noise impacts. Also, a different branch of NOAA is currently funding geologic mapping of the coastal seabed, including the sanctuaries, the primary purpose of which is to determine the presence of oil deposits. This mapping uses an air concussion with underwater sound impact not unlike Low Frequency Active Sonar which has been blamed for dozens of whale beachings. Action plans might contain the following components: analyze noise sources, develop monitoring programs, address stranding issues and determine appropriate management responses.

Response: Additional provisions have been added to all three sanctuary Management Plans in response to this comment. See the MBNMS Marine Mammal, Seabird and Turtle Disturbance Action Plan regarding Acoustics, the CBNMS Ecosystem Protection Action Plan (Strategy EP-7), and the GFNMS Wildlife Disturbance Action Plan (Strategy WD-3). Sanctuary regulations would prohibit the “taking” of any marine mammal, sea turtle or seabird in or above the Sanctuary, except as authorized by the Marine Mammal Protection Act (MMPA), 16 U.S.C. 1361 et seq., the Endangered Species Act (ESA), 16 U.S.C. 1531 et seq., and the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703 et seq. Use of military high-intensity active sonar systems, undersea warfare training zones, and geologic mapping of the coastal seabed within the sanctuaries typically require that the project proponents receive approval (likely in the form of a MMPA Take Permit) from NOAA’s National Marine Fisheries Service. As stated in the MBNMS Strategy MMST-6.2, the NMSP intends to continue collaborating with the NMFS in evaluating individual proposals on a case-by-case basis to determine the impacts of such projects and whether they would be appropriate to conduct within the sanctuaries. The Minerals Management Service is also conducting geologic mapping of the coastal seabed,

under provisions of the Energy Policy Act of 2005. A project of this sort would still be subject to the permitting and review provisions outlined above. See the Sanctuary Action Plans for additional activities related to addressing noise effects on wildlife. Although NOAA currently addresses and evaluates potential impacts on marine mammals resultant from acoustic sources under the Marine Mammal Protection Act, the NMSP will continue to coordinate with NMFS to evaluate acoustic impacts within sanctuaries. Increasing research efforts, such as those recommended within the National Academies' National Research Council's recent reports on the impacts of noise on marine mammals, will assist NOAA in continuing to evaluate the agency's management responses to this issue.

NOAA's National Marine Fisheries Service has a stranding response team that coordinates with sanctuary staff as appropriate on strandings, including those that may be related to acoustic exposure. Additionally, the large whale disentanglement team network that is proposed for development would be able to assist in such an event.

Comment: Acoustic impacts should be divided into two categories and addressed in sanctuary management plans: impacts of noise on birds and pinnipeds above the water (e.g., from aircraft, boat traffic and MPWC), and the impacts of underwater noise (e.g., ship propulsion noise, active sonars and seismic airgun exploration) on fish, turtles, marine mammals and marine invertebrates.

Response: The physical characteristics of air-based and water-based sound sources are different (decibel levels, physics, attenuation, etc) and thus have different potential impacts on sanctuary species. Impacts on marine species from sound sources both above and below the water surface have been studied, and such data are available for management decision-making. Due to the importance of accounting for possible cumulative effects from exposure of sanctuary resources to multiple noise source types, sources are not divided into categories. Instead, each source's propagation is modeled individually and then considered additively (if necessary) to estimate total levels of ensonification over various spatial/temporal scales. Currently, NMFS addresses potential acoustic impacts on marine mammals in accordance with its mandates under the MMPA. The NMSP is increasingly interested in issues of noise impact on marine species. The NMSP will continue to work closely with NMFS and other research partners to help identify critical subject areas needing additional study and evaluation. Based on the results of these future studies, the NMSP will develop reasonable management approaches to responding to the issue. No additional changes to the EIS are needed.

Comment: There should be a permanent ban or rejection of any request of the Navy in regard to sonar testing experiments, which harm marine life, especially whales and dolphins.

Response: The U.S. Navy must consult with NOAA when its actions, including sonar testing, trigger consultation requirements under the NMSA, ESA, or MSA. Under the NMSA, this consultation is triggered when the action is likely to injure, cause the loss of, or destroy sanctuary resources. Once consultation is initiated, NOAA will recommend alternatives to the Navy to protect sanctuary resources. Please also see response to comments on Sanctuary Management: Military Exemption for more information on this issue.

Comment: Modify the DEIS to analyze suggested noise regulations.

Response: NOAA is not proposing new regulations on noise in the sanctuaries at this time. The proposed Management Plans include provisions for addressing noise and additional provisions have been included in the wildlife disturbance action plans, based on public comments. None of the proposed changes in the sanctuary regulations would result in significant increased noise impacts on wildlife in the sanctuaries. Noise has been added to the list of impacts found to be not significant in Section 5.5 of the EIS.

Comment: The sanctuaries should take a leadership role and establish noise level criteria and regulations to reduce or eliminate harmful anthropogenic noise impacts on marine life. Sanctuary management plans should allow for a time in the near future when an acceptable Ocean Noise Criteria system emerges. Until that time, precaution should inform decisions about introducing or permitting new, unusual, or loud human generated sounds into the sanctuaries. Knowing that we are already starting with a noisy acoustical environment should not stop us from moving ahead with informed regulations and a policy framework.

Response: NOAA recognizes the concern about potential negative impacts on marine mammals from a variety of acoustic disturbances (e.g., noise from ships, aircraft, research boats, and military and industrial activities). Noise can cause direct physiological damage, mask communication, or disrupt important migration, feeding or breeding behaviors. Active-sonar, specifically low frequency (100-500 Hz) and mid-frequency (2.8-3.3 kHz) active sonar used in military activities by the U.S. and other nations are of particular concern. The impact of seismic testing for geological mapping and oil and gas exploration is also unknown. The MBNMS Management Plan includes Marine Mammal, Seabird and Turtle Disturbance Action Plan Strategy MMST-6: Assess Impacts from Acoustics, which recognizes that noise levels in the sanctuaries is increasing. The Strategy includes activities to expand research and monitoring of acoustics and to continue to evaluate individual projects with the potential to disturb wildlife. NOAA's Acoustics Program is investigating all aspects of marine animal acoustic communication, hearing, and the effects of sound on behavior and hearing in protected marine species.

For additional information, please see: <http://www.nmfs.noaa.gov/pr/acoustics/>.

Comment: NOAA should prohibit seismic exploration for resource extraction or even for “asset surveys” and other sources of sound that may mask biological sounds critical to the survival of marine animals. Noise from seismic surveys adjacent to the sanctuaries does not conform to the sanctuary boundary, thus setting sanctuary limitations on “trans-boundary noise pollution” will require coordination and cooperation with other jurisdictions.

Response: Within the sanctuaries, NOAA prohibits exploring for, development or production of oil, gas, or minerals. NOAA works with the Department of the Interior's Minerals Management Service and other agencies to manage potential impacts to sanctuary resources from seismic exploration activities outside of the sanctuary's boundary.

Sanctuary Management

Agency Coordination

Comment: The management plans should include language regarding compatibility with the National Park Service and other agencies' management plans.

Response: As a routine matter, NOAA coordinates management efforts with managers of adjacent protected areas. Other agencies often manage resources pursuant to mandates, polices, and priorities that may be different from NOAA's National Marine Sanctuaries Program or priorities set forth in the National Marine Sanctuaries Act. NOAA will continue coordination with the National Park Service and other agencies to ensure compatibility, to the maximum extent practicable, with other agencies management plans.

Comment: The commenter disagrees with the findings under the Executive Order 13132 (which refers to regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on the States, on the relationship between the national government and the States, or

on the distribution of power and responsibilities among the various levels of government) and request the background material that allowed said findings to be made.

Response: NOAA concluded the regulatory actions do not have federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order 12612. The ONMS consulted with a number of entities within the State which participated in development of the proposed rules, including but not limited to the California Coastal Commission, California Regional Water Quality Control Board, California Department of Fish and Game, and California Resources Agency. This lengthy, collaborative process led NOAA to conclude that the actions will not preempt State law, and to the conclusion that the actions will complement existing State authorities. NOAA also points out that section 304(b)(1) of the National Marine Sanctuaries Act (16 U.S.C. § 1434(b)(1)) provides the Governor of any affected state with the ability to object to any term of designation (or modification thereto). No term of designation certified as unacceptable by the Governor can be effective in state waters of the sanctuary.

Budget

Comment: We can't do a better job of conservation without spending some money. I hope the Sanctuary Program will fight for appropriate funding and staffing.

Response: NOAA recognizes resource limitations and necessary program and partner developments may limit implementation of all of the activities in the various management plans. NOAA will continue to work with the Department of Commerce, Office of Management and Budget, and Congress in developing supporting justifications when preparing budget submissions.

Emergency Regulations

Comment: Consistency does not exist between the three sanctuaries on the use of emergency regulations. CBNMS establishes a 120-day maximum and the others do not.

Response: NOAA will consider this issue as part of a separate rulemaking process that will propose to make conforming modifications to all sanctuary regulations to achieve an appropriate level of consistency, including the authority for emergency regulations.

Enforcement

Comment: NOAA should clarify what agency will enforce the provisions of the proposed regulations.

Response: Primary law enforcement responsibilities for NOAA regulations are assigned to the NOAA Office for Law Enforcement (OLE). An enforcement officer conducts investigations into violations of the National Marine Sanctuaries Act and regulatory prohibitions in coordination with State, local and other Federal law enforcement counterparts. In addition, a cooperative enforcement agreement was signed between NOAA and the State of California to deputize State Fish and Game Wardens and State Park Rangers as Federal Sanctuary enforcement officers. State peace officers work together with NOAA to conduct patrols and investigate potential violations. In addition to the cooperative assistance by the State, the U.S. Coast Guard conducts air and sea surveillance within sanctuaries and has broad Federal enforcement authority. NOAA OLE also works with the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, and the Federal Bureau of Investigations (FBI) to investigate violations of environmental laws within national marine sanctuaries. More information about enforcement of NOAA regulations can be found at <http://www.nmfs.noaa.gov/ole/index.html>.

Comment: New regulations and increasing the size of sanctuaries significantly impacts the fisheries enforcement staff of the California Department of Fish and Game. The staff work under a Joint Enforcement Agreement with NOAA. CDFG can only provide limited enforcement effort without additional staff and funding to successfully carry out expanded enforcement activities.

Response: NOAA understands the resource limitations of our partners in enforcement. However, the revised regulations and management plans make only one significant boundary modification –the addition of Davidson Seamount, which is in federal waters, to the MBNMS. This addition should not create an additional enforcement burden for the CDFG. NOAA acknowledges and appreciates the efforts of CDFG in assisting with enforcement of NMSP regulations. NOAA will continue to work with CDFG to seek additional resources to mitigate workload impacts.

Global Warming

Comment: The sanctuary management plans should address potential changes resulting from global warming, including monitoring, education and management responses. More specifically, NOAA should infuse the increasing body of scientific data, ranging from ocean acidification to rising sea temperatures and levels, as well as their causes, effects, and the huge potential ecosystem changes that they portend, into each of the appropriate action plan strategies.

Response: NOAA agrees global warming trends and impacts on ocean ecosystems have become important issues in recent years and should be addressed in the management plans. Language has been inserted into the emerging issues section of all three sanctuaries' management plans recommending several steps: a) identifying and coordinating with partners for evaluating and addressing global warming impacts on sanctuaries; b) enhancing scientific understanding of existing and future changes in temperature, rainfall and runoff, oceanographic patterns, ocean chemistry (including acidification), sea level, species composition, seasonal shifts, etc.; c) evaluating impacts of global warming on the other issues and strategies in management plans, including nonpoint runoff, beach erosion, tidepool protection, fisheries and MPAs, etc. and developing modifications as needed to these plans to reflect global warming concerns; d) implementing appropriate modifications to sanctuary facilities and operations ensuring the program minimizes its contribution to global warming; and e) developing and incorporating messages and recommendations about global warming and ocean impacts into outreach programs.

Military Exemptions

Comment: The U.S. Coast Guard requests the management plans and proposed regulations for each sanctuary include language exempting the U.S. Coast Guard and Department of Defense activities from all prohibitions, similar to provisions applicable to the Northwestern Hawaiian Islands Marine National Monument.

Response: Each of the regulations for the national marine sanctuaries include specific exceptions for activities carried out by the Department of Defense (DOD). In the sanctuaries, activities carried by the DOD prior to date of designation are generally exempted from the prohibitions contained in the regulations. Additional activities initiated after designation can be exempted after consultation between NOAA and DOD. The referenced exemption for the Northwestern Hawaiian Islands Marine National Monument were crafted to address the unique circumstances surrounding that area including its remote location, its large size, and the strategic military importance of the area as identified by DOD during interagency consultation on the regulations for the area. Nevertheless, the Proclamation establishing the Monument (Proclamation 8031) and the implementing regulations promulgated by NOAA and the Fish and Wildlife Service (50 C.F.R. Part 404) require the Armed Forces (including the Coast Guard) to carry out all activities in a manner that avoids,

to the extent practicable and consistent with operational requirements, adverse impacts on monument resources and qualities. In addition, in the event of a threatened or actual destruction of, loss of, or injury to a Monument resource or quality resulting from an incident, including but not limited to spills or groundings, caused by a component of the Department of Defense or the Coast Guard, the cognizant component shall promptly coordinate with the Secretaries of Commerce and the Interior for the purpose of taking appropriate actions to respond to and mitigate the harm and, if possible, restore or replace the monument resource or quality. See 50 C.F.R. 404.9 (c) and (d).

Maritime Heritage

Comment: The GFNMS has significant maritime heritage resources. GFNMS needs to more explicitly address the individual and cumulative significance of shipwrecks, and the importance of revisiting the recommendations contained in the Submerged Cultural Resource Assessment of 1989 by doing a basic assessment and site survey. The program should consider a joint initiative with the Office of Exploration, and partner with NPS in regard to enhancing the interpretation of the submerged maritime heritage in the parks, and at the San Francisco Maritime NHP.

Response: NOAA has added additional discussion of the individual and cumulative significance of the shipwrecks in the GFNMS Management Plan's Maritime Heritage Cross-cutting Action Plan. Basic assessment and site survey of significant wrecks has been added as well as the need for establishing a baseline for further monitoring to ensure their protection. Additional information has also been added to the Gulf of the Farallones Administration Action Plan to include restoration, education, outreach, and exhibits about the historic Fort Point Coast Guard Station. The NMSP has also added NOAA's Office of Exploration and the National Park Service as partners.

Performance Measures

Comments: NOAA should review its proposals for measuring implementation success of each action plan to ensure that all desired outcomes and their corollary performance measures have been identified. For example, it appears that only a portion of the Monterey Bay Water Quality Program Action Plans has been covered.

Response: NOAA considers performance measurement an essential component of management responsibilities. All Action Plans have performance measures selected for their ability to indicate overall performance of the action plans or strategies. NOAA limited the number of performance measures to correlate with the resources available for program review.

Research and Monitoring

Comment: NOAA should include Coastal Commission and other Resource Agency partners in the execution of the research and monitoring strategies.

Response: NOAA considers the Coastal Commission a critical partner in management of sanctuary resources and will include the Coastal Commission in research and monitoring activities. California Resources Agency staff (including Coastal Commission and California Department of Fish and Game) are also members of the Sanctuary Advisory Councils and MBNMS Research Activity Panel helping guide implementation of research activity in the sanctuaries.

Permitting

Comment: It is unclear from the proposed language changes if currently authorized activities will still be permitted in the future. How would the proposed regulation changes impact currently permitted activities and similar future activities?

Response: Individuals with currently effective permits will be allowed to continue permitted activities under the terms and conditions of their permit. The new regulations will apply for new permits issued (and applications received) on or after the effective date of the new regulations.

Resource Protection

Comment: Please vacate failed plans to create so called marine sanctuaries off California. All Management Plans should be withdrawn because they are discriminatory, out of touch, abusive; some of the animals the plan intends to protect are destructive over-populated pests such as the sea lion. Entire U.S. industries and companies will be adversely affected by this Plan; jobs will be lost; and taxpayers will be denied access to U.S. waterways.

Response: The JMPR process updates existing management plans for existing marine sanctuaries; it does not create new sanctuaries. The proposed management plans are revisions to existing management plans and were developed with input from stakeholders, local and state agencies, and the general public. The commenter does not specify which parts of the management plans are flawed. Adverse impacts, including socioeconomic effects, associated with implementing the JMPR update are addressed in the FEIS. No significant impacts on businesses or jobs were identified in the FEIS. Taxpayers will not be denied access to the marine sanctuaries, although specific types of activities that pose risk of harm to sanctuary resources would be prohibited or restricted.

Comment: The Sanctuary should have very limited alteration and remain in its natural current state.

Response: The intent of the sanctuary management plans and regulations is to protect sanctuary resources. Existing sanctuary regulations include prohibitions on numerous activities that would alter or otherwise impact sanctuary resources. The proposed changes to regulations and management plans are consistent with the intent to limit adverse effects on sanctuary resources.

Sanctuary Visibility

Comment: NOAA's National Marine Sanctuary Program needs to be more visible in the public eye including additional exposure on TV and radio.

Response: Please see the education, outreach and constituent building components of the site specific and cross-cutting action plans (contained within each Sanctuary's Management Plan), which include strategies to increase public education including the use of various forms of media.

Sanctuary Advisory Councils and Management Plan Review Process

Comment: There are problems in the structure and representation of the MBNMS Sanctuary Advisory Council and therefore the MBNMS Management Plan does not represent the public's priorities.

Response: The Monterey Bay National Marine Sanctuary Advisory Council's twenty voting members represent a variety of local user groups, as well as the general public, plus seven local and state governmental jurisdictions. The Sanctuary Advisory Council adequately represents the public and specific stakeholders. In the past several years, the NMSP has worked with the Association of Monterey Bay Area Governments to make improvements to the selection process for councilmembers. People who apply for seats are reviewed

by a subgroup of the existing Sanctuary Advisory Council, are appointed competitively by NOAA, and serve three-year terms after which they are readvertised for selection. Local and state governmental jurisdiction representatives are chosen by their respective agencies. The recruitment of Sanctuary Advisory Council members is widely advertised throughout the state and the public is welcomed to comment or provide letters of support for applicants.

Furthermore, NOAA has taken extraordinary steps, above and beyond the advisory council, to repeatedly and regularly involve the general public in addressing the priority issues in the Management Plan. The process used by the NMSP is a very inclusive public process. Development of the MBNMS Management Plan included more than 120 public meetings including Advisory Council, Working Group, Scoping and Public Comment meetings. 223 individuals participated in working groups to develop the action plans for the MBNMS and the NMSP received over 30,000 comments during the review of the management plans.

Comment: NOAA should have issued the various draft management plans for public comment and following the inclusion of those comments released proposed changes to both the designation documents and regulations.

Response: The review of the management plans began in 2001, with scoping meetings requesting comments on potential changes to the management plans, regulations, and designation documents. In 2003, the Sanctuary Advisory Councils for each Sanctuary held public meetings taking comment from the public on the action plans, which make up the substantive programmatic direction in the management plan. This process occurred prior to release of any regulations and the public was encouraged to provide comments on any program including regulations and designation documents. After consideration of the comments received from the public and Sanctuary Advisory Councils, NOAA's release of the proposed rules and management plans in 2006 provided over 90 days for public comment.

Seagrass Protection

Anchoring

Comment: Eel grass bed protections should be strengthened to preclude both commercial and recreational uses that would further disturb these essential resources. Measures should include prohibitions of anchoring or mooring in the beds and prohibitions against shallow-draft motor boats that disturb root systems.

Response: The regulation of anchoring in seagrass zones in Tomales Bay is designed to prevent damage from vessel anchors. NOAA will monitor the seagrass protection zones for effectiveness and use a model of adaptive management to make appropriate adjustments to the zones. The use of shallow-draft motor boats will be monitored. A re-evaluation of the zones will include an assessment of all the effects of vessels on seagrass.

Comment: The creation of the no-anchor zones in Tomales Bay, though well intended, is ill considered because it prohibits an activity that never occurs, or only occurs to a truly insignificant and immaterial extent. At the very least, NOAA should consider putting a "sunset" provision on this requirement, so that it can be reevaluated to determine its need.

Response: NOAA has added language about the biology of seagrass and the effects from anchoring has been added to the FEIS to document the need for the proposed prohibition. Seagrass, including eelgrass, can grow in water depths up to 20 feet in Tomales Bay. The location and extent of the no-anchoring zones are based upon seagrass data provided by California Department of Fish and Game from 1992, 2000, 2001 and

2002. The no-anchoring seagrass protection zones include some areas where seagrass coverage is extensive and other areas where coverage is discontinuous and patchy. All zones extend to the shoreward MHWL boundary.

Vessels have been observed through California department of Fish and Game aerial photographs within current and historic eelgrass beds throughout Tomales Bay. The State regulation that states no eel grass, surf grass or sea palm may be cut or disturbed does not specifically prohibit anchoring. The proposed seagrass protection zone regulation is intended to complement existing State regulation. These zones would be more enforceable and facilitate specific types of vessel usage. The seagrass protection zones would prevent the risk of harm to seagrass beds before the damage occur. The regulation of anchoring in seagrass zones in Tomales Bay is designed to prevent damage from vessel anchors. NOAA will monitor the seagrass protection zones for effectiveness and use a model of adaptive management to make appropriate adjustments to the zones. The use of shallow-draft motor boats will be monitored. A re-evaluation of the zones will include an assessment of all the effects of vessels on seagrass.

Comment: Is there any evidence that any anchoring activities in Tomales Bay have caused any damage to the seagrass? If so, what is the relative impact of anchoring activities that would continue to be permitted as compared to the remote possibility of recreational boat anchoring? In the GFNMS MP and DEIS, the only basis was reference to a discussion at a meeting (DEIS page 2-17) of a technical committee formed to address boating impacts in Tomales Bay.

Response: Additional background information has been included in the FEIS regarding the number and types of vessels that use and anchor in Tomales Bay. NOAA has also added information about the effects of anchoring on seagrass. Although there have been no studies on the damage to seagrass beds from anchoring in Tomales Bay, studies in California, studies on similar types of seagrass in coastal Florida, and on seagrasses in other parts of the world have found that boat propellers, anchors and mooring lines can damage the underground root and rhizome system of seagrass (Milazzo, M., et al, 2002; Walker et al., 1989; Kentworthy et al, 2006).

Comment: What is the history of enforcement actions under the current regulations that would prevent anchoring in seagrass beds (Cal. Admin. Code Section 30.10) which has been in effect since 1984? Have law-enforcement organizations in Tomales Bay been asked for reports of any problems in enforcing this law? Why not direct the law enforcement agencies to create a high priority for enforcement of this law?

Response: Establishing specific seagrass zones and demarcating these zones with buoys would create an enforceable regulation that is easy for boaters to follow and understand, and is likely to result in protection of the seagrass beds. The State regulation on disturbing or cutting eel grass, surf grass, or sea palm does not specifically prohibit anchoring. As such, the seagrass protection zone regulation is intended to complement existing State regulation. These zones are more enforceable and facilitate specific types of vessel usage. The seagrass protection zones would prevent the risk of harm to seagrass beds before the damage occurs.

Comment: The DEIS states that the Tomales Bay Vessel Management Plan, currently being developed, would provide “positive effects on marine transportation and would offset any minor adverse effects of the seagrass anchoring prohibition,” and that the implementation of the boating Management Plan would result in a “slight net positive cumulative effect on marine transportation.” (DEIS p. 3-167, 3-184) How was this plan that is in development evaluated for its positive effect on marine transportation, and where can the public obtain a copy of the draft plan so that they can evaluate the “net positive cumulative effect”?

Response: Additional information about the Tomales Bay Vessel Management Plan has been added to the FEIS (see Section 3.10.8). This plan is part of a multi-agency effort to streamline future vessel-related management activities. Only approximately 22% of Tomales Bay is currently being zoned as a no-anchor area. The seagrass protection zones avoid navigation channels and other shallow, sheltered areas of Tomales Bay are still available for anchoring; including areas near boat launch ramps, marinas, and docks. Copies of the plan can be obtained from NOAA or by visiting the GFNMS website at: http://farallones.noaa.gov/ecosystemprotection/protect_tomalesbay.html.

Comment: What consideration has been given to the health and safety implications of requiring vessels to anchor in less protected areas than where they currently anchor?

Response: NOAA considered and identified safe anchorages when designing the proposed seagrass protection zones. Shallow, sheltered areas of Tomales Bay would still be available for anchoring, including areas near boat launch ramps, marinas, and docks. Also, see additional text in FEIS Section 3.10.8.

Comment: In order that the public can fairly evaluate the true impact of the no-anchoring plan, there should be temporary buoy fields set up marking the proposed zones. Why not consider simply referring to the area within 2-fathom (12 feet) line, which follows the actual contours of the bottom and is clearly shown on the nautical charts in both paper and electronic form?

Response: NOAA will mark the seagrass zones with buoys to provide clear direction to boaters. The location and area of the zones were identified based on California Department of Fish and Game seagrass surveys in 1992, 2000, 2001, and 2002. NOAA considered using depth contours to as the boundaries for the seagrass zones, but has determined depth contours to be unreliable as permanent boundaries and thus difficult to enforce.

Comment: Why do the no-anchoring zones extend into and encroach on private property? The proposed Zone 3 of Tomales Bay covering the Marshall area extends easterly to the mean high water line. That is across the boundary of the typical Marshall property line, which extends into the Bay to the mean low tide line, typically by referent to Tide Land Survey No. 145 Marin County.

Response: These submerged lands are part of the GFNMS and are subject to management actions of the sanctuary.

Comment: The proposed GFNMS prohibition of anchoring in designated seagrass protection zones in Tomales Bay should provide an exemption for research activities.

Response: Rather than provide a blanket exemption for research activities, NOAA has decided to consider allowing research activities on a case-by-case basis through its permitting system. The GFNMS Superintendent has the authority to issue permits for activities that further research or monitoring related to Sanctuary resources and qualities. This will allow NOAA to compare the relative benefits of the research with the impacts of the activity and to include special conditions to prevent harm to Sanctuary resources. The permitting system also allows NOAA to track research activities on a national level through a permitting database and on a regional level through the SIMoN website as part of an outreach tool to the public and the science community.

Taking of Marine Mammals, Seabirds and Turtles

Disturbance by Vessels

Comment: The MBNMS should prohibit vessels from coming within a quarter mile of areas where seabirds and mammals aggregate for feeding and/or breeding, especially those areas not protected under the State's Marine Life Protection Act.

Response: Preventing disturbance to marine mammals and seabirds is a primary focus of both the sanctuary regulations and its education and outreach programs. Sanctuary wildlife disturbance regulations complement the MMPA, ESA and MBTA by prohibiting unauthorized take of marine mammals and seabirds. "Take" is defined in §922.3 of the regulations for the National Marine Sanctuary Program to include operating a vessel in a way that "results in the disturbance or molestation of any marine mammal, sea turtle or seabird." The NMSP believes this approach of prohibiting unauthorized take wherever it occurs is a better approach with regard to general vessel traffic and is more functional than fixed distance regulations.

Disturbance by Overflights

Comment: The regulations for the MBNMS should prohibit aircraft from flying below 1000 feet above a state designated Area of Special Biological Significance (ASBS),

Response: The existing overflight zones in the MBNMS are focused on areas where seabirds and marine mammals are likely to be flushed by low flying aircraft. They overlap with the ASBSs off of Ano Nuevo and Big Sur. The air space around the Monterey Peninsula contains flight paths for the Monterey Peninsula Airport and overflight restrictions are not practicable.

Comment: I have observed aircraft flying low over Ano Nuevo Island in violation of Sanctuary regulations. It is my understanding that pilots are not informed about overflight restrictions in the Sanctuary. NOAA should work with the Federal Aviation Administration (FAA) to ensure that pilots are aware of federal regulations.

Response: NOAA has an outreach program to pilots to help ensure that they are aware of the restrictions. The NOAA Office for Law Enforcement routinely contacts pilots when aircraft are identified flying below 1000 feet within restricted overflight zones of the Sanctuary. However, the overflight restrictions in Sanctuary regulations are not accurately reflected on FAA aeronautical charts. NOAA will continue its efforts to work with FAA to update the charts.

Comment: GFNMS should change its overflight regulation to be consistent with MBNMS. Specifically, GFNMS should adopt the prohibition of flying motorized aircraft at less than 1000 feet, and remove the additional clause of disturbing seabirds or marine mammals.

Response: NOAA is not changing the overflight regulation for GFNMS or MBNMS at this time. NOAA is in conversations with the Federal Aviation Administration regarding the regulation of aircraft operations over national marine sanctuaries and may make modifications as part of a separate regulatory process if determined appropriate following those conversation. The public will be provided with an opportunity to provide input into any such process.

Lighting

Comment: Given the high seabird density, NOAA should further consider the potential effects of high intensity lights on sensitive species, including night foraging seabirds, within the GFNMS and CBNMS

Management Plans. The use of high powered, high intensity lights (e.g., squid fishing vessels) may pose a risk to sensitive resources.

Response: Currently the Market Squid Fishery Management Plan adopted in 2004 by the California Fish and Game Commission established a seabird closure restricting the use of attracting lights for commercial purposes in any waters of the GFNMS.

Regulations

Comment: In relation to the proposed prohibition on the “take” of marine mammals, birds and sea turtles, the NMSP should not grant itself expanded authority to impose severe criminal and civil penalties that far exceed those penalties as provided in the MMPA, ESA and Migratory Bird Treaty Act.

Response: The National Marine Sanctuaries Act establishes a limit on the maximum civil penalties (there are essentially no criminal penalties) that can be charged for violations of Sanctuary regulations and law. Currently, that limit is set at \$130,000 per day for any continuing violation. However, the act does not require application of the maximum allowable penalty in any enforcement case. The amount of any penalty is determined by the nature of a violation and a variety of aggravating/mitigating circumstances, such as gravity of the violation, prior violations, harm to protected resources, value of protected resources, violator’s conduct, and degree of cooperation. NOAA prosecutors scale penalties to fit the nature of a particular violation, and courts oversee penalty settlements to ensure penalties are appropriate.

While marine mammals, seabirds and endangered and threatened species are protected under other legislation, NOAA believes the higher penalties under the NMSA will provide a stronger deterrent.

Comment: The NMSP should continue to support research into the causes of endangerment of the elusive leatherback sea turtle and to try to create further protection. They’re in a 90 percent decline over the last 30 years.

Response: Sanctuary regulations prohibit the unauthorized take of leatherback sea turtles. Additionally, the MBNMS management plan has strategies in its Wildlife Disturbance Action Plan to address disturbance to turtles from harassment and marine debris by working with NOAA’s Office of Protected Resources. The Plan also addresses the need for research to more fully understand the life history characteristics of the turtles and the threats that they face. NOAA will continue its efforts to better understand and protect this endangered species.

White Shark Attraction

Prohibition

Comment: The proposed GFNMS prohibition on attracting white sharks should include an exemption for chumming conducted in the course of lawful fishing. Also, the Designation Document language, which allows the regulation of “attracting or approaching any animal” (page B-83), must be clarified to be specific to white sharks and not include chumming for lawful fishing.

Response: The prohibition against attracting white sharks is intended to address harassment and disturbance related to human interaction from shark diving programs known generally as adventure tourism, or from recreational visitors who may opportunistically approach a white shark after a feeding event. NOAA concluded these activities can degrade the natural environment, impacting the species as a whole, as well as individual sharks that may be impacted from repeated encounters with humans and boats. A similar

prohibition against attracting great white sharks was promulgated for the MBNMS in 1996 and has not affected lawful fishing activities.

The terms of designation for national marine sanctuaries (as defined in the NMSA (16 U.S.C. 1434(a)(4))) list the types of activities that they may be subject to regulation under sanctuary. Listing does not necessarily mean that a type of activity will be regulated. If a type of activity is not listed, it may not be regulated, except on an emergency basis, unless the terms of designation are amended to include the type of activity. NOAA must follow the same procedures by which the original designation was made to modify the terms of designation of any national marine sanctuary. In this case, the authority to regulate attraction or approach of any animal is only being applied with respect to white sharks. No regulations are being considered regarding attracting or approaching other animals at this time. Retaining the authority in the terms of designation to regulate attracting or approaching other animals will maintain flexibility to respond in the future, as necessary, to similar resource issues involving the attraction of other animals. It is important to note that, although it would not be necessary to amend the terms of designation to promulgate such regulations, NOAA would still be required to engage in a rulemaking process before any additional regulations could be issued. This would include, among other things, consultations with other governmental entities, public notice and comment of any proposed action, and compliance with all applicable laws such as the National Environmental Policy Act (NEPA).

Comment: The proposed GFNMS prohibition on attracting white sharks should be clarified to apply specifically to intentional approaching.

Response: The prohibition against approaching a white shark within the GFNMS is intended to apply to vessels that approach a white shark once it has been identified in the water. A white shark feeding event generally takes place at or near the surface of the water, and can be easily spotted. The regulation is not intended to apply to persons who are already near a white shark when it surfaces but would prohibit them from approaching closer.

Comment: Ecotourism should be allowed to continue at South East Farallon Island with educational permits. NOAA should establish a permit process to avoid curtailing traditional, legitimate, and first-hand education that does not require a Ph.D. in order to participate.

Response: NOAA will consider applications to conduct educational and research activities that would violate the regulation on attracting white sharks in the GFNMS on a case-by-case basis and will use the guidelines developed and approved by the SAC to help draft permit conditions. The Management Plan outlines the approaches that will be taken through the Wildlife Disturbance Action Plan, Strategy WD-5 and the Conservation Science Action Plan CS-1. In 2006, NOAA launched a pilot research program to assess current white shark viewing practices by adventure tourism operators, private boaters and researchers, which will also be used as a guide to developing permit conditions. NOAA will continue to conduct research to guide permit conditions for new white shark viewing and assess effectiveness of new regulations.

Comment: White shark attraction should be prohibited in all sites.

Response: The regulations would prohibit white shark attraction throughout MBNMS and GFNMS. NOAA has determined that at this time there is no need for a regulation prohibiting white shark attraction within CBNMS. CBNMS is entirely offshore and, unlike the Gulf of the Farallones, there are no seal or sea lion haul outs to attract sharks. Without aggregations of seals and sea lions to prey on, there is no draw for sharks to congregate or patrol within CBNMS.

CHAPTER 8

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CHAPTER 9

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CHAPTER 10

GLOSSARY

SECTION 10

GLOSSARY

Affected environment—The physical features, land, and area or areas to be influenced, affected by, or created by an alternative under consideration; also includes various social and environmental factors and conditions pertinent to an area.

Annelid—Worm with a cylindrical body segmented both internally and externally.

Aquaculture—Farming of plants and animals that live in water, such as fish, shellfish, and algae.

Area of special biological significance—An outdated term. New term is a state water quality protection area (as of January 1, 2003). The ASBS or state water quality protection designation is based on the presence of certain species or biological communities that, because of their value or fragility, deserve special protection by preserving and maintaining natural water quality conditions to the extent practicable.

Benthic—Literally, living on the bottom. Refers to material, especially sediment, at the bottom of an aquatic ecosystem, or it can be used to describe the organisms that live on, or in, the bottom of a water body.

Benthos—A region that includes the bottom of the sea and the **littoral zone** (see below); also refers to the benthic invertebrate community, which is a group of animals that lives on or in the bottom sediments.

Bioprospecting—Scientific research that looks for a useful application, process, or product in nature. Also called biodiversity prospecting. In many cases, bioprospecting is a search for useful organic compounds in microorganisms, plants, and fungi that grow in extreme environments, such as rainforests, deserts, hot springs, and the ocean bottom.

Brackish—Slightly salty water.

Cetacean—Large aquatic carnivorous mammal with fin-like forelimbs, no hind limbs includes whales, dolphins, porpoises, and narwhals. Also of or relating to these animals.

Chumming—Intentionally feeding or attracting a living resource. Often refers to the practice of using animal carcass parts and bloody body parts to attract sharks.

Cold seep—Regions on the seafloor that release sulfide- and methane-rich fluids.

Continental shelf—The gently seaward-sloping surface that extends between the shoreline and the top of the continental slope at about 150 meters (345 feet) depth. The average gradient of the shelf is between 1:500 and 1:1000 and, although it varies greatly, the average width is approximately 70 kilometers (44 miles). This can also be a judicial term; for example, the outer limit of the legal continental shelf is determined by reference to be a distance of 200 nautical miles (370 kilometers, 230 miles) or to the outer edge of the geological continental margin, wherever the margin extends beyond 200 nautical miles (370 kilometers; 230 miles).

Continental slope—That part of the continental margin that lies between the continental shelf and the bottom of the ocean. Sunlight does not penetrate this area, and mostly it is home to scavengers. It is characterized by a relatively steep slope of 3 to 6 degrees.

Crustacean—Includes a diversity of marine, freshwater, and terrestrial animals. All crustaceans have a head and five pairs of appendages, two of which are antennae. Many microscopic crustaceans, like krill and brine shrimp, are marine plankton, an important food source for other animals in the sea. Shrimp, lobsters, crabs, crayfish, and barnacles are crustaceans.

Demersal—Living near, deposited on, or sinking to the bottom of the sea.

de minimis level—Negligible level.

Diapause—A state of rest, halted development, or arrested development or growth, accompanied by greatly decreased metabolism, often correlated with the seasons, usually applied only to insects.

Downwelling—Downward movement of surface ocean waters in a nearshore ocean ecosystem.

Effluent—A waste product that is discharged to the environment, usually used to mean treated wastewater discharged from a wastewater treatment plant, sewer, or industrial outfall.

El Niño—Refers to the large-scale ocean-atmosphere climate phenomenon linked to a periodic warming in sea-surface temperatures across the central and east-central equatorial Pacific Ocean.

Epifaunal—Living on the surface of the **substrate** (see below).

Estuaries—A water body that has constant exchange and interaction with ocean water; also, a marine embayment with no more than a temporary separation from seawater.

Eutrophication—The process whereby an aquatic environment becomes rich in dissolved nutrients, causing excessive growth and decomposition of oxygen-depleting plant life and resulting in injury or death to other organisms.

Halophytic—A plant that can tolerate or thrive in alkaline soil rich in sodium or calcium salts; tolerant of saline (salty) conditions.

Harassment—Any act that injures or has the significant potential to injure marine mammal, bird, or terrestrial animal stock in the wild; also, any act that disturbs or is likely to disturb such animals by disrupting natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered.

Holdfast—The base of seaweed that attaches to a rock or other hard surface. Holdfasts are superficially similar to roots on plants; however, they differ functionally because holdfasts secure **sessile** (see below); seaweed individuals to a location but do not absorb liquids or nutrients.

Hydrocarbons—Chemical compounds that contain hydrogen and carbon. Most motor vehicles and engines are powered by hydrocarbon-based fuels, such as gasoline and diesel. Hydrocarbons include many toxic compounds that cause cancer and other adverse health effects.

Holocene Epoch—A geologic time segment of the Quaternary Period, dating from the end of the Pleistocene Epoch, approximately 8,000 years ago until the present.

Indigenous—Originating where it is found. Refers to species or peoples found locally and from the local area.

Intertidal—The zone between the high and low water marks.

Invertebrate—An animal without a backbone or spinal column, such as an insect.

Isobath—Line connecting points of equal water depth on a nautical chart; a seabed contour.

La Niña—The periodic cooling of surface temperatures in the central and east-central equatorial Pacific Ocean; occurs approximately every three to five years.

Lagoon—A water body often separated from ocean water exchange, with enclosure as a defining characteristic.

Lightering—Smaller boats supplying larger boats with supplies and/or carrying fuel; lightering operations include transfers within the vessel, to lightering barges, or if necessary, into the sea.

Lithic—Of or pertaining to stone.

Littoral zones—That portion of the coast from high water area to area with no attached plants; interface between land and water; highly productive biologically.

Mariculture—Farming or aquaculture of marine animals in tanks, pens, ponds, or cages or net enclosed areas in the open sea.

Migratory bird—Any mutation or hybrid of a listed species, as well as any part, egg, or nest of such bird. Protected under the Migratory Bird Treaty Act.

Mollusk—An invertebrate having a soft unsegmented body, usually enclosed in a shell. Also a group of freshwater and saltwater animals, including oysters, clams, mussels, snails, conches, scallops, squid, and octopus.

Nautical mile—A distance measurement equivalent to 1.15 statutory miles, or 1.8 kilometers.

Nearshore—In beach terminology, an indefinite zone extending seaward from the shoreline well beyond the breaker zone. Typically at water depths of the order of 20 meters (66 feet).

Parapodia—Paired lateral appendages extending from the body segments.

Perturbation—A secondary influence on a system that causes it to deviate.

Pelagic—Referring to the open seas or in the middle portion of the water column.

Petroglyph—A prehistoric carving or drawing on rock.

Phytoplankton—Microscopic floating aquatic plants that produce their own nutrients through photosynthesis.

Pinnipeds—Aquatic carnivorous mammals having a streamlined body specialized for swimming with limbs modified as flippers, for example, seals.

Plankton—Very small, free-floating organisms of the ocean or other aquatic systems, including phytoplankton and zooplankton, which get their nutrients from organisms.

Plume—A narrow thermal feature, which can be either hot or cold, that rises or sinks because of its anomalous temperature compared to the surrounding fluid.

Polychaete—A class of mainly marine annelids, characterized by parapodia bearing numerous hairs; for example, bristle worm.

Promulgated—Formally made public; published accounts.

Offshore—In beach terminology, the comparatively flat zone of variable width, extending from the shore to the edge of the continental shelf. It is continually submerged. Also the breaker zone directly seaward of the low tide line.

Remedial/remedial action—The implementation of a permanent resolution to address a release or potential release of a hazardous substance from a site.

Riprap—A rubble sustaining wall, often used along shorelines to prevent erosion.

Rookery—A breeding ground for gregarious animals or birds.

Salinian/Salinian block—The piece of rock west of the San Andrea Fault moving northward.

Sea fan—Corals having a treelike or fan-shaped horny skeleton.

Sessile—Attached directly by the base; not having an intervening stalk; As in, the shell of a sessile barnacle is attached directly to a substrate. Usually refers to marine animals and plants.

Stipe—The stem-like structure on seaweed.

Substrate— Any **stratum** (see below) lying underneath another.

Stratum— Several parallel layers of material arranged one on top of another.

Take—Currently under revision in the Marine Mammal Protection Act, meaning “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” In the Endangered Species Act, the definition includes to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. A notable component of this definition is “harm,” which means an act that actually kills or injures protected wildlife. Such acts may include significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering.

Tertiary—A geologic period dating from 63 million to 2 million years ago.

Trawling—The operation of towing a net (trawl) to catch fish and/or shellfish. Trawls are towed either with bottom contact or in midwater. The towing speed varies, according to such factors as the type of trawl and trawling and the target species.

Vertical hook and line fishing—Analogous to the rod and reel used by recreational anglers, this is a method that attracts fish by a natural or artificial bait (lures) placed on a hook fixed to the end of a line, on which they get caught. A vertical line is attached to a sinker and several hooks.

Upwelling—Divergence of water currents or the movement of surface water away from land, leading to upward movement of cold nutrient-rich water from the ocean depths; often associated with great production of fish and fisheries.

APPENDIX A

PUBLIC INVOLVEMENT

APPENDIX A-1

**NOTICE OF INTENT TO PREPARE AN
ENVIRONMENTAL IMPACT STATEMENT**

final affirmative scope determination; in response, the Court issued a final and conclusive court decision with respect to the rough forgings scope litigation.

The Court determined that the Department should liquidate entries of rough forgings suspended since the publication of the A-588-604 antidumping duty order in 1987 without re-opening or re-reviewing any closed segment of the proceeding. The Department considers as open any segments of an antidumping proceeding which were ongoing at the time the scope issue was first raised before the Department with respect to forgings (*i.e.*, as of Koyo's September 17, 1993 request for a scope inquiry). This decision thus requires liquidation under the TRBs order of all rough forgings entries suspended during any administrative review period open at the time the Department received the scope inquiry. Because the final results of the 1990-1992 reviews were not published until December 9, 1993 (*see Final Results of Antidumping Duty Administrative Reviews; Tapered Roller Bearings and Parts Thereof, Finished and Unfinished, From Japan and Tapered Roller Bearings, Four Inches or Less in Outside Diameter, and Components Thereof, From Japan*, 58 FR 64720), which was after the date on which Koyo filed its scope inquiry, the Department will liquidate all entries of rough forgings suspended during the 1990-1992 review periods under the TRBs antidumping duty order. Therefore, we will issue instructions to Customs to liquidate all suspended entries of TRBs and forgings subject to the A-588-604 order manufactured by Koyo during these periods pursuant to these amended final results.

Amendment To Final Determinations

Pursuant to 19 U.S.C. 1516a(e), we are now amending the final results of administrative reviews of the antidumping duty order on TRBs from Japan (A-588-604) for Koyo. The weighted-average margins are as follows:

Period	Final results margin (percent)
3/27/87-9/30/88	36.29
10/1/88-9/30/89	24.88
10/1/89-9/30/90	30.08
10/1/90-9/30/91	17.36
10/1/91-9/30/92	24.87

Appraisal Methodology

Accordingly, the Department will determine and Customs will assess appropriate antidumping duties on

entries of the subject merchandise manufactured/entered by Koyo covered by the reviews of the periods listed above. The Department will instruct Customs to liquidate TRBs manufactured by Koyo and entered into United States during the first three administrative review periods (1987-1988, 1988-1989, and 1989-1990) using the above-referenced weighted-average margins. As a result of the Court's decision with regard to the rough forgings scope litigation, the Department will instruct Customs to liquidate all suspended entries of TRBs and rough forgings manufactured by Koyo and entered into the United States between October 1, 1990 and September 30, 1992 using importer-specific assessment rates. The Department will issue appraisal instructions directly to Customs.

Dated: October 15, 2001.

Faryar Shirzad,

Assistant Secretary for Import Administration.

[FR Doc. 01-28093 Filed 11-7-01; 8:45 am]

BILLING CODE 3510-DS-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

Notice of Initiation of Joint Review of Management Plans/Regulations for the Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries; Intent To Prepare Draft Environmental Impact Statements and Management Plans; Scoping Meetings

AGENCY: Office of Ocean and Coastal Resource Management (OCRM), National Ocean Service (NOS), National Oceanic and Atmospheric Administration, Department of Commerce (DOC).

ACTION: Initiation of joint review of management plans/regulations; intent to prepare environmental impact statements; scoping meetings.

SUMMARY: Cordell Bank National Marine Sanctuary (CBNMS) was designated in 1989 and encompasses 526 square miles of open ocean off Point Reyes, California. Cordell Bank is a submerged island that reaches within 120 feet of the ocean surface. The upwelling of nutrient rich ocean waters and the bank's topography create one of the most biologically productive areas in North America. The present management plan was completed in 1989.

Gulf of the Farallones National Marine Sanctuary (GFNMS) is located

along the California coast west of the San Francisco Bay area. It was designated in 1981 and encompasses 1,255 square miles. The Gulf of the Farallones is rich in marine resources, including spawning grounds and nursery areas for commercially valuable species, at least 36 species of marine mammals, and 15 species of breeding seabirds. The present management plan was completed in 1987.

Monterey Bay National Marine Sanctuary (MBNMS) stretches along 276 miles of the central California coast and encompasses 5,328 square miles of coastal and ocean waters. It was designated in 1992 and contains many diverse biological communities, including sandy bottom and rocky outcrop habitats, the nation's largest expanse of kelp forests, one of the deepest underwater canyons in North America, and a vast open ocean habitat. The present management plan was completed in 1992.

The National Marine Sanctuary Program (NMSP) is jointly reviewing the management plans for all three sanctuaries. These sanctuaries are located adjacent to one another, managed by the same program, and share many of the same resources and issues. In addition, all three sites share many overlapping interest and user groups. It is also more cost-effective for the program to review the three sites jointly rather than conducting three independent reviews.

In accordance with section 304(e) of the National Marine Sanctuaries Act, as amended, (NMSA) (16 U.S.C. 1431 *et seq.*), the Marine Sanctuaries Division (MSD) of the National Oceanic and Atmospheric Administration (NOAA) is initiating a review of the management plans, to evaluate substantive progress toward implementing the goals for the Sanctuaries, and to make revisions to the plans and regulations as necessary to fulfill the purposes and policies of the NMSA.

The proposed revised management plans will likely involve changes to existing policies and regulations of the Sanctuary, to address contemporary issues and challenges, and to better protect and manage the Sanctuaries resources and qualities. The review process is composed of four major stages: information collection and characterization; preparation and release of a draft management plan/environmental impact statement, and any proposed amendments to the regulations; public review and comment; preparation and release of a final management plan/environmental impact statement, and any final amendments to the regulations. NOAA

anticipates completion of the revised management plans and concomitant documents will require approximately eighteen to twenty-four months.

NOAA will conduct public scoping meetings to gather information and other comments from individuals, organizations, and government agencies on the scope, types and significance of issues related to the sanctuaries management plans and regulations. The scoping meetings are scheduled starting on November 28, and are detailed below.

DATES: Written comments should be received on or before January 31, 2002.

Scoping meetings will be held at:

- (1) Wednesday, November 28, 2001, 1 P.M. and 6:30 P.M. in Santa Cruz*, CA.
- (2) Thursday, November 29, 2001, 1 P.M. and 6:30 P.M. in Monterey*, CA.
- (3) Saturday, December 1, 2001, 1 PM in Salinas*, CA.
- (4) Monday, December 3, 2001, 6:30 P.M. in San Luis Obispo, CA.
- (5) Tuesday, December 4, 2001, 6:30 P.M. in Cambria, CA.
- (6) Wednesday, December 5, 2001, 6:30 P.M. in Big Sur, CA.
- (7) Thursday, December 6, 2001, 6:30 P.M. in Half Moon Bay, CA.
- (8) Friday, December 7, 2001, 8:30 A.M. in Half Moon Bay, CA.
- (9) Tuesday, December 11, 2001, 10 A.M.—2 P.M. in Sacramento, CA.
- (10) Friday, December 14, 2001, 10 A.M.—12:30 P.M. in Washington, DC.
- (11) Monday, January 7, 2002, 6:30 P.M. in Gualala, CA.
- (12) Tuesday, January 8, 2002, 6:30 P.M. in Bodega Bay, CA.
- (13) Wednesday, January 9, 2002, 7:30 P.M. in Pt. Reyes Station, CA.
- (14) Thursday, January 10, 2002, 6:30 P.M. in San Rafael, CA.
- (15) Monday, January 14, 2002, 6:30 P.M. in Rohnert Park, CA.
- (16) Tuesday, January 15, 2002, 6:30 P.M. in San Francisco, CA.
- (17) Wednesday, January 16, 2002, 6:30 P.M. in Pacifica, CA.
- (18) Thursday, January 17, 2002, 6:30 P.M. in San Jose*, CA.

* Spanish Translation Available

ADDRESSES: Written comments may be sent to either of the following addresses: Gulf of the Farallones and Cordell Bank National Marine Sanctuaries, Anne Walton, Management Plan Coordinator, Fort Mason, Building 201, San Francisco, CA 94123, (415) 561-6622 phone, (415) 561-6616 fax, Anne.Walton@noaa.gov.

Monterey Bay National Marine Sanctuary, Sean Morton, Management Plan Coordinator, 299 Foam Street, Monterey, CA 93940, (831) 647-4217 phone, (831) 647-4250 fax, Sean.Morton@noaa.gov.

Comments will be available for public review at the same addresses.

Comments may also be submitted on the Joint Management Plan Website at <http://sanctuaries.nos.noaa.gov/jointplan> or via e-mail at jointplancomments@noaa.gov.

Scoping meetings will be held at:

- (1) Santa Cruz Civic Center, 307 Church Street, Santa Cruz, CA, 95060.
- (2) Monterey Conference Center, One Portola Plaza, Monterey, CA, 93940.
- (3) Hartnell College, 156 Homestead Avenue, Salinas, CA, 93901.
- (4) San Luis Obispo Public Library, 995 Palm Street, San Luis Obispo, CA, 93401.
- (5) Cambria Grammer School, 1350 Main Street, Cambria, CA, 93428.
- (6) Big Sur Lodge at Pfeiffer Big Sur State Park, 47225 Pacific Coast Highway One, Big Sur, CA, 93920.
- (7) Ted Adcock Community Center, 535 Kelly Avenue, Half Moon Bay, CA, 94019.
- (8) Douglas Beach House, 311 Mirada Road, Half Moon Bay, CA, 94019.
- (9) Sheraton Grand Sacramento, Compagno Room, 1230 J Street, Sacramento, CA, 95814.
- (10) U.S. Department of Commerce, Herbert C. Hoover Bldg., Rooms 6800 & 6802, 14th Street and Constitution Ave. NW, Washington, DC, 20230.
- (11) Gualala Arts Center, 46501 Old State Highway, Gualala, CA, 95445.
- (12) Bodega Marine Laboratory, 2099 Westside Road, Bodega Bay, CA, 94923.
- (13) Point Reyes Dance Palace, Main Hall, 5th and B Street, Pt. Reyes Station, CA, 94956.
- (14) Marin Center, Hospitality Room and Six Meeting Rooms, Avenue of the Flags, North San Pedro Road, San Rafael, CA, 94903.
- (15) Doubletree Hotel, Rohnert Park, Salons 3 & 4, One Doubletree Drive, Rohnert Park, CA, 94928.
- (16) Marina Middle School, 3500 Fillmore Street, San Francisco, CA, 94123.
- (17) Oceana High School, 401 Paloma Avenue, Pacifica, CA, 94044.
- (18) Santa Clara County Office of Education, 1290 Ridder Park Drive, San Jose, CA, 95131.

FOR FURTHER INFORMATION CONTACT: Gulf of the Farallones and Cordell Bank National Marine Sanctuaries, Anne Walton, Management Plan Coordinator, Fort Mason, Building 201, San Francisco, CA 94123, (415) 561-6622, Anne.Walton@noaa.gov.

-or-

Monterey Bay National Marine Sanctuary, Sean Morton, Management Plan Coordinator, 299 Foam Street, Monterey, CA 93940, (831) 647-4217, Sean.Morton@noaa.gov.

Information about the Joint Management Plan Review can also be found on the Internet at: <http://sanctuaries.nos.noaa.gov/jointplan>.

(Federal Domestic Assistance Catalog Number 11.429 Marine Sanctuary Program)

Authority: 16 U.S.C. section 1431 *et seq.*

Jamison S. Hawkins,

Deputy Assistant Administrator for Ocean Services and Coastal Zone Management.

[FR Doc. 01-28054 Filed 11-7-01; 8:45 am]

BILLING CODE 3510-08-P

COMMITTEE FOR THE IMPLEMENTATION OF TEXTILE AGREEMENTS

Adjustment of Import Limits for Certain Cotton and Man-Made Fiber Textile Products Produced or Manufactured in Bangladesh

November 2, 2001.

AGENCY: Committee for the Implementation of Textile Agreements (CITA).

ACTION: Issuing a directive to the Commissioner of Customs adjusting limits.

EFFECTIVE DATE: November 8, 2001.

FOR FURTHER INFORMATION CONTACT: Ross Arnold, International Trade Specialist, Office of Textiles and Apparel, U.S. Department of Commerce, (202) 482-4212. For information on the quota status of these limits, refer to the Quota Status Reports posted on the bulletin boards of each Customs port, call (202) 927-5850, or refer to the U.S. Customs website at <http://www.customs.gov>. For information on embargoes and quota re-openings, refer to the Office of Textiles and Apparel website at <http://otexa.ita.doc.gov>.

SUPPLEMENTARY INFORMATION:

Authority: Section 204 of the Agricultural Act of 1956, as amended (7 U.S.C. 1854); Executive Order 11651 of March 3, 1972, as amended.

The current limits for Categories 352/652 and 369-S are being increased for carryforward.

A description of the textile and apparel categories in terms of HTS numbers is available in the **CORRELATION:** Textile and Apparel Categories with the Harmonized Tariff Schedule of the United States (see **Federal Register** notice 65 FR 82328, published on December 28, 2000). Also

APPENDIX A-2

**NOTICE OF INTENT TO PREPARE A
SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT
STATEMENT**

DEPARTMENT OF COMMERCE**National Oceanic and Atmospheric Administration****15 CFR Part 922****Notice of Intent To Prepare a Supplemental Draft Environmental Impact Statement for a Proposed Rule Limiting Discharges From Vessels in Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries**

AGENCY: National Marine Sanctuary Program, National Ocean Service, National Oceanic and Atmospheric Administration, Department of Commerce.

ACTION: Notice of Intent.

SUMMARY: Notice is hereby given that the National Oceanic and Atmospheric Administration's (NOAA) National Marine Sanctuary Program (NMSP) is preparing a Supplemental Draft Environmental Impact Statement (SDEIS) to supplement and/or replace information contained in the Draft Environmental Impact Statement (DEIS) for the Joint Management Plan Review, the management plan review for the Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries. The SDEIS will analyze revisions to the proposed action that would in effect prohibit the following discharges within the sanctuaries: All sewage from vessels 300 gross registered tons (GRT) or more with the capacity to hold sewage while within the sanctuary; and, in the Monterey Bay National Marine Sanctuary, all graywater from vessels 300 GRT or more with the capacity to hold graywater while within the sanctuary.

DATES: Because the NMSP has previously requested (64 FR 31528 and 71 FR 29096) and received extensive information from the public on issues to be addressed in the SDEIS, and because the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) do not require additional scoping for this SDEIS process (40 CFR 1502.9(c)(4)), the NMSP is not asking for further public scoping information and comment at this time. Upon release of the SDEIS the NMSP will provide a 45-day public review/comment period.

ADDRESSES: Copies of the 2006 DEIS are available at NOAA offices located at 1 Bear Valley Rd., Point Reyes Station, CA; West Crissy Field on the Presidio, 991 Marine Drive, San Francisco, CA, 299 Foam Street, Monterey, California,

and on the Web at <http://sanctuaries.noaa.gov/jointplan/>.

FOR FURTHER INFORMATION CONTACT: Sean Morton at (301) 713-7264 or sean.morton@noaa.gov.

SUPPLEMENTARY INFORMATION: The National Oceanic and Atmospheric Administration (NOAA) has proposed draft revised management plans, revised designation documents, and revised regulations for the Cordell Bank National Marine Sanctuary (CBNMS), Gulf of the Farallones National Marine Sanctuary (GFNMS), and Monterey Bay National Marine Sanctuary (MBNMS). The proposed regulations would revise and provide greater clarity to existing regulations. In particular, NOAA proposed changes to prohibitions regarding "discharge and deposit" in the MBNMS, and prohibiting discharging or depositing most matter from cruise ships.

On May 11, 2007 NOAA received a request from the California State Water Resources Control Board to prohibit discharges from certain vessels in national marine sanctuaries offshore California. In addition, on August 10, 2007, the California Coastal Commission voted to concur with the consistency finding the Jmpr actions are consistent with the policies of the California Coastal Management Program, on the condition that NOAA revise the proposed discharge and deposit regulation to prohibit vessels of 300 gross registered tons (GRT) or more from discharging sewage or graywater into the waters of the sanctuaries. After reviewing public comments on the proposed regulations, considering the California Coastal Commission's federal consistency review (per the Coastal Zone Management Act; 16 U.S.C. 1451 *et seq.*), and further analyzing vessel discharge issues, NOAA decided to revise the CBNMS, GFNMS, and MBNMS proposed discharge regulations to prohibit discharges of all sewage from vessels 300 gross registered tons (GRT) or more with the capacity to hold sewage while within the sanctuary; and in the MBNMS limit the exception for graywater discharges to vessels less than 300 GRT and vessels 300 GRT or more without the capacity to hold graywater while within the MBNMS. The revised proposed regulations will include prohibitions satisfying the request from the State of California for the CBNMS, GFNMS, and MBNMS.

The SDEIS, in conjunction with the concomitant supplemental proposed rule, will evaluate the revised proposed action and provide the public with an opportunity for additional review and comment.

Authority: 16 U.S.C. 1431 *et seq.*

Federal Domestic Assistance Catalog Number 11.429 Marine Sanctuary Program.

Dated: November 15, 2007.

Elizabeth R. Scheffler,

Associate Assistant Administrator for Management, Ocean Services and Coastal Zone Management.

[FR Doc. E7-22710 Filed 11-20-07; 8:45 am]

BILLING CODE 3510-NK-P

COMMODITY FUTURES TRADING COMMISSION**17 CFR Part 150****RIN 3038-AC140****Revision of Federal Speculative Position Limits**

AGENCY: Commodity Futures Trading Commission.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Commodity Futures Trading Commission ("Commission") periodically reviews the speculative position limits for certain agricultural commodities set out in Commission regulation 150.2 ("Federal speculative position limits"). In this regard, the Commission has reviewed the existing levels for Federal speculative position limits and is now proposing to increase these limits for all single-month and all-months-combined positions in all commodities except oats, based on the formula set out in Commission Regulation 150.5(c). In addition, the Commission is also proposing to aggregate traders' positions for purposes of ascertaining compliance with Federal speculative position limits when a designated contract market ("DCM") lists for trading a futures contract that shares substantially identical terms with a Regulation 150.2-enumerated contract listed on another DCM, including a futures contract that is cash-settled based on the settlement prices for a futures contract that is already enumerated. The Commission is requesting comment on these rule amendments.

DATES: Comments must be received on or before December 21, 2007.

ADDRESSES: Comments should be submitted to David Stawick, Secretary, Commodity Futures Trading Commission, Three Lafayette Centre, 1155 21st Street, NW., Washington, DC 20581. Comments also may be sent by facsimile to (202) 418-5521, or by electronic mail to secretary@cftc.gov. Reference should be made to "Proposed Revision of Federal Speculative Position Limits." Comments may also be

submitted by connecting to the Federal eRulemaking Portal at <http://www.regulations.gov> and following comment submission instructions.

FOR FURTHER INFORMATION CONTACT: Don Heitman, Attorney, Division of Market Oversight, Commodity Futures Trading Commission, Three Lafayette Centre, 1155 21st Street, NW., Washington, DC 20581, telephone (202) 418-5041, facsimile number (202) 418-5507, electronic mail dheitman@cftc.gov; or Martin Murray, Economist, Division of Market Oversight, telephone (202) 418-5276, facsimile number (202) 418-5507, electronic mail mmurray@cftc.gov.

SUPPLEMENTARY INFORMATION:

I. Background

A. Introduction

The Commission has long established and enforced speculative position limits for futures contracts on various agricultural commodities. The Commission periodically reviews these Federal speculative position limits, which are set out in Commission regulation 150.2.¹ In this regard, the Commission has reviewed the existing levels for Federal speculative position limits and is now proposing to increase these limits for all single-month and all-months-combined positions in all commodity markets enumerated in Commission regulation 150.2, except Chicago Board of Trade (“CBT”) Oats, based on the formula set out in Commission Regulation 150.5(c). In particular, the Commission is proposing to increase levels for single-month and all-months-combined positions for CBT Corn, Soybeans, Wheat, Soybean Oil, and Soybean Meal; Minneapolis Grain Exchange (MGE) Hard Red Spring Wheat; Kansas City Board of Trade (KCBT) Hard Winter Wheat, and New York Board of Trade (NYBOT) Cotton No. 2. The spot month limits for all of these commodities would remain unchanged. In addition, the Commission is also proposing to aggregate traders’ positions for purposes of ascertaining compliance with Federal speculative position limits when a DCM lists for trading a futures contract that shares substantially identical terms with a Regulation 150.2-enumerated contract listed on another DCM, including a futures contract that is cash-settled based on the settlement prices for a

¹ Regulation 150.2 imposes three types of position limits for each specified contract: A spot month limit, a single-month limit, and an all-months-combined limit. The Commission most recently adopted amendments to levels for Federal speculative position limits in 2005 (see 70 FR 24705 May 11, 2005).

futures contract that is already enumerated.

B. Regulatory Framework

Speculative position limits have been a tool for the regulation of the U.S. futures markets since the adoption of the Commodity Exchange Act of 1936. Section 4a(a) of the Commodity Exchange Act (Act), 7 U.S.C. 6a(a), states that:

Excessive speculation in any commodity under contracts of sale of such commodity for future delivery made on or subject to the rules of contract markets or derivatives transaction execution facilities causing sudden or unreasonable fluctuations or unwarranted changes in the price of such commodity, is an undue and unnecessary burden on interstate commerce in such commodity.

Accordingly, section 4a(a) provides the Commission with the authority to:

Fix such limits on the amounts of trading which may be done or positions which may be held by any person under contracts of sale of such commodity for future delivery on or subject to the rules of any contract market or derivatives transaction execution facility as the Commission finds are necessary to diminish, eliminate, or prevent such burden.

This longstanding statutory framework providing for Federal speculative position limits was supplemented with the passage of the Futures Trading Act of 1982, which acknowledged the role of exchanges in setting their own speculative position limits. The 1982 legislation also provided, under section 4a(e) of the Act, that limits set by exchanges and approved by the Commission were subject to Commission enforcement.

Finally, the Commodity Futures Modernization Act of 2000 (“CFMA”) established designation criteria and core principles with which a DCM must comply to receive and maintain designation. Among these, Core Principle 5 in section 5(d) of the Act states:

Position Limitations or Accountability—To reduce the potential threat of market manipulation or congestion, especially during trading in the delivery month, the board of trade shall adopt position limitations or position accountability for speculators, where necessary and appropriate.

As outlined above, the regulatory structure is administered under a two-pronged framework. Under the first prong, the Commission establishes and enforces speculative position limits for futures contracts on a limited group of agricultural commodities. These Federal speculative position limits are enumerated in Commission regulation 150.2, and apply to the following

futures and option markets: CBT Corn, Oats, Soybeans, Wheat, Soybean Oil, and Soybean Meal; MGE Hard Red Spring Wheat; NYBOT Cotton No. 2; and KCBT Hard Winter Wheat. Under the second prong, individual DCMs establish and enforce their own speculative position limits or position accountability provisions, subject to Commission oversight and separate authority to enforce exchange-set speculative position limits approved by the Commission. Thus, responsibility for enforcement of speculative position limits is shared by the Commission and the DCMs.²

II. Commission Speculative Position Limit Levels

The Commission is proposing several revisions to the Federal speculative position limit levels found in regulation 150.2 based upon its experience in administering these limits and the open interest formula found in Commission Regulation 150.5. Under the proposed revisions, spot month limits would remain unchanged from the current levels, but every single-month and all-months-combined position limit, except for CBT Oats, would be increased based upon open interest data for the most recent calendar year (2006). For all-months-combined levels, the Commission proposes to amend the limits set forth in Regulation 150.2 to the maximum levels permitted under the open interest formula, and to adjust the single month limits to reflect the existing ratio of single month to all-months-combined levels. With respect to the single month limits, a strict application of the open interest formula contained in regulation 150.5 would have resulted in somewhat lower single month limits for some commodities and higher limits for others than those proposed below. However, the Commission believes that maintaining the existing ratios between single-month and all-months-combined speculative position limit levels is of benefit to the marketplace, and thus the Commission is proposing to establish single-month limits that are consistent with that

² Provisions regarding the establishment of exchange-set speculative position limits were originally set forth in CFTC regulation 1.61. In 1999, the Commission simplified and reorganized its rules by relocating the substance of regulation 1.61’s requirements to part 150 of the Commission’s rules, thereby incorporating within part 150 provisions for both Federal speculative position limits and exchange-set speculative position limits (see 64 FR 24038, May 5, 1999). Section 4a(e) of the Act provides that a violation of a speculative position limit set by a Commission-approved exchange rule is also a violation of the Act. Thus, the Commission can enforce directly violations of exchange-set speculative position limits as well as those provided under Commission rules.

approach.³ The open interest formula does not justify an increase in the CBT Oats single month or all-months-combined limits, and the Commission does not propose any change in their levels at this time.

In addition, with respect to the MGE and KCBT Wheat contracts, the Commission proposes to maintain parity with the levels proposed for CBT Wheat rather than establish different limits based on the open interest formula for each contract. The Commission first adopted this parity approach in an action to revise position limits in 1993.⁴ At that time the Commission concluded that the breadth and liquidity of the cash markets underlying the KCBT and MGE Wheat contracts justified setting these limits at parity with little risk of regulatory harm from such action.⁵ The Commission continues to believe that the breadth and liquidity of underlying cash markets, as well as continued growth in open interest, for the KCBT and MGE Wheat contracts support

maintenance of these speculative position limit levels at parity with one another.⁶

Finally, the Commission is also proposing to aggregate traders' positions for purposes of ascertaining compliance with Federal speculative position limits when a DCM lists for trading a futures contract that shares substantially identical terms with a Regulation 150.2-enumerated contract listed on another DCM, including a futures contract that is cash-settled based on the settlement prices for a futures contract that is already enumerated. In this regard, when the Commission last amended regulation 150.2, it clarified its practice of aggregating traders' positions when a single DCM lists for trading two or more contracts with substantially identical terms based on the same underlying commodity characteristics, such as the CBT Corn and Mini-Corn futures contracts.⁷ At the time it adopted those clarifying amendments, the Commission noted, "that should a DCM list a

contract that shared substantially identical terms with a Regulation 150.2-enumerated contract listed on another DCM, the Commission could consider at that time whether to amend regulation 150.2 to likewise apply Federal limits to the newly-listed contract." Since then, the New York Mercantile Exchange (NYMEX) has listed for trading a Cotton futures contract that is cash-settled based on the settlement price for the NYBOT Cotton No. 2 futures contract. The Commission believes that aggregation of traders' positions in such circumstances is necessary to protect the integrity of the existing limits by removing the ability of a trader to flout the limits by taking a position in the non-encumbered market.

Based on the criteria noted above, the Commission is proposing the following changes to the Federal speculative position limits (additions are underlined, and deletions are struck through).

Speculative Position Limits¹
[By contract]

Contract	Spot Month	Single Month		All Months	
Chicago Board of Trade					
Corn & Mini-Corn ²	600	13,500	<u>26,000</u>	22,000	<u>42,400</u>
Soybeans & Mini-Soybeans ² ..	600	6,500	<u>8,600</u>	10,000	<u>13,300</u>
Wheat & Mini-Wheat ²	600	5,000	<u>11,100</u>	6,500	<u>14,500</u>
Soybean Oil	540	5,000	<u>6,600</u>	6,500	<u>8,600</u>
Soybean Meal	720	5,000	<u>5,500</u>	6,500	<u>7,100</u>
Minneapolis Grain Exchange					
Hard Red Spring Wheat	600	5,000	<u>11,100</u>	6,500	<u>14,500</u>
New York Board of Trade					
Cotton No. 2	300	3,500	<u>5,300</u>	5,000	<u>7,300</u>
Kansas City Board of Trade					
Hard Winter Wheat	600	5,000	<u>11,100</u>	6,500	<u>14,500</u>

¹ For purposes of compliance with these limits, positions in a futures contract that shares substantially identical terms with a contract market enumerated herein, including a futures contract that is cash-settled based on the settlement price of an enumerated contract market, shall be aggregated with positions in the enumerated contract market.

² For purposes of compliance with these limits, positions in the regular sized and mini-sized contracts shall be aggregated.

³ The Commission used this more flexible approach when it last revised the Federal speculative position limits in 2005 (See 70 FR 24705, May 11, 2005).

⁴ See 58 FR 17973 (April 7, 1993).

⁵ *Id.* at 17979.

⁶ The Commission maintained parity between the CBT, MGE, and KCBT wheat contracts when it last

revised the Federal speculative position limits in May, 2005.

⁷ 70 FR 24705, (May 11, 2005).

III. Related Matters

A. Cost Benefit Analysis

Section 15(a) of the Act requires the Commission to consider the costs and benefits of its action before issuing a new regulation under the Act. By its terms, section 15(a) does not require the Commission to quantify the costs and benefits of a new regulation or to determine whether the benefits of the proposed regulation outweigh its costs. Rather, section 15(a) requires the Commission to “consider the costs and benefits” of the subject rule.

Section 15(a) further specifies that the costs and benefits of the proposed rule shall be evaluated in light of five broad areas of market and public concern: (1) Protection of market participants and the public; (2) efficiency, competitiveness, and financial integrity of futures markets; (3) price discovery; (4) sound risk management practices; and (5) other public interest considerations. The Commission may, in its discretion, give greater weight to any one of the five enumerated areas of concern and may, in its discretion, determine that, notwithstanding its costs, a particular rule is necessary or appropriate to protect the public interest or to effectuate any of the provisions or to accomplish any of the purposes of the Act.

The proposed rule amendments impose limited additional costs in terms of reporting requirements, particularly since entities trading in or holding large positions, which either approach or meet the speculative limits of the rules herein, already file large trader reports with the Commission. Moreover, the amendments proposed herein would increase Federal speculative position limits for some commodities and, to that extent, reduce the compliance costs associated with these speculative position limits. The countervailing benefits to any additional costs are that the continued inclusion of appropriate speculative limits will help to ensure the maintenance of competitive and efficient markets, protect the price discovery and risk shifting functions of those markets, and protect market participants and the public interest.

B. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA), 5 U.S.C. 601 et seq., requires federal agencies, in proposing rules, to consider the impact of those rules on small businesses. The Commission believes that the proposed rule amendments to raise Commission speculative position limits would only impact large traders. The Commission has previously determined that large traders are not small entities for purposes of the RFA.⁸ Therefore, the Acting Chairman, on behalf of the Commission, hereby certifies, pursuant to 5 U.S.C. 605(b), that the action taken herein will not have a significant economic impact on a substantial number of small entities. The Commission also notes in this regard that the proposed rules will raise speculative limit levels and thereby reduce the regulatory burden on all affected entities.

C. Paperwork Reduction Act

When publishing proposed rules, the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) imposes certain requirements on federal agencies (including the Commission) in connection with their conducting or sponsoring any collection of information as defined by the Paperwork Reduction Act. In compliance with the Paperwork Reduction Act, the Commission, through this rule proposal, solicits public comment to: (1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including the validity of the methodology and assumptions used; (2) evaluate the accuracy of the agency’s estimate of the burden of the proposed collection of information including the validity of the methodology and assumptions used; (3) enhance the quality, utility and clarity of the information to be collected; and (4) minimize the burden of the collection of information on those who are to respond through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information

technology, e.g., permitting electronic submission of responses.

The Commission has submitted the proposed rule and its associated information collection requirements to the Office of Management and Budget. The proposed rule is part of two approved information collections. The burdens associated with these rules are as follows:

Collection Number

[3038-0009]

Average burden hours per response: 3.

Number of respondents: 2946.

Frequency of response: On occasion.

Collection Number

[3038-0013]

Average burden hours per response: 3.

Number of respondents: 9.

Frequency of response: On occasion.

List of Subjects in 17 CFR Part 150

Agricultural commodities, Bona fide hedge positions, Position limits, Spread exemptions.

In consideration of the foregoing, pursuant to the authority contained in the Commodity Exchange Act, the Commission hereby proposes to amend part 150 of chapter I of title 17 of the Code of Federal Regulations as follows:

PART 150—LIMITS ON POSITIONS

1. The authority citation for part 150 is revised to read as follows:

Authority: 7 U.S.C. 6a, 6c, and 12a(5), as amended by the Commodity Futures Modernization Act of 2000, Appendix E of Pub. L. 106-554, 114 Stat. 2763 (2000).

2. Section 150.2 is revised to read as follows:

§ 150.2 Position limits.

No person may hold or control positions, separately or in combination, net long or net short, for the purchase or sale of a commodity for future delivery or, on a futures-equivalent basis, options thereon, in excess of the following:

SPECULATIVE POSITION LIMITS¹

[In contract units]

Contract	Spot month	Single month	All months
Chicago Board of Trade			
Corn and Mini-Corn ²	600	26,000	42,400
Oats	600	1,400	2,000

⁸ 47 FR 18618 (April 30, 1982).

SPECULATIVE POSITION LIMITS¹—Continued
[In contract units]

Contract	Spot month	Single month	All months
Soybeans and Mini-Soybeans ²	600	8,600	13,300
Wheat and Mini-Wheat ²	600	11,100	14,500
Soybean Oil	540	6,600	8,600
Soybean Meal	720	5,500	7,100
Minneapolis Grain Exchange			
Hard Red Spring Wheat	600	11,100	14,500
New York Board of Trade			
Cotton No. 2	300	5,300	7,300
Kansas City Board of Trade			
Hard Winter Wheat	600	11,100	14,500

¹For purposes of compliance with these limits, positions in a futures contract that shares substantially identical terms with a contract market enumerated herein, including a futures contract that is cash-settled based on the settlement price of an enumerated contract market, shall be aggregated with positions in the enumerated contract market.

²For purposes of compliance with these limits, positions in the regular-sized and mini-sized contracts shall be aggregated.

Issued by the Commission this November 15, 2007, in Washington, DC.
David Stawick,
Secretary of the Commission.
[FR Doc. E7-22681 Filed 11-20-07; 8:45 am]
BILLING CODE 6351-01-P

DEPARTMENT OF HOMELAND SECURITY

Bureau of Customs and Border Protection

19 CFR Part 4

[USCBP-2007-0098]

Hawaiian Coastwise Cruises

AGENCY: Customs and Border Protection; Department of Homeland Security.
ACTION: Proposed interpretation; solicitation of comments.

SUMMARY: This document proposes new criteria to be used by Customs and Border Protection (“CBP”) to determine whether non-coastwise-qualified vessels are in violation of the Passenger Vessel Services Act (PVSA) when engaging in cruise itineraries in which passengers board at a U.S. port, the vessel calls at several Hawaiian ports, and then the vessel proceeds to a foreign port or ports for a brief period, before ultimately returning to the original U.S. port of embarkation where the passengers disembark to complete their cruise. CBP believes these itineraries are contrary to the PVSA because it appears that the primary objective of the foreign stop is evasion of the PVSA.

DATES: Comments must be received on or before December 21, 2007.
FOR FURTHER INFORMATION CONTACT: Glen E. Vereb, Cargo Security, Carriers & Immigration Branch, Office of International Trade, (202) 572-8730.
ADDRESSES: You may submit comments, identified by docket number, by one of the following methods:
• *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.
• *Mail:* Border Security Regulations Branch, Office of International Trade, Customs and Border Protection, 1300 Pennsylvania Avenue, NW., (Mint Annex), Washington, DC 20229
SUPPLEMENTARY INFORMATION:

I. Public Participation

Interested persons are invited to participate in this proposed interpretation by submitting written data, views, or arguments on all aspects of the proposed interpretation. Customs and Border Protection (CBP) also invites comments that relate to the economic, environmental, or federalism effects that might result from this proposed interpretation. Comments that will provide the most assistance to CBP in developing these procedures will reference a specific portion of the proposed interpretation, explain the reason for any recommended change, and include data, information, or authority that support such recommended change.

Instructions: All submissions received must include the agency name and docket number for this proposed

interpretation. All comments received will be posted without change to <http://www.regulations.gov>, including any personal information provided.

Docket: For access to the docket to read background documents or comments received, go to <http://www.regulations.gov>. Submitted comments may also be inspected on regular business days between the hours of 9 a.m. and 4:30 p.m. at the Office of International Trade, Customs and Border Protection, 799 9th Street, NW., 5th Floor, Washington, DC. Arrangements to inspect submitted documents should be made in advance by calling Mr. Joseph Clark at (202) 572-8768.

II. Background

The maritime cabotage law governing the transportation of passengers was first established by section 8 of the Passenger Vessel Services Act of June 19, 1886 (the “PVSA”), 24 Stat. 81; as amended by section 2 of the Act of February 17, 1898, 30 Stat. 248, formerly codified at 46 U.S.C. App. 289 (now codified at 46 U.S.C. 55103). That statute provided that no foreign vessel shall transport passengers between ports or places in the United States, either directly or by way of a foreign port, under a penalty of \$200 (now \$300, as promulgated in T.D. 03-11 pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. 2461 note) for each passenger so transported and landed.

The intent of the maritime cabotage laws, including the PVSA, was to provide a “legal structure that guarantees a coastwise monopoly to

APPENDIX A-3

**JOINT MANAGEMENT PLAN REVIEW SUMMARY
SCOPING DOCUMENT**

Joint Management Plan Review
Cordell Bank
Gulf of the Farallones
Monterey Bay National Marine Sanctuaries



Summary Scoping Document

Report to Sanctuary Advisory Councils

February 25, 2002

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1.0 INTRODUCTION

1.1 Purpose of Document

This document was created to assist National Marine Sanctuary Program (NMSP) staff and Sanctuary Advisory Council (SAC) members from Cordell Bank, Gulf of the Farallones and Monterey Bay National Marine Sanctuaries, and the public, in understanding and interpreting the comments received during the scoping phase of the Joint Management Plan Review (JMPR). Approximately 4,000 comments were obtained from participants at the 20 public scoping meetings. Additionally, the NMSP received nearly 8,500 written comments via letters, emails, and petitions.

This document summarizes the scoping comments received through early February 2002. It organizes the comments into 30 general issue categories. When feasible, the comments are attributed to a specific sanctuary or to multiple sites. Background information is provided for each issue area. NMSP staff and the three SACs will use this document, in conjunction with evaluation criteria, to prioritize issues that will be addressed in the JMPR.

1.2 Summary of Scoping Process

Raising Public Awareness and Participation

Management plan review is a lengthy and complex public process, particularly when three individual sanctuaries are involved at the same time. In order to raise awareness, reduce confusion, and increase public participation throughout the JMPR, Sanctuary staff from all three sites and headquarters developed a joint Strategic Communications Plan. The plan calls for conducting outreach to various user groups and members of the media, and detailed methods for informing the public about the JMPR.

One of the first outreach strategies was to create a project website and specific outreach materials. Informational pamphlets were developed in early November to inform people about each sanctuary, the JMPR process, and how they could get involved. The program launched a JMPR website (<http://sanctuaries.nos.noaa.gov/jointplan/>) in early November. The website contains information about the JMPR and other general information about each site, including maps, existing regulations and management plans. All outreach materials and products from the public scoping meetings have also been posted on the website.

Individual State of the Sanctuary reports were developed for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries. They were made available on the website and hard copies were sent out to thousands of people on each of the Sanctuary's mailing lists. The reports provide information about each Sanctuary, their significant accomplishments to date, and the current and emerging resource management issues. The intent of these reports was to help raise public awareness about each Sanctuary before the public scoping meetings were held.

Prior to the scoping meetings, staff made efforts to contact and explain the Jmpr process to local and regional media. Media were encouraged to help raise awareness about the Jmpr and bolster public participation at the scoping meetings. To date, the following media “hits” have been tracked: 35+ feature print articles, 7 radio interviews, and 6 television station reports. Staff also distributed newspaper and radio public service announcements, calendar event listings, and placed advertisements announcing the local scoping meetings. Scoping meeting flyers and posters were posted at ports and harbors, universities, and other marine-related businesses. Finally, a notice was placed in the *Federal Register* formally announcing the scoping process.

Scoping Meetings

Beginning on November 28, 2001, and lasting until January 17, 2002, the NMSP held 20 public scoping meetings in communities throughout the north-central California coast, from Gualala to San Luis Obispo, and one meeting each in Sacramento and Washington, D.C. Approximately 1,000 people participated in these forums to comment on the three Sanctuaries’ management strategies and provide input on specific issues they see as management priorities for the next 5 to 10 years. The scoping meetings and written comments are tools that are used to “scope out” or receive input from resource users, interest groups, government agencies, and other members of the public on resource management issues. After the meetings, Sanctuary staff compiled all of the comments raised at the meetings and posted them on the Joint Management Plan Review website.

The format for each public scoping meeting was similar, though tailored to meet the needs for each venue. The Sanctuary manager or superintendent opened each scoping meeting and provided a summary of the Jmpr process, detailed the meeting format, and answered questions. Following the introduction, the participants broke into smaller discussion groups of 10 to 12 people. Each group had an NMSP staff leader, or on some occasions a member of a Sanctuary Advisory Council, to help guide the discussion and ensure everyone had the opportunity to provide comments. Each group also had an NMSP staff person record each of the comments on a flip-chart so the group could see that their comments were captured. At the end of the meeting, the whole group reconvened and the Sanctuary manager or superintendent summarized issues raised in the individual breakout groups so everyone could hear a sampling of issues raised in other groups.

Written Comments

In addition to public scoping meetings, the program accepted written comments from early November 2001 to early February 2002. Comments were sent to the NMSP in the form of E-mails, letters, faxes, and a standard form (handed out at scoping meetings and provided on the website). As of February 14, 2002, the program received approximately 6,500 e-mails, 300 letters, 13 faxes, and a petition with 1,700 signatures.

A full list of issues raised at the scoping meetings and in the written comments can be found on the website and are included with all the other comments in Appendix 1.

2.0 EVALUATING ISSUES AND SETTING PRIORITIES

2.1 Advisory Council Input

The public scoping process was incredibly successful at generating public participation in the management plan review for all three sites and for identifying compelling suggestions for improving management of these three national treasures. The sheer number of comments exceeded program expectations, as more public comments were received than when the sites were designated. Moreover, comments have been received from individuals in most states across the nation.

Below are tables that have been developed by staff at each site, and the NMSP headquarters, to analyze and synthesize the thousands of comments received. They serve as the next iteration of comments from the “raw” comments listed on the website for the scoping meetings.

The next step in the process is to get advice from the Sanctuary Advisory Councils that help with management of all three national marine sanctuaries (see Figure 1; this diagram shows more clearly the specific steps that the program will take from scoping, to issue prioritization, to the development of a work plan on priority issues). This summary scoping document and a set of proposed criteria for establishing priorities is being distributed to all three Sanctuary Advisory Councils on or around February 25, 2002. Sanctuary Advisory Council members will use this document as they communicate with their constituents and the public about the issues raised during the scoping process. Individual Advisory Council members will be asked to review this summary scoping document, the proposed prioritization criteria, and input from their constituents to select their top four site-specific sub-issues (i.e., MBNMS SAC member choose Monterey Bay NMS issues) and their top four cross-cutting sub-issues that they believe should be addressed in the JMPR. These eight priority issues will need to be submitted to their respective management plan coordinators by Friday, March 22.

The members' individual priority issues will be compiled into a matrix and distributed prior to a joint SAC workshop in April (the date for the workshop still needs to be established). The purpose of the workshop is to narrow down and prioritize the list of issues identified during the scoping process into something that can be realistically addressed during the JMPR. The three SACs, as a group, will use agreed-upon evaluation criteria to prioritize those issues they will recommend to the Sanctuary to address during the JMPR. Each individual SAC will also provide recommendations on site-specific issues.

Following the joint SAC prioritization workshop, Sanctuary staff will analyze the SAC recommendations and develop a draft working plan for how they could be addressed in the JMPR. Staff may also suggest additional national or site-specific issues that need to be addressed during the review. It is envisioned that working groups will be created to address site-specific issues and cross-cutting issues. SAC members will have an opportunity to comment on the draft plan before it is made final. Once working groups are formed, the issue characterization phase of the JMPR will begin. We hope to begin the issue characterization phase of JMPR, including the creation of working groups in summer.

2.2 Tables Summarizing Comments

At the December 5, 2002 meeting, the MBNMS Advisory Council asked sanctuary staff to exercise professional judgement to synthesize the thousands of comments provided during the scoping process and provide some analysis of those comments that need further consideration as priorities. This request matched the analytical process NMSP intended to apply to comments. Thus, the tables that follow provide a synthesis and analysis of comments, as discussed further below.

The approximately 12,500 comments raised during the scoping process break into 30 broad categories or “issues”. In the tables that follow, sub-issues for most of these broad issues are identified from the scoping comments. The sub-issues reflect priorities, that came from the public, that the NMSP could further develop in the joint management plan review process.

Table 1: Summary of Issues Raised During Scoping

Table 1 presents a general overview of the issues raised during scoping. It provides summary information for each meeting in terms of location, number of participants, and issues raised (organized into 30 main categories). The table also depicts those issues raised in the written comments and the number of comments received. This table is a reflection on whether an issue was brought up during a meeting or in the written comments, and does not attempt to prioritize or count the number of comments received on each issue.

Tables 2 - 5: Analysis of Issues

These tables summarize, synthesize and conduct background analysis on the numerous issues raised during the scoping process. Table 2 presents issues that cross-cut two or three of the national marine sanctuaries here in northern/central California. Issues that apply to two or more sites, and a table for each of the site-specific issues. In all tables, the issues were divided into 30 categories with a brief background description for each. The sub-issues reflect a consolidation of similar comments and themes. Although some sub-issues could conceivably apply to more than one issue area, staff assigned sub-issues to the issue area with the most significant relationship. For instance, the comment that MBNMS should expand and more fully support the Citizen Watershed Monitoring Network is shown in the issue area, Monitoring, yet, it could have also been shown in the issue area Water Quality.

It should also be noted that the NMSP received many comments concerning a particular issue that were opposed to each other (i.e., sanctuary should do something; the sanctuary should not do something). This scenario occurs in almost every category provided. For example, one comment says to move a boundary in a certain way and another comment says to keep things status quo. In the tables below, staff have captured the comments that asked for action, and typically have not included comments that asked for no action. It is reasonable for readers to consider that for every sub-issue that calls for an action, there was another received that asked

for no action on that same topic. Nonetheless, all of the comments received are part of the record and can be found in Appendix 1

Table 3 provides the comments that relate specifically, and exclusively, to the Cordell Bank National Marine Sanctuary. Table 4 is the same for the Gulf of the Farallones National Marine Sanctuary, and Table 5 provides the comments that relate to the Monterey Bay National Marine Sanctuary. It is possible that for all three sites there may be site-specific comments that have a close analogue in the cross-cutting table. It is important for all Sanctuary Advisory Council members to read the site-specific table that applies to you, as well as the cross-cutting table to discern those comments that apply to the sanctuary you represent. It is also important to us that, at a minimum, you take a chance to get acquainted with the comments that pertain to other sanctuaries. A major goal of the NMSP is to get your assistance in prioritizing the issues that relate to the entire region, not just the sanctuary on whose advisory council you sit.

2.3 Appendices

Several appendices have been produced that you may wish to refer to in reviewing this summary scoping document. Other analytical material may be produced, and will be provided as additional appendices.

Appendix 1: Full List of Issues Raised at Scoping Meetings and in Writing

This appendix organizes the scoping meeting and written comments received at all three sites and headquarters into the 30 main issue areas. Under each issue area, the comments are divided between issues and suggested strategies and tools. The NMSP received thousands of individual comments that ranged from issues and problems, to strategies and tools. This table provides summarizes all of the non-duplicate comments. The “raw” or unprocessed comments can be viewed on the website for the scoping meetings.

Appendix 2: JMPR Process Diagram

This diagram depicts the entire joint management plan review process from the initial planning stages to the completion of the final management plan. It also shows the reader where we are in the process, at step 4 - internal evaluation of issues.

Figure 1: Process for Prioritizing Scoping Issues - CA JMPR

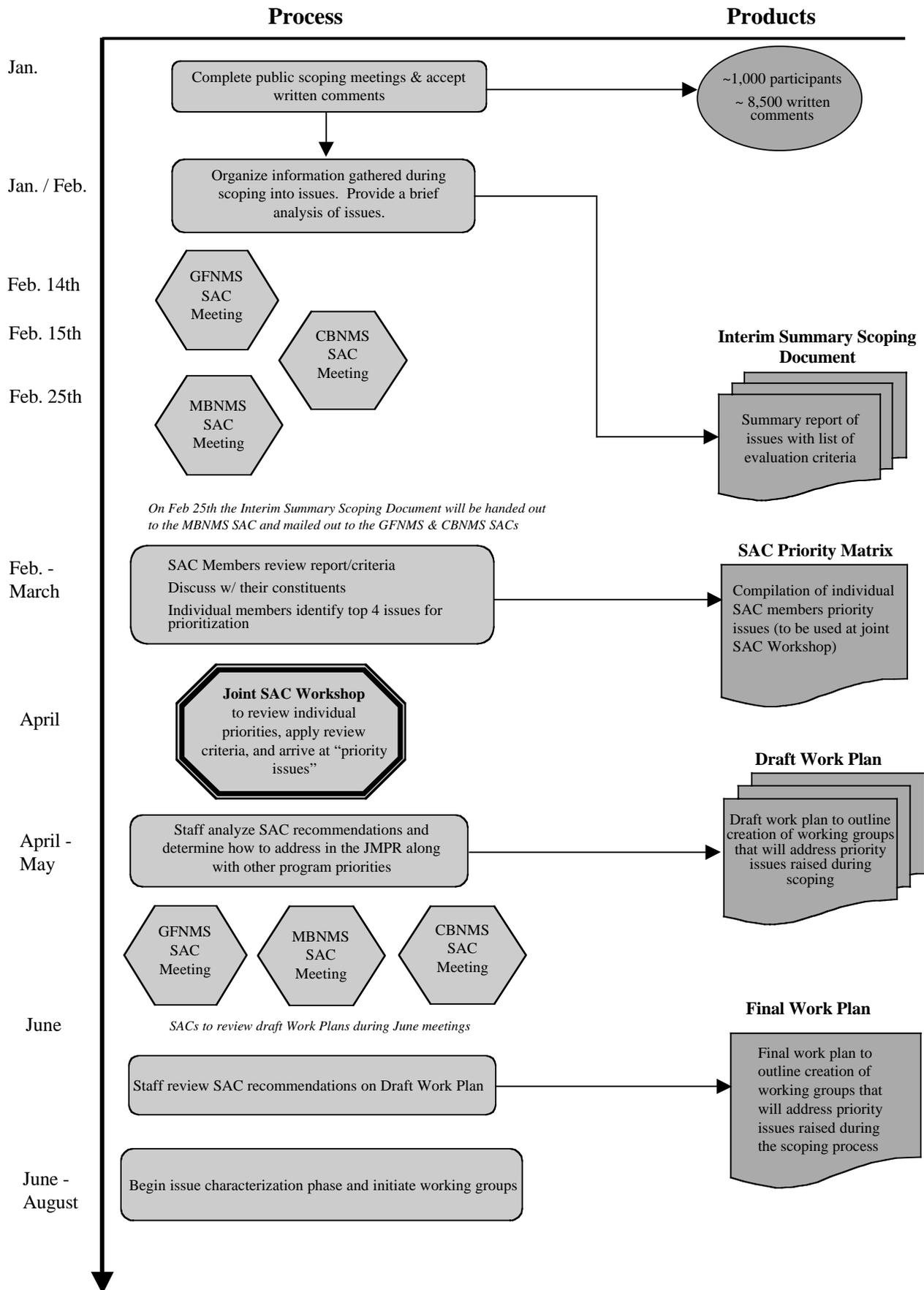


TABLE 2 ANALYSIS OF CROSS-CUTTING ISSUES

Issue Area	Description of Issue Area	Summary of Sub-Issues	Spatial Range				
			C B	G F	M B	R	N
1.0 Acoustics	A number of studies document impacts to living marine resources, including behavioral changes and physical effects due to exposure to anthropogenic noise and pressure waves in the marine environment. Anthropogenic sources of noise include: large commercial shipping traffic such as container ships, freighters, barges and tankers, recreational and commercial boats, military low frequency testing, research activities and aerial overflights. Marine mammals have been observed to deviate from their migration paths to avoid noise, or interrupt their communications in response to elevated noise levels. Certain anthropogenic noise is thought to mask sounds used for mating, feeding and avoiding predators. Responses vary depending on the acoustic frequency, decibel level, proximity to the source and other species-specific sensitivity factors. Concern about the cumulative impacts of noise from a variety of sources has grown as the ocean has become noisier in past half-century. However, long-term cumulative impacts are uncertain and range from minimal impacts in some situations to behavioral alterations to possible physiological or physical damage to hearing. The Sanctuaries have been involved in evaluating and requesting limits or alterations of specific proposals to use acoustic devices in the region, such as the Navy’s recent Low-Frequency Array proposal, but has not addressed the overall issue of cumulative noise impacts	1.1 Restrict or prohibit all harmful sources of marine noise	✓	✓	✓	✓	
		1.2 Research / Survey existing and potential noise impacts, identify alternatives and mitigation.	✓	✓	✓	✓	
2.0 Administration	Administrative roles for governing each sanctuary are divided up between the Manager or Superintendent and the National Marine Sanctuary Program (NMSP). The NMSP provides oversight and coordination among the thirteen national marine sanctuaries, taking responsibility for ensuring each site’s management plan is coordinated and consistent with the National Marine Sanctuary Act while developing a general budget and staffing for the site. The Sanctuary Manager or Superintendent is responsible for determining expenditures for program development, operating costs and staffing to meet the site’s annual operating plan. The Manager or	2.1 All three sanctuaries need to increase coordination on key programs and resources threats	✓	✓	✓		
		2.2 Increase public responsiveness and accountability	✓	✓	✓		
		2.3 Increase funding for all sites	✓	✓	✓		

TABLE 2 ANALYSIS OF CROSS-CUTTING ISSUES

Issue Area	Description of Issue Area	Summary of Sub-Issues	Spatial Range				
			C B	G F	M B	R	N
	<p>staffing to meet the site’s annual operating plan. The Manager or Superintendent and NMSP work together to monitor effectiveness of the management plan and to develop programs or policies that help meet resource management priorities</p> <p>Since its designation in 1989, CBNMS has grown from no full time staff or budget to a dedicated full time staff of three and a budget of \$480,000. Since 1990, GFNMS staff has grown from one and a budget of just under \$300,000 to a current staff of four with a budget of \$975,000. Since 1992, the MBNMS staff has grown to 12 government employees and about 10 contractors; its budget has grown from about \$450,000 in the first year to \$2,750,000 in fiscal year 2002. Prior to 1998, the GFNMS had management responsibilities for the northern half of the MBNMS. Since then, most of the management duties for this region have shifted to the MBNMS, although certain management responsibilities are carried out through joint consultation.</p>	<p><i>See also</i> Section 5.0 Boundary Issues and Section 11.0 Enforcement which include sub-issues related to Administration.</p>					
3.0 Aquaculture	<p>NOAA defines aquaculture as, “The propagation and rearing of aquatic organisms in controlled or selected environments for any commercial, recreational, or public purpose.” Aquaculture is used for bait production, wild stock enhancement, fish cultures for zoos and aquaria, rebuilding of populations of threatened and endangered species, and food production for human consumption. One of the concerns about aquaculture is the impact it has on water quality. Intensive cage, floating pen and other types of aquaculture systems discharge wastes directly to the aquatic environment. Ocean water circulatory systems used for pools and tanks often discharge pulses of highly concentrated waste discharges during cleaning and harvesting. Other concerns related to aquaculture activities may include: an elevated risk for eutrophication; disease and parasite introduction; accumulation of antibiotics; introduction of exotic species (including genetically altered); and escapement of hatchery stocks that may lead to interbreeding with native wild stocks altering genetic make-up.</p>	<p>3.1 Evaluate environmental impacts and if necessary, increase regulation.</p> <p>3.2 Increase education regarding aquaculture and how facilities can reduce impacts.</p>		✓	✓		
4.0 Biodiversity Protection and	<p>The goals and objectives set forth by the National Marine Sanctuary Act (NMSA) direct each of the sanctuaries to take an ecosystem-based approach to managing these fluid marine environments that have great</p>	<p>4.1 Revised management plans and future actions must focus on primary goal of resource protection</p>	✓	✓	✓		

TABLE 2 ANALYSIS OF CROSS-CUTTING ISSUES

Issue Area	Description of Issue Area	Summary of Sub-Issues	Spatial Range				
			C B	G F	M B	R	N
Ecosystem Conservation	temporal and spatial complexity, diversity and dimension. Through sanctuary partnerships, our experience has shown that the scientific community, resource agencies and the public have recognized the importance of an integrated ecosystem approach to management of the sanctuaries. Ecosystems include habitat structure, species assemblages and ecological processes, as well as humans and their use patterns. While upholding the main goal of resource protection, sanctuaries do allow for multiple use that is compatible with resource protection. Among other things, Management Plans set out to describe how human use activities will be addressed by the sanctuaries while improving the conservation, understanding, management and wise and sustainable use of marine resources. Many of the comments received during scoping reiterate the goals and objectives of the NMSA. Furthermore, comments directed the Sanctuary program to actively pursue protection of the ecosystem and enhance biodiversity through their management strategies, via strategies such as marine reserves, tidepool protection, eliminate fishing gear that damages habitat and boundary changes to better protect ecosystems	4.2 Management should focus on long term sustainability	✓	✓	✓		
		4.3 Protect biodiversity by Sanctuaries adopting more fully protected marine reserves throughout region.	✓	✓	✓	✓	
		4.4 Adopt marine reserves in Federal waters; participate with and advise CDFG in MLPA process.	✓	✓	✓		
		4.5 Need special protection of biodiversity at special places (e.g. Salinas River, kelp beds, Bolinas Lagoon).		✓	✓		
		4.6 Develop action plans specific to NMSP to help recover endangered species or key species at risk	✓	✓	✓		
		<i>See also Section 5.0 Boundary Changes:</i> many boundary changes were proposed to increase biodiversity protection					
5.0 Boundary Modifications	All three sites have boundaries that define the sanctuary itself, and where applicable, special use zones (like dredge disposal areas for MBNMS) within the sanctuary. These boundaries received extensive debate and analysis when the sites' were designated. Typically, a sanctuary's boundary is set to protect a defined ecosystem; human use zones either allow uses within a zone or prohibit them. Comments have arisen about the need to adjust boundaries for various reasons, and the management plan review process is the proper place to consider those. Reasons for boundary adjustments have included better protection of an ecosystem (Move MBNMS boundary further south), increased biodiversity protection (Include Davidson Seamount in MBNMS; Close "donut hole" off San	5.1 Consider moving the boundaries to better reflect socio-political and biological factors.	✓	✓	✓		
		5.2 Boundary of the CBNMS should be extended inward to the coastline.	✓	✓			
		5.3 Combine CB/GF/MB into one Sanctuary	✓	✓	✓	✓	
		5.4 Resolve "co-management" of the northern MBNMS; consider moving shared GF/MB boundary south		✓	✓		

TABLE 2 ANALYSIS OF CROSS-CUTTING ISSUES

Issue Area	Description of Issue Area	Summary of Sub-Issues	Spatial Range				
			C B	G F	M B	R	N
	Francisco), and administrative/operation reasons (Move shared GF/MBNMS boundary south; Create one national marine sanctuary instead of three). Some changes might reduce resource protection (Create buffer zones off urban areas) while others are beyond the initial intent of sanctuary designation, and possibly the NMSA (Move sanctuary boundaries into harbors and up watersheds).	5.5 Consider changing the boundary of the Sanctuary to include inland areas and watersheds.	✓	✓	✓		
6.0 Coastal Armoring	Development along the coast has increased the pressure to protect coastal structures with various types of coastal armoring (such as seawalls, bulkheads and revetments) to manage erosion. Approximately 14 miles of the MBNMS coastline is already armored, and this is estimated to double if trends continue at the current rate. Coastal armoring can damage or alter local coastal habitats, deprive beaches of sand, lead to accelerated erosion of adjacent beaches, and hinder recreational access. MBNMS has reviewed and authorized permits for seawalls, riprap or other coastal armoring projects at 16 sites since its designation, issuing conditions primarily focused on minimizing impacts from the construction process rather than long-term impacts from the armoring itself. Only a fraction of the total number of coastal armoring projects underway in the region came to the Sanctuary for review. This past year MBNMS staff have initiated a joint evaluation of coastal armoring with the California Coastal Commission, with a goal of developing a more proactive, comprehensive regional approach to the issue.	6.0 Prohibit coastal armoring (“seawalls”) in the GFNMS and MBNMS		✓	✓		
7.0 Coastal Development	The population of the greater San Francisco and Monterey Bay region numbers over 6 million and their populations are expected to keep increasing. Commercial and residential development is already concentrated around the Monterey Bay including the Monterey Peninsula, Marina, Watsonville and Santa Cruz, Half Moon Bay and north to San Francisco and Marin. Indirect affects of continued coastal development include increases in point (increased sewer use) and non point source pollution, nearshore habitat conversion to urbanized areas, as well as increased human presence at easily accessible points along the shoreline for the purposes of coastal recreation.	7.1 Sanctuary should take active role in promoting alternatives to development along coastline.		✓	✓		
		7.2 Minimize shoreline development along the sanctuary.		✓	✓		

TABLE 2 ANALYSIS OF CROSS-CUTTING ISSUES

Issue Area	Description of Issue Area	Summary of Sub-Issues	Spatial Range				
			C B	G F	M B	R	N
8.0 Community Outreach	<p>CBNMS’ outreach programs are directed at improving public awareness and understanding of the significance of the Sanctuary and the need to protect its resources. Public opportunities for direct interaction with Sanctuary resources are limited due the isolation of Cordell Bank, weather conditions and depth below the water surface. The goal of the Sanctuary’s interpretive outreach programs is to reach three target audiences: 1) site visitor programs for fishing and whale watching excursions and other recreational visitors to the Sanctuary; 2) programs for those visiting the Sanctuary visitor centers; and 3) outreach programs for interested groups in the region. CBNMS also provides the public with information on the Sanctuary through fairs, school presentations, and lecture series.</p> <p>GFNMS, in cooperation with the Farallones Marine Sanctuary Association, sponsors events, interpretive trips and exhibits. FMSA and GFNMS have worked together in establishing visitor centers in Pacifica and San Francisco. Sanctuary outreach materials are also available at Golden Gate National Recreation Area and Bodega Marine Lab</p> <p>Communication and Outreach for the MBNMS currently centers around its four facilities. The main thrust remains in Monterey and Santa Cruz, but has recently expanded south to San Simeon and north to Half Moon Bay. Most events and news surrounding the Sanctuary is disseminated through the education staff located in each office. Limited programming at schools and the general public are available. MBNMS just completed a multi-cultural education plan, targeting the large Hispanic community in Monterey and Santa Cruz Counties. The plan is to have bilingual marine educators working with families in their community groups, at targeted State Beaches and Parks and with Hispanic serving teachers. The majority of current outreach is in the form of informal presentations and distributed print materials</p>	8.1 Implement a nationwide outreach program	✓	✓	✓	✓	✓
		8.2 Increase marketing, media exposure and public awareness	✓	✓	✓	✓	
		8.3 Increase multicultural outreach for all three sanctuaries	✓	✓	✓	✓	
9.0 Cultural Resources	Submerged cultural resources include shipwrecks, aircraft, wharfs and dock sites, prehistoric archaeological sites and associated artifacts. For hundreds of years mariners transiting this region have been faced with prevailing	9.1 Recognize and help preserve traditional cultures, communities and activities within the sanctuary.	✓	✓	✓	✓	

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	winds, extreme weather conditions and natural hazards. Although there is not a complete inventory, remnants of hundreds of ships are believed to be off the coast, within Sanctuary waters. With the development of underwater technologies that bring the public virtually closer to the marine environment, there is increasing interest in submerged cultural resources. The continuing discovery, exploration, documentation and study of these resources provides a richer understanding of the region's maritime community and the larger ecosystem all three sanctuaries are protecting.	9.2 Develop and implement a research plan to identify submerged cultural resources, such as shipwrecks, and enforcement and education efforts to better protect them.	✓	✓	✓	✓	✓
10.0 Education	Education programs are designed to enhance public awareness and understanding of marine natural and cultural resources of the Sanctuary. Education is essential to achieving many of the Sanctuary's management objectives, and is an important component in promoting the Sanctuary's research and restoration projects. The Farallones Marine Sanctuary Association (FMSA) works collaboratively with GFNMS to implement various education, interpretation, and research programs. GFNMS in cooperation with FMSA, sponsors student summits, lectures, teacher training, summer camps and other education programs. FMSA is also supporting the development of a Coastal Ecosystem curriculum for high school students and multi-cultural programs with the San Francisco Dept. of Parks and Recreation and the California Coastal Commission.	10.1 Develop more targeted education as to how local communities and resource users can help protect sanctuary resources.	✓	✓	✓	✓	✓
		10.2 Use new technologies to bring offshore areas of the Sanctuary to the public.	✓	✓	✓	✓	✓
		10.3 Provide education program for local schools.	✓	✓	✓	✓	✓
11.0 Enforcement and Regulations	The purpose of Sanctuary enforcement is to ensure compliance with the National Marine Sanctuaries Act and appropriate regulations of the Sanctuary. Section 207 of the NMSA authorizes the Secretary of Commerce to conduct activities for carrying out the Act, delineates civil penalties and powers of authorized officers, and provides for recovery of penalties by the Secretary. Although GFNMS does not have an enforcement program of its own, it works together with the U.S. Coast Guard, National Marine Fisheries Service and Dept. of Fish and Game to enforce Sanctuary regulations. The Sanctuary also works directly with user groups to encourage compliance and best management practices. As an example, GFNMS has worked with CalTrans to stop the disposal of highway spoils along the Sanctuary shoreline. Sanctuary staff worked for more than 10 years with the City of Santa Rosa to prevent sewage discharge in the Sanctuary. As a result, the City's tertiary treatment system processes discharges that can be used to irrigate crops and recharge the aquifer for the Geyser electric generating facility.	11.1 All sanctuaries should have the same regulations and permit procedures	✓	✓	✓		✓

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12.0 Exotic / Introduced Species	Invasions by non-native species are increasingly common worldwide in coastal habitats. Estuaries, in particular, harbor large numbers of introduced species. For example, there are about 250 known invasive species in the San Francisco Bay and Delta, and many in Elkhorn Slough. Although the effects of many introduced aquatic species on habitats they colonize is unknown, some clearly have had serious negative influences. Impacts often include decreasing abundance and even local extinction of native species, alteration of habitat structure, and extensive economic costs due to biofouling. Probably the most important mechanism for the introduction of aquatic/marine species is transport in ship ballast tanks, though other mechanisms such as disposal of aquarium materials contribute to the issue. Eradication of introduced species is difficult, and management practices focus largely on prevention of introductions.	12.1 Prohibit disposal of ballast water in Sanctuaries to reduce threat of introduction.	✓	✓	✓		
		12.2 Develop and implement invasive species protection plan	✓	✓	✓		
13.0 Fishing & Kelp Harvesting	The California Department of Fish and Game (CDFG) regulates fisheries in State waters and, under the Marine Life Protection Act, is currently restructuring marine managed areas and establishing new ones. The Pacific Fisheries Management Council (PFMC) regulates fisheries in Federal waters and designates essential fish habitat as fisheries management tools. Fishing is a critical part of the regions culture and economy. Although some stocks appear healthy, fishery managers are concerned about declining stocks and habitat threats for other species, including many rockfish species, the live fish fishery, and anadromous species such as salmon and steelhead. The three sanctuaries do not currently manage any aspect of commercial or recreational fisheries. Kelp harvesting is also managed by the Department of Fish and Game although the appropriate level of kelp harvest remains an ongoing issue of interest in the MBNMS; kelp is not currently harvested in the CBNMS or GFNMS, rather only in the MBNMS. However, sea palms are harvested in the GFNMS.	13.1 Develop programs with fishing community to promote positive aspects of fishing, such as fish stocks that are sustainable.	✓	✓	✓	✓	
		13.2 Coordinate with NMFS in the coho salmon recovery plan and other fishery management plans.	✓	✓	✓	✓	✓
		13.3 Pursue fishing regulations only in Federal waters	✓	✓	✓		
		13.4 Define Sanctuary role in fisheries management	✓	✓	✓		
		13.5 Regulate shore fishermen separately from commercial and sport fishermen in regards to possible management and possible fishing closures.		✓	✓		

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	<p>About 200 species of fish and invertebrates are harvested in the three sanctuaries. In CBNMS, commercial fisheries generally target rockfish, flatfish, salmonoids, groundfish and albacore tuna. Recreational fisheries generally focus on rockfish, lingcod, salmon and albacore tuna. Most of the private boats and charter vessels that fish CBNMS are from Bodega Bay. Rough ocean conditions often prevent smaller recreational boats from accessing CBNMS. Fishery gear types include: hook and line, long lines, bottom trawlers and mid-water trawlers. The California Department of Fish and Game (CDFG) regulates fisheries in State waters and, under the Marine Life Protection Act, is currently restructuring marine managed areas and establishing new ones. The Pacific Fisheries Management Council (PFMC) regulates fisheries in Federal waters and designates essential Fish habitat as fisheries management tools. CBNMS staff coordinates with these fisheries management agencies. During the management plan review process CBNMS staff will be evaluating the best tools for protection of living resources and habitats.</p>	<p><i>See also Section 4.0 Biodiversity Protection and Ecosystem Conservation</i> for marine reserve sub-issues.</p> <p><i>See also Sub-issue 14.1</i> below regarding bottom trawling.</p>					
14.0 Habitat Alteration	<p>MBNMS and GFNMS have regulations that prohibit habitat alteration such as seabed disturbance (Cordell Bank does not have a seabed disturbance regulation only the taking of algae and invertebrates). Exceptions to this include fishing activities and normal anchoring. Habitat alteration can from construction activities or repeated activity such as bottom trawling or tidepool trampling. Habitat or environmental alteration can also occur as a form of restoration to a more natural state or by “improvements” such as artificial reefs. Placement of seawalls, rip rap, or other coastal armoring also alters the habitat however this issue is included in this summary as Issue 6.0. The impacts of activities that alter the habitat vary depending upon the action or duration of the activity. Sanctuaries received comments calling for stricter regulation or prohibition of fiber optic cables and</p>	14.1 Ban or restrict bottom trawling in sanctuaries	✓	✓	✓		
		14.2 Ban or restrict construction of commercial submarine cables	✓	✓	✓		
		14.3 Altered coastal habitats should be restored to the natural state; remove non-native species and restore with indigenous flora and fauna .		✓	✓	✓	

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	calling for stricter regulation or prohibition of fiber optic cables and anchoring, regulation of coastal sand mining operations, and restrictions on bottom trawling. Other comments called for restoration activities, primarily in coastal wetlands that have been degraded by past human activity. Other specific comments called for placement of structures on the seafloor to propagate kelp for the purpose of harvesting or to act as habitat in order to mitigate for kelp harvesting activities.						
15.0 Marine Bioprospecting	Marine bioprospecting may include either sampling or continuous extraction of a living marine resource for commercial purposes. What differentiates marine bioprospecting from commercial fishing or kelp harvesting is the genetic value of the bioprospected material. Genetic material means any material of plant, animal, microbial or other origin containing genetic elements. Extraction for the purposes of marine bioprospecting may cause injury to Sanctuary resources, have impacts on biodiversity and/or interfere with the natural functional aspects of the ecosystem. The most common use of marine bioprospected materials to date is pharmaceuticals. Inquiries about collecting Sanctuary resources for biochemical analysis are an indication of the current expansion in this field. In the GFNMS, active harvesting of sponges, algae and shark cartilage for medicinal use and research is under way.	15.1 Regulate or prohibit marine bioprospecting in the sanctuaries.	✓	✓			
16.0 Marine Discharge and Debris	Marine deposits in the MBNMS include harbor dredged materials and landslide material related to maintenance and repair of coastal highways. MBNMS review the composition of the sediment and any associated contaminants and authorizes dredged material disposal at these sites for clean sediments of the appropriate grain size and amounts. Deposition of material from landslides along the Sanctuary's steep coastline can bury intertidal and subtidal habitat, and increase sand scour which inhibits larval settlement in certain habitats. Some of these slides occur naturally while	16.1 Review Sanctuaries' role in permit process for dredge disposal to ensure efficiency of review and protection of Sanctuary resources		✓	✓		
		16.2 Develop marine debris reduction program	✓	✓	✓	✓	

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	<p>settlement in certain habitats. Some of these slides occur naturally, while other slides are created or exacerbated by highway design, repair and maintenance practices. Sanctuary regulations currently prohibit these discharges. The interagency review process for both dredging and landslide disposal is quite complicated, and improvements in coordination of the process have begun.</p> <p>Marine debris along the coastline includes litter and trash from the watersheds, beaches and boats which can harm marine life which may mistake them for prey or become entangled. Debris also reduces enjoyment of recreational use of the coastline. The Sanctuaries assists annually with Coastal Cleanup Day and has some urban runoff educational materials which mention debris, but has otherwise not focused heavily on this issue.</p>						
17.0 Military Activities	The U.S. Navy and the U.S. Coast Guard regularly use the GFNMS for operations. U.S. Navy's third fleet conducts surface, air and submarine maneuvers. Just outside GFNMS to the north, there is a special submarine transit lane used primarily on approach to, and departure from, San	17.1 Sanctuaries should reduce or eliminate the impact from military experiments and activities, including pollution, sound, etc.	✓	✓	✓	✓	✓

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	<p>Francisco Bay. The U.S. Navy’s operations areas are located 8 nautical miles (nmi) southeast and 9 nmi northwest of the Farallon Islands. This submarine activity includes a trial diving exercise and various equipment checkouts normally following vessel refitting or overhauls. Approximately 10 nmi southwest of the Pt. Reyes Headlands, the U.S. Navy conducts both aircraft and surface vessel exercises, often coordinated with submarine operations. Submarine transit lanes run parallel to the mainland and due west of Bodega Headland and vary in width from 7 to 10 nmi. When activated, all other vessels in the vicinity are cautioned against towing submerged objects. The U.S. Coast Guard flies maintenance personnel to the lighthouse on Southeast Farallon Island for periodic servicing. They also conduct regular flights within the Sanctuary for enforcement and search and rescue missions.</p> <p>Military use of the MBNMS includes air, surface and underwater activity. Some activity includes the use of non explosive ordnance, sonar, smoke markers and the temporary placement of objects for torpedo firing or sonar location training. Air activities include aircraft carrier takeoffs and landing, and low-level air combat maneuvering. The U.S. Navy uses these areas for submarine operations. Navy minesweeping ships in Monterey Bay conduct mine hunting training eight times a year; each exercise lasts about one week. On occasion, U.S. Marines practiced amphibious landings on the beaches adjacent to this area. Concerns regarding the military activity in the MBNMS primarily relate to conflicts and disturbances to marine life, both temporary or long term. Acoustic issues such as the Navy’s LFA Sonar are addressed in Section 1.0. Other concerns include the carrier launched jet aircraft and their impact on seabird roosting areas along the coast.</p>						
18.0 Monitoring	Data derived from monitoring efforts provide an important tool in effective resource management at all three sanctuaries. Monitoring provides long-term information about the resources, often indicating trends, changes over time or cause and/or effect relationships. Ideally, good monitoring data will allow sanctuary management to discern natural variability in populations from adverse human-induced change, and work to reduce or eliminate the harmful human activities.	18.1 Establish long-term monitoring for intertidal areas.		✓	✓		
		18.2 Increase monitoring of Water Quality.	✓	✓	✓		
		18.3 Expand SIMoN to GFNMS and CBNMS and fully fund critical monitoring efforts.	✓	✓	✓	✓	

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	Over the past 20 years, the GFNMS has supported several seabird and marine mammal monitoring programs and is currently involved in several marine mammal monitoring programs, shoreline monitoring, intertidal monitoring, coastal ecology relationships monitoring, and restoration monitoring. Virtually the same is true for the MBNMS. In addition, the MBNMS has recently developed an integrated ecosystem monitoring program, SIMoN (Sanctuary Integrated Monitoring Network) to use existing data collected by regional scientists and to collect new data to better monitor the health of the sanctuary’s ecosystem. CBNMS has initiated several monitoring projects to assess environmental changes as they occur including: monitoring harmful algal blooms; visual assessments of the Cordell Bank reef community; population assessments of blue and humpback whales; seabird surveys; and monitoring of biological, physical and chemical properties of the CBNMS.						
19.0 Motorized Personal Watercraft (MPWC)	MPWCs operate in a manner unique among recreational vehicles creating potentially significant impacts on wildlife, water quality and personal safety. The high speed and maneuverability of personal watercraft, and the fact they tend to operate nearshore and in a repeated fashion, within a confined area, results in recurring disturbance to animals and habitats. Suspected impacts include behavior modification of sea birds, fish and pinnipeds; and site abandonment and avoidance by certain porpoises and whales. In 2000, GFNMS prohibited use of MPWCs in the Sanctuary. MBNMS restricted use of these vehicles with the designation in 1992 and confined them to four zones outside of the four harbors in the Sanctuary. The MBNMS regulation includes a provision in the definition of a MPWC that states it has the capacity to carry not more than the operator and one other person while in operation. Since adoption of this regulation, certain MPWC manufacturers have designed vehicles that do not fall under the MBNMS definition. Specifically, certain MPWCs now are capable of carrying two, three or four people in addition to the operator and therefore are not subject to the MBNMS regulation. There have been conflicts between PWCs and other recreational ocean users due to the noise and operation of PWCs. Comments received during scoping include calling for a complete ban, adopting the GFNMS definition, using marine zones for buffering the impacts from wildlife, or well as removing regulations related to MPWCs.	19.1 Reassess environmental impacts from MPWC and recast regulations accordingly; ensure regulatory consistency at all three sanctuaries.	✓	✓	✓		
		19.2 Ban MPWCs entirely, except for genuine lifesaving duties	✓	✓	✓		

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20.0 Oil and Gas Exploration and Development	Oil and gas activity was one of the major reasons for designation of all three of the north/central California National Marine Sanctuaries. In the past 10 years, the State of California has adopted legal restrictions to prohibit new oil and gas leasing and development. Temporary moratoria have been in place in federal waters since 1982. The most current directive (June 1998, Clinton administration) under the OCS Lands Act prevents any leasing of new areas for oil and gas exploration and development through June 30, 2012. The OCS presidential deferrals do not restrict development of already leased Federal areas. There are 36 remaining undeveloped active OCS leases south of the MBNMS off the coast in San Luis Obispo and Santa Barbara counties.	20.1 Maintain prohibition on oil and gas exploration and development	✓	✓	✓		
21.0 Partnerships with Agencies	The NMSP is committed to coordinating with other Federal, State and local agencies on a continuous ecosystem management process. The process is designed to ensure the long-term protection of the unique resources of this region, while considering the demands of multi-use interests. As such, the management process requires that cooperation of many agencies and institutions that historically may not have focused on the same goals. Overlapping jurisdictions, different agency mandates and limited resources necessitate the development of a relationship that brings together multiple agencies for the common purpose of ecosystem management. Achieving the long and short-term goals of the Sanctuary Program requires close and continuing partnerships among all agencies.	21.1 Work with other local, state and federal agencies having shared resource management authorities and responsibilities.	✓	✓	✓	✓	✓
		21.2 Coordinate with coastal planning agencies to reduce marine impacts from coastal development issues.	✓	✓	✓	✓	✓
22.0 Partnerships with Community Groups	The Sanctuaries could not function in the many roles they undertake without the support of community partnerships. For instance, the MBNMS Sanctuary Advisory Council (SAC) is comprised of 40 agency and user group representatives as well as the public at large. Its advice is critical to	22.1 Develop regional partnership program to capitalize on shared interests with tourism industry, and with regional NGOs.	✓	✓	✓	✓	

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	understanding the needs of the local communities while protecting the Sanctuary's resources. The SAC relies on an additional 80 individuals on 4 working groups for the best information regarding Research, Education, Conservation, Business and Tourism. Each of these groups is comprised of representatives, who volunteer their time to help develop the Sanctuary's programs, products and viewpoints. 30 Hispanic serving institutions worked with MBNMS staff to develop the multicultural education plan. Partnerships with State and Regional Parks and private nonprofit groups have greatly enhanced the MBNMS's ability to share its mission. The GFNMS is similar in its success due via support from many non-governmental organizations. The Farallones Marine Sanctuary Association provides volunteers and funding for many important sanctuary activities and programs.						
23.0 Radioactive Waste	No Cross Cutting Comments See analysis of Gulf of the Farallones NMS Issues						
24.0 Research	The opportunities for marine research within the Sanctuaries are abundant, as seen by past research studies that have provided important baseline information about the area. The diversity of habitat types and communities provides a wealth of opportunities for conducting a variety of research programs. Studies on the processes at the land-sea interface are also feasible due to the accessibility of extensive coastline. Finally, the marine research institutions within the area provide an exceptional resource to draw upon in furthering our understanding, and thus the management of, the Sanctuary's marine resources. Research is necessary to understand how the Sanctuary ecosystem functions and how humans impact it. This can be accomplished by improving our understanding of the Sanctuary environment, resources and qualities, resolving specific management problems, and coordinating and facilitating information flow between the various research institutions, agencies and organizations in the area. Research results can be used for making management decisions about resource protection and to develop and improve education programs for visitors and others interested in the Sanctuary.	24.1 Coordinate research activities among all three sites concerning sanctuary resources.	✓	✓	✓	✓	
		24.2 Need research on water quality impacts from San Francisco Bay industrial point sources	✓	✓	✓		

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25.0 Sanctuary Advisory Councils	No Cross Cutting Comments See analysis of Monterey Bay NMS Issues							
26.0 Spill Response and Contingency Planning	Emergency response within the Sanctuary ranges from small events associated with fuel and oil discharges, debris and habitat damage from vessel groundings, sinkings and plane crashes, to larger oil spills from offshore shipping traffic, sunken vessels or natural seeps where damages can span hundreds of miles of coastline. The most severe oil spill impacts would result from large, acute spills usually associated with oil well blowouts, or in the case of this sanctuary, tanker accidents. Oil spills could have a major impact on foraging birds including the fouling of feathers, reducing flying and swimming ability, loss of buoyancy and thermal insulation. Preening birds can ingest oil leading to death, reproductive failure, unviable eggs or the transfer of oil to chicks. Pinnipeds may experience loss of buoyancy and thermal insulation from coming into contact with oil. Impacts on cetaceans from oil spills include contact with eyes or skin, fouling of baleens and ingestion or inhalation. Oil spill impacts on fish and benthic fauna may include reproductive failure and disruption in larval development. Additionally, oil residue may impact habitats throughout the water column, benthic habitats, kelp forests, rocky reefs and sandy beaches.	26.1 Stage adequate oil spill response supplies in Bodega Bay, not just SF Bay.	✓	✓	✓			
		26.2 Develop an oil spill contingency plan that applies to all three sanctuaries	✓	✓	✓	✓		
		26.3 Develop a Sanctuaries policy for use of oil spill dispersants	✓	✓	✓	✓	✓	

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27.0 User Conflicts	<p>All three Sanctuaries are located near some of California’s most urbanized areas and have experienced an increase in the number of users. Users have put increasing demands on the resources through commercial and recreational fishing, wildlife viewing, boating, tourism, research interests and educational opportunities. Because the area is large and includes adjacent rural and urban areas, management must be responsive and equipped to deal with a broad range of concerns. One tool National Marine Sanctuaries use to address user conflicts is through zoning. Zoning may be used to avoid concentration of uses that could result in significant impacts on marine resources; to reduce conflict between users; provide opportunities for scientific research; and/or to provide for the recovery of resources from degradation or other injury attributable to human uses. Other tools to address user conflicts include: the promulgation of regulations restricting activities that are harmful and the development of voluntary rules for interaction with Sanctuary resources such as wildlife viewing guidelines.</p>	27.1 Sanctuary should not limit access to resources or recreational opportunities. Provide more public access to the Sanctuary.	✓	✓	✓		
28.0 Vessel Traffic	<p>The diverse resources in the Sanctuaries are particularly sensitive to the impacts of spilled oil or other hazardous materials. The Sanctuaries are also located in an area of active maritime commerce, which is a major component of the regional and national economy. Vessel traffic was a major issue of concern raised during the Sanctuary designation and concerns continue today. The historical record of spills for the Pacific Coast indicates that the total number of spills from transiting vessels is relatively small in number, but the potential impacts can be enormous given the number and volume of these vessels and the potential size of a spill.</p> <p>Due to the high volume of large commercial vessel traffic and the risks and consequences of spills, vessel traffic was a major issue during the MBNMS designation in 1992. NOAA and the Coast Guard used a collaborative “key stakeholder” process to develop recommendations, much of which were approved internationally, to move shipping lanes 12 to 20 miles offshore, and keep most tanker traffic out of the Sanctuary. Individuals commented on this issue during scoping with recommendations to move the vessel traffic lanes further offshore and thereby further reduce the threat potential.</p>	28.1 Move tanker traffic further offshore, outside of Sanctuaries.	✓	✓	✓		

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29.0 Water Quality	<p>Nonpoint Source Pollution Coastal watersheds immediately adjacent to the three sanctuaries cover over 10,000 square miles of land with a mix of land uses including major urban areas, rural communities, agricultural land, and pockets of industrial areas. As rainfall or irrigation water in these watersheds moves downstream, it picks up a variety of contaminants. Offshore areas of the Sanctuaries are in relatively good condition, but nearshore coastal areas, harbors, lagoons, estuaries and tributaries show a number of problems including elevated levels of coliform bacteria, detergents, oils, nitrates, sediments, and persistent pesticides such as DDT and toxaphene. These contaminants can have a variety of biological impacts including bioaccumulation, reduced recruitment of anadromous species, algal blooms, transfer of human pathogens and interference with recreational uses of the sanctuary due to beach closures. In addition, recent problems such as recurring beach closures which are in part due to nonpoint sources of coliform pollution have not yet been adequately addressed in the urban runoff and water quality monitoring efforts.</p> <p>Point Source Pollution Point sources of pollution are those in which a single discharge point is evident, and they include sewage spills and discharges, desalination plants, and industrial discharges such as power plants. Sewage spills have become more frequent in recent years, in part due to cracks and clogging of aging pipelines beneath many of the region’s cities and small communities. These spills, along with nonpoint sources of coliform, have contributed to more frequent beach closures which reduce recreational use. Pathogens from sewage have also been implicated in sea otter diseases and mortality patterns. In addition, there are currently 15 desalination plants that are existing or in some stage of planning within MBNMS, with an increasing trend towards the development of small independent plants for private developments. Discharges from these plants have potential impacts due to elevated salinity and metal levels, toxic contaminants associated with cleaning and maintenance, and construction impacts from pipelines</p>	29.1 Collaborate with local, state and federal management agencies to address impacts from point and non-point source pollution.	✓	✓	✓	✓	✓
		29.2 Prohibit private desalination facilities		✓	✓		
		29.3 Address pollution from municipal sewage system outfalls.		✓	✓		
		29.4 Establish a water quality pollution monitoring program through all three sanctuaries	✓	✓	✓		
		29.5 Monitor and address pollution from SF Bay.	✓	✓	✓	✓	

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Issue Area	Description of Issue Area	Summary of Sub-Issues	Spatial Range				
			C B	G F	M B	R	N
30.0 Wildlife Disturbance	The Sanctuaries provide many opportunities for observation of nature, including whale watching, bird watching and pinniped pupping and haulout activity. Party boats are used for nature observation tours. Rocky shorelines provide pedestrians opportunities to view the flora and fauna associated with the habitat. With the multitude of opportunities for observation comes the potential for wildlife disturbance which may result in flushing birds from their nesting sites, pinnipeds abandoning pups, potential harassment or even death. Previously in the MBNMS ecotourism operations included white shark viewing with the aid of chumming and other attraction methods. MBNMS has adopted prohibitions for white shark attraction. These activities do occur in the GFNMS or CBNMS, however no regulations for these activities exist.	30.1 Develop responsible wildlife viewing standards for various user groups (kayakers, hikers, boaters, divers, etc.).	✓	✓	✓	✓	✓
		30.2 Adopt regulations that limit or prohibit “chumming” for great white sharks; keep regulations consistent between sanctuaries.	✓	✓	✓	✓	
		30.3 Develop action plan, and possibly new regulations, to better protect sanctuary tidepool wildlife from trampling and collection activities.		✓	✓		

TABLE 3: Analysis of Cordell Bank National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
1.0 Acoustic Impacts	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
2.0 Administration	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
3.0 Aquaculture	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
4.0 Biodiversity Protection & Ecosystem Conservation	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
5.0 Boundary Modifications	All three sites have boundaries that are defined by their terms of designation. The boundary delineates the spatial extent of each sanctuary. During the designation process, a range of boundary options are proposed, and often modified based on public and agency input before there is a final determination on the boundary. Typically, sanctuary boundaries are designed to protect areas of special significance such as a distinct ecosystem, and address human uses. The management plan review process provides an opportunity to re-examine, evaluate, and, as appropriate, redefine a sanctuary's boundary.	5.1 Boundary of the Sanctuary should be extended north and inwards toward the coast.
6.0 Coastal Armoring	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
7.0 Coastal Development	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
8.0 Community Outreach	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
9.0 Cultural Resources	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
10.0 Education	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
11.0 Enforcement & Regulations	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
12.0 Exotic/ Introduced	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.

TABLE 3: Analysis of Cordell Bank National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
Species		
13.0 Fishing	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
14.0 Habitat Alteration	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
15.0 Marine Bioprospecting	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
16.0 Marine Debris & Discharge	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
17.0 Military Activities	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
18.0 Monitoring	Data derived from monitoring efforts provide an important tool in effective resource management. Monitoring provides short- and long-term information about the resources. This information may indicate trends, changes over time, or cause-and-effect relationships. CBNMS has initiated several monitoring projects to assess environmental changes as they occur including: monitoring harmful algal blooms; visual assessments of the Cordell Bank reef community; population assessments of blue and humpback whales; seabird surveys; and monitoring of biological, physical and chemical properties of the CBNMS.	18.1 Expand Monterey Bay NMS’s Sanctuary Integrated Monitoring Network (SIMoN) program to Cordell Bank.
19.0 Motorized Personal Watercraft (MPWC)	MPWCs operate in a manner unique among recreational vehicles creating potential impacts on wildlife, water quality and the quality of a person’s experience. The high speed and maneuverability of personal watercraft, and the fact they tend to operate nearshore and in a repeated fashion, within a confined area, results in recurring disturbance to animals and habitats. Suspected impacts include behavior modification of sea birds, fish and pinnipeds; and site abandonment and avoidance by certain porpoises and whales. The National Marine Sanctuary Program has regulated MPWC in both the Monterey Bay and Gulf of the Farallones National Marine Sanctuaries. The Monterey Bay National Marine Sanctuary restricted use of these vehicles with the designation in 1992 and confined their use to four zones outside of the four harbors in the Sanctuary. That regulation defined MPWC to mean any motorized vessel that is less than 15 feet in length, is capable of exceeding speeds of 15 knots, and has the capacity to carry not more than the operator and one other person while in operation. Since adoption of this regulation, certain MPWC manufacturers have designed vehicles that do not fall under the MBNMS definition. Specifically, certain MPWCs now are capable of carrying two, three or four people in addition to the operator and therefore are not subject to the MBNMS regulation. There have been conflicts between MPWCs and other recreational ocean users due to the noise and operation of MPWCs. On Sept. 10, 2001, the	19.1 MPWC should be banned from Cordell Bank NMS and Bodega Bay.

TABLE 3: Analysis of Cordell Bank National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
	Gulf of the Farallones NMS published a final rule prohibiting MPWC throughout the entire sanctuary except for emergency search and rescue and for law enforcement purposes. Currently there is no regulation pertaining to MPWC for Cordell Bank NMS.	
20.0 Oil/Gas Development & Exploration	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
21.0 Partnerships w/ Agencies	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
22.0 Partnerships w/ Community Groups	CBNMS has a staff of 4 1/2 and a budget of \$480,000. Community partnerships provide a useful, economical and efficient means of project implementation.	22.1 Provide more opportunities to work with volunteers and other community partners
23.0 Radioactive Waste	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
24.0 Research	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
25.0 Sanctuary Advisory Council	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
26.0 Spill Response & Contingency Planning	The Sanctuary participates in emergency response and contingency planning for oil spills, hazardous material spills, grounded vessels or natural disasters. The plan is based on the Incident Command System and U.S. Coast Guard’s Area Contingency Plan and seeks to initiate a seamless operation in cooperation with various Federal, State and local emergency response agencies in California. The most severe oil spill impacts would result from large, acute spills usually associated with oil well blowouts, or in the case of this sanctuary, tanker accidents. Oil spills could have a major impact on foraging birds including the fouling of feathers, reducing flying and swimming ability, loss of buoyancy and thermal insulation. Preening birds can ingest oil leading to death, reproductive failure, unviable eggs or the transfer of oil to chicks. Pinnipeds may experience loss of buoyancy and thermal insulation from coming into contact with oil. Impacts on cetaceans from oil spills include contact with eyes or skin, fouling of baleens and ingestion or inhalation. Oil spill impacts on fish and benthic fauna may include reproductive failure and disruption in larval development. Additionally, oil residue may impact habitats throughout the water column, benthic habitats, kelp forests, rocky reefs and sandy beaches.	26.1 Ensure there is an updated contingency plan to respond to oil and hazardous material spills.
27.0 User Conflicts	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.

TABLE 3: Analysis of Cordell Bank National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
28.0 Vessel Traffic	The Sanctuary is home to an extraordinarily diverse array of marine mammals, sea birds, fishes and invertebrates, including many species that are particularly sensitive to the impacts of spilled oil or other hazardous materials. The Sanctuary is also located in an area of critical importance to the conduct of maritime commerce, which is a major component of the regional and national economy. Vessel traffic within the Sanctuary was a major issue of concern raised during the Sanctuary designation process and continues today. The historical record of spills for the Pacific Coast indicates that the total number of spills from transiting vessels is relatively small in number, but the potential impacts can be enormous given the number and volume of these vessels and the potential size of a spill.	28.1 Provide more safeguards to reduce incidences of vessel oil spills or discharges in or near Cordell Bank.
29.0 Water Quality	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.
30. 0 Wildlife Disturbance	No Comments specific to CBNMS. See Analysis of Cross-Cutting Issues Table.	No Comments specific to CBNMS.

TABLE 4: Analysis of Gulf of the Farallones National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
1.0 Acoustic Impacts	No comments specific to GFNMS. See Analysis of Cross-Cutting Issues Table.	No comments specific to GFNMS.
2.0 Administration	No comments specific to GFNMS. See Analysis of Cross-Cutting Issues Table.	No comments specific to GFNMS.
3.0 Aquaculture	NOAA defines aquaculture/mariculture as, “The propagation and rearing of aquatic and/or marine organisms in controlled or selected environments for any commercial, recreational, or public purpose.” Aquaculture is used for bait production, wild stock enhancement, fish cultures for zoos and aquaria, rebuilding of populations of threatened and endangered species, and human food production. One of the concerns about aquaculture is the impact it has on water quality. Intensive cage, floating pen and other types of aquaculture systems discharge wastes directly to the aquatic environment. Ocean water circulatory systems, used for pools and tanks, often discharge pulses of highly concentrated waste discharges during cleaning and harvesting. Other concerns related to aquaculture activities may include: an elevated risk for eutrophication; accumulation of antibiotics; and disease, parasite, and exotic species introduction (including genetically altered). Escapement of hatchery stocks may lead to interbreeding with native wild stocks altering genetic make-up. In GFNMS, oysters and scallops are grown on tracts of tidelands in Tomales Bay leased from the State Lands Commission and regulated by CDFG.	3.1 Regulate the operation of aquaculture/mariculture facilities in the Sanctuary, particularly as it relates to water quality discharges. 3.2 Prohibit aquaculture facilities from discharging harmful pathogens or introducing non-native species.
4.0 Biodiversity Protection & Ecosystem Conservation	The goals and objectives set forth by the National Marine Sanctuary Act (NMSA) direct each of the Sanctuaries to take an ecosystem-based approach to managing marine environments that have temporal and spatial complexity, diversity and dimension. Through Sanctuary partnerships, experience has shown that the scientific community, resource agencies and the public have recognized the importance of an integrated ecosystem approach to sanctuary management. Ecosystems include habitat structure, species assemblages and ecological processes. While upholding our highest goal of resource protection, Sanctuaries do allow for multiple uses that are compatible with resource protection. Management Plans set out how human use activities will be addressed by the Sanctuaries while improving the conservation, understanding, management and sustainable use of marine resources.	4.1 Need better integration of land use planning adjacent to the estuaries 4.2 Land around Esteros should remain zoned for agriculture. 4.3 Increase protection of sanctuary habitats and natural resources, particularly in intertidal areas 4.4 Sanctuary should evaluate watershed/upland uses and how they impact the marine environment (agriculture, vineyards, forestry/logging, waste management). 4.5 Sanctuary should recognize the good land stewardship practices by ranchers and farmers.
5.0 Boundary Modifications	All three sites have boundaries that are defined by their terms of designation. The boundary delineates the spatial extent of each sanctuary. During the designation process, a range of boundary options are proposed, and often modified based on public and agency input before there is a final determination on the boundary. Typically, sanctuary boundaries are designed to protect areas of special significance such as a distinct ecosystem, and address human uses. The management plan review process provides an opportunity to re-examine, evaluate, and, as appropriate, redefine a sanctuary’s boundary.	5.1 Move the GFNMS southern boundary to Ano Nuevo or the San Mateo County Line. 5.2 Move the GFNMS southern boundary south to include Marin County. 5.3 Extend the boundary into San Francisco Bay and the Sacramento River. 5.4 Extend the boundary north into Sonoma County.
6.0 Coastal Armoring	No comments specific to GFNMS. See Analysis of Cross-Cutting Issues Table.	No comments specific to GFNMS.

TABLE 4: Analysis of Gulf of the Farallones National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
7.0 Coastal Development	No comments specific to GFNMS. See Analysis of Cross-Cutting Issues Table.	No comments specific to GFNMS.
8.0 Community Outreach	Outreach programs are intended to reach a broader audience than focused education programs. Outreach programs complement educational efforts in achieving many of the Sanctuary’s management objectives. GFNMS, in cooperation with the Farallones Marine Sanctuary Association, sponsors events, interpretive trips and exhibits. FMSA and GFNMS have worked together in establishing visitor centers in Pacifica and San Francisco. Sanctuary outreach materials are also available at Golden Gate National Recreation Area, Point Reyes National Seashore, and Bodega Marine Lab.	8.1 Expand community lecture series and make it more accessible to the public.
		8.2 Continue existing sanctuary volunteer programs.
		8.3 Sanctuary should work with the Steinhart Aquarium on outreach activities.
9.0 Cultural Resources	No comments specific to GFNMS. See Analysis of Cross-Cutting Issues Table.	No comments specific to GFNMS.
10.0 Education	Education programs are designed to enhance public awareness and understanding of marine natural and cultural resources of the Sanctuary. Education is essential to achieving many of the Sanctuary’s management objectives, and is an important component in promoting the Sanctuary’s research and restoration projects. The Farallones Marine Sanctuary Association (FMSA) works collaboratively with GFNMS to implement various education, interpretation, and research programs. GFNMS in cooperation with FMSA, sponsors student summits, lectures, teacher training, summer camps and other education programs. FMSA is also supporting the development of a Coastal Ecosystem curriculum for high school students and multi-cultural programs with the San Francisco Dept. of Parks and Recreation and the California Coastal Commission.	10.1 Continue and expand volunteer programs such as BEACH Watch.
		10.2 Establish an outreach program with the agriculture industry in Sonoma County.
		10.3 Inform users and landowners about the Sanctuary and its regulations
11.0 Enforcement and Regulations	The purpose of Sanctuary enforcement is to ensure compliance with the National Marine Sanctuaries Act and appropriate regulations of the Sanctuary. Section 207 of the NMSA authorizes the Secretary of Commerce to conduct activities for carrying out the Act, delineates civil penalties and powers of authorized officers, and provides for recovery of penalties by the Secretary. Although GFNMS does not have an enforcement program of its own, it works together with the U.S, Coast Guard, National Marine Fisheries Service and Dept. of Fish and Game to enforce Sanctuary regulations. The Sanctuary also works directly with user groups to encourage compliance and best management practices. As an example, GFNMS has worked with CalTrans to stop the disposal of highway spoils along the Sanctuary shoreline. Sanctuary staff worked for more than 10 years with the City of Santa Rosa to prevent sewage discharge in the Sanctuary. As a result, the City’s tertiary treatment system processes discharges that can be used to irrigate crops and recharge the aquifer for the Geyser electric generating facility.	11.1 Enforce existing regulations, particularly the new jet ski regulation.
		11.2 Acquire a dedicated Sanctuary enforcement officer.
12.0 Exotic /	Exotic species in the marine environment can be defined as a plant, invertebrate, fish, amphibian, bird, reptile or mammal whose natural zoogeographic range would not have	12.1 Prohibit those activities that could result in the introduction of non-native disease and species.

TABLE 4: Analysis of Gulf of the Farallones National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
Introduced Species	included the waters of the Eastern Pacific without passive or active introduction to the area through anthropogenic means. San Francisco Bay is considered to be one of the most invaded aquatic ecosystems in North America with more than 200 introduced species. Exotic species in the marine environment threaten the diversity and/or abundance of native marine species and human recreational and commercial activities. Common sources of introduction of exotic species include ballast water and disposal of aquaria materials. Prevention of exotic species introduction is proving to be more effective than eradication of exotic species.	12.2 Limit the spread of non-native oysters in Tomales Bay by commercial culture operations.
13.0 Fishing & Kelp Harvesting	King salmon and rockfish are the primary sport fishing targets. The most important commercial harvests include salmon, rockfish, flatfish, albacore tuna and Dungeness crab. Most of the commercial catches harvested in GFNMS are landed in San Francisco, Bodega Bay, Oakland, Half Moon Bay, and Sausalito. Clam digging is a popular activity for gaper, Washington, and littleneck clams. The tidal community includes a wide diversity of invertebrates such as barnacles, limpets, black turban snails, mussels, sea anemones and urchins that may be harvested as well. Gear types used in GFNMS include: sceines, round haulnets, gillnets, trammel nets, hook and line, long lines, bottom trawlers and mid-water trawlers. The California Department of Fish and Game (CDFG) regulates fisheries in State waters and, under the Marine Life Protection Act, is currently restructuring marine managed areas. The Pacific Fisheries Management Council (PFMC) regulates fisheries in Federal waters and designates Essential Fish Habitat as a fisheries management tool. GFNMS staff coordinates with these agencies. During the management plan review process GFNMS staff will be evaluating the best tools for protection of living resources and habitats.	13.1 Ensure the fish and invertebrates are not overfished or depleted (i.e., salmon, rockfish, geoducks, horse neck clams, abalone).
14.0 Habitat Alteration	Human alteration of the environment includes any modification from the natural state. Types of alteration include the laying fiber optic cables or placement of other objects like artificial reefs on the seabed. Alteration can occur from repeated activity such as bottom trawling or tidepool trampling, Habitat alteration can have either negative or positive impacts depending upon the nature of the activity (i.e., habitat destruction or creation). Placement of seawalls, riprap, or other coastal armoring also alters the habitat however this issue is included in this summary as a coastal armoring issue. Many land based human actions may also directly alter the habitat in the Sanctuaries, however these specific actions were categorized under the coastal development issue. The impacts of activities that alter the habitat vary depending upon the action or duration of the activity.	<p>14.1 Sanctuary should determine, and if necessary regulate, the impacts from upstream land use practices (forestry, agriculture, development) on sanctuary resources.</p> <p>14.2 Protect tidepool habitats from trampling and collection.</p> <p>14.3 Establish a mooring buoy system for vessels at various anchorage locations.</p> <p>14.4 Explore opportunities to use wrecks and other artificial reefs to enhance sanctuary resources.</p>
15.0 Marine Bioprospecting	No comments specific to GFNMS. See Analysis of Cross-Cutting Issues Table.	No comments specific to GFNMS.

TABLE 4: Analysis of Gulf of the Farallones National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
16.0 Marine Debris and Discharge	Marine debris and discharge originates from both land-based and at-sea sources. Due to the proximity to San Francisco Bay, the Sanctuary has been thought of as a convenient location to dump dredge spoils. The Sanctuary has worked closely with the Port of Oakland, U.S. Army Corps of Engineers and U. S. EPA to identify appropriate locations outside of the Sanctuary for clean dredge material disposal. The Sanctuary worked with the City of Santa Rosa to find alternatives for sewage disposal that included using tertiary treatment system to process discharges to be used to irrigate crops. The Sanctuary has also worked with partners such as the Pt. Reyes National Seashore to identify sources of land-based discharges such as mercury from abandoned mines. With more than 58 coastal access points to the Sanctuary and three major shipping lanes converging on San Francisco Bay, discharges from vessel traffic and associated activities is a major concern that us partially addressed by Sanctuary regulations.	16.1 Organize clean-up events for coastal areas and beaches.
17.0 Military Activities	The U.S. Navy and U.S. Coast Guard (non-military) regularly use the GFNMS for operations. U.S. Navy’s third fleet conducts surface, air and submarine maneuvers. Just outside GFNMS to the north, there is a special submarine transit lane used primarily on approach to, and departure from, San Francisco Bay. The U.S. Navy’s operations areas are located 8 nautical miles (nmi) southeast and 9 nmi northwest of the Farallon Islands. This submarine activity includes a trial diving exercise and various equipment checkouts normally following vessel refitting or overhauls. Approximately 10 nmi southwest of the Pt. Reyes Headlands, the U.S. Navy conducts aircraft and surface vessel exercises, often coordinated with submarine operations. Submarine transit lanes run parallel to the mainland and due west of Bodega Headland and vary in width from 7 to 10 nmi. When activated, all other vessels in the vicinity are cautioned against towing submerged objects. The U.S. Coast Guard flies maintenance personnel to the lighthouse on Southeast Farallon Island for periodic servicing. They also conduct regular flights within the Sanctuary for enforcement and search and rescue missions.	17.1 Sanctuary should reduce or eliminate the impact of pollution (including sound) from military experiments and activities.
18.0 Monitoring	Data derived from monitoring efforts provide an important tool in effective resource management. Monitoring provides short- and long-term information about the resources. This information may indicate trends, changes over time, or cause and/or effect relationships. Over the past 20 years, the GFNMS has supported several seabird and marine mammal monitoring programs. These include the investigation of pollutants in breeding seabirds and Steller sea lions, and surveys of the number and distribution of pinnipeds, harbor porpoises, and humpback, gray, blue and minke whales. Currently, GFNMS is involved in several marine mammal monitoring programs, shoreline monitoring, intertidal monitoring, coastal ecology relationships monitoring, and restoration monitoring.	18.1 Determine the status of and continually monitor red abalone in Bodega Bay. 18.2 Monitor sea lion populations. 18.3 Increase monitoring efforts to determine impacts of the radioactive waste disposal site. 18.4 Monitor water quality for presence and impacts of pollutants. 18.5 Monitor impacts of shark chumming on sharks and other prey populations. 18.6 Expand the MBNMS’s Sanctuary Integrated Monitoring Network (SIMoN) to GFNMS.

TABLE 4: Analysis of Gulf of the Farallones National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
19.0 Motorized Personal Watercraft (MPWC)	PWCs operate in a manner unique among recreational vehicles creating potentially significant impacts on wildlife, water quality and personal safety. The high speed and maneuverability of personal watercraft, and the fact they tend to operate nearshore and in a repeated fashion, within a confined area, results in recurring disturbance to animals and habitats. Studies have shown that the use of PWCs in nearshore areas can increase flushing rates, reduce nesting success of certain bird species, have impacts on spawning fish, and reduce fishing success. Coastal nests can be flooded by wakes of the vehicles, which can also cause shoreline erosion, and increased turbidity via shallow-water sediment resuspension. Offshore, marine mammals or surfacing birds may be unaware of the presence of the vehicles due to the low frequency sound, combined with the vehicles' high speed, and rapid and unpredictable movements, putting animals and operators at risk. Suspected impacts include behavior modification of sea birds, fish and pinnipeds; and site abandonment and avoidance by certain porpoises and whales. A majority of PWCs have two-stroke engines that release 10% to 50% more pollutants into the water column than other vessels with 4-stroke engines. On Sept. 10, 2001, the Gulf of the Farallones NMS published a final rule prohibiting MPWC throughout the entire sanctuary except for emergency search and rescue and for law enforcement purposes.	19.1 Expand the sanctuary boundary north to prohibit jet skis off Sonoma County.
20.0 Oil and Gas Exploration and Development	Oil and gas activity was one of the major reasons for designation of all five of the West Coast National Marine Sanctuaries. In 1989, the State Lands Commission administratively foreclosed the possibility of new oil and gas leasing in California State coastal waters. This administrative Sanctuary was incorporated through the California Coastal Sanctuary Act of 1994. Pursuant to that statute, all State coastal waters, except those under lease on January 1, 1995, are permanently protected from development. No portion of the Federal OCS has a permanent moratorium on oil and gas leasing and development except some of the waters within National Marine Sanctuaries (by regulation or statute). A temporary moratorium has been in place since 1982. The most current directive (June 1998, Clinton administration), under the OCS Lands Act, prevents any leasing of new areas for oil and gas exploration and development through June 30, 2012. The OCS presidential deferrals can be reversed by subsequent administrations and do not restrict development of already leased Federal areas. There are 79 remaining active OCS leases, all off the coast of central and southern California in San Luis Obispo, Santa Barbara, Ventura and Los Angeles counties. There are no active leases in or adjacent to GFNMS, CBNMS or MBNMS. A concern about activities related to oil and gas development is the impacts on marine resources from oil spills.	20.1 Permanently prohibit petroleum and natural gas exploration, development, or production with the sanctuaries or in areas with the potential to impact the Farallon Islands.
21.0 Partnerships with Agencies	GFNMS and the NMSP are committed to coordinating with other Federal, State and local agencies on a continuous ecosystem management process. The process is designed to ensure the long-term protection of the unique resources of this region. As such, the management	21.1 Coordinate with Coast Guard and Navy and other aviators during the breeding season to minimize disturbance at the Farallon Islands.

TABLE 4: Analysis of Gulf of the Farallones National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
	<p>process requires the cooperation of many agencies and institutions that historically may have different goals. Overlapping jurisdictions, different agency mandates and limited resources necessitate the development of a relationship that brings together multiple agencies for the common purpose of ecosystem management. Achieving the long and short-term GFNMS goals requires close and continuing partnerships among all agencies. The GFNMS borders are adjacent to, or overlap areas under the authority of several different agencies. GFNMS partners with/ and or shares management responsibilities with ten Federal agencies, twelve State, and many local agencies and not for profit organizations.</p>	<p>21.2 Collaborate with local, state and federal management agencies to address impacts from development and non-point source pollution.</p>
<p>22.0 Partnerships with Community Groups</p>	<p>As an individual site, GFNMS has limited staff and financial resources. Without the support of community partnerships, GFNMS could not carry out its current level of day-to-day operations. Community partnerships provide a useful and efficient means of project implementation. Community partnerships include five research and educational institutions, over 450 Beach Watch, SEALS, and other volunteers, 14 non-governmental organizations, and the Farallones Marine Sanctuary Association (FMSA). FMSA, a not for profit organization, works collaboratively with GFNMS to implement various education, interpretation, outreach and research programs.</p>	<p>22.1 Explore opportunities to work with the Surfrider Foundation on coastal water quality monitoring.</p> <p>22.2 Expand efforts to involve volunteer organizations and community groups in sanctuary management.</p>
<p>23.0 Radioactive Waste</p>	<p>From 1946 to 1970, a variety of U.S. government agencies and private research institutions legally dumped more than 50,000 55-gallon drums containing low, high and undetermined levels of radioactivity. Working with the U.S. Geological Survey, U.S. Navy and the U.S. Environmental Protection Agency, GFNMS has conducted limited exploratory testing of substrates and groundfish in the dumpsites.</p>	<p>23.1 Determine status of barrels containing radioactive waste and assess potential impacts of contamination.</p> <p>23.2 Develop a clean-up plan for the Farallones radioactive dumpsite and implement it.</p> <p>23.3 Disseminate more information about the effects of radiation on fish, the fishing industry, and humans.</p> <p>23.4 Prohibit bottom trawling in vicinity of radioactive waste site.</p>
<p>24.0 Research</p>	<p>The diversity of physical and biological habitats throughout the Gulf of the Farallones offers an outstanding opportunity for scientific research on marine and estuarine ecosystems. Marine research activities focus on Intertidal flora, seabirds, and marine mammals. On the mainland, numerous bays and headlands offer prime locations for ecological studies of coastal ecosystems. The Areas of Special Biological Significance around the Farallon Islands, Point Reyes Headlands, Duxbury Reef, Double Point, Bird Rock and Bodega Marine Life Refuge all contain unique resources warranting protection for educational and scientific use. Most research in the GFNMS is carried out by investigators associated with Universities, CDFG, NPS or PRBO</p>	<p>24.1 Complete joint tax inventory of Sanctuary with Point Reyes National Seashore.</p> <p>24.2 Conduct research on white sharks, including the effects of chumming.</p> <p>24.3 Determine the sources and impacts of pollution on sanctuary wildlife (include SF Bay).</p> <p>24.4 Coordinate and disseminate information about research activities in the Sanctuary.</p> <p>24.5 Encourage and provide support for research in the sanctuary</p>
<p>25.0 Sanctuary Advisory Council</p>	<p>No comments specific to GFNMS. See Analysis of Cross-Cutting Issues Table.</p>	<p>No comments specific to GFNMS.</p>

TABLE 4: Analysis of Gulf of the Farallones National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
26.0 Spill Response and Contingency Planning	No comments specific to GFNMS. See Analysis of Cross-Cutting Issues Table.	No comments specific to GFNMS.
27.0 User Conflicts	All three Sanctuaries are located near some of California’s most urbanized areas and have experienced an increase in the number of users. Users have put increasing demands on the resources through commercial and recreational fishing, wildlife viewing, boating, tourism, research and education. Because the area is large and includes adjacent rural and urban areas, management must be responsive and equipped to deal with a broad range of concerns. National Marine Sanctuaries may address user conflicts via zonal management. Zoning may be used to: avoid concentration of uses that could result in significant impacts on marine resources; reduce conflict between users; provide opportunities for scientific research; and/or to provide for the recovery of resource degradation.	<p>27.1 Determine whether too many users are negatively impacting sanctuary resources.</p> <p>27.2 Ensure the Sanctuary users (kayakers and hikers) do not impact wildlife on nearby private lands and ranches.</p> <p>27.3 Prohibit “extreme” sports from occurring in the Sanctuary.</p> <p>27.4 Resolve conflict between shark researchers and shark wildlife watching operators.</p> <p>27.5 Determine whether there is a need to regulate the number of kayakers and boaters in Tomales Bay.</p>
28.0 Vessel Traffic	The Sanctuary is home to an extraordinarily diverse array of marine mammals, sea birds, fishes and invertebrates, including many species that are particularly sensitive to the impacts of spilled oil or other hazardous materials. The Sanctuary is also located in an area of critical importance to the conduct of maritime commerce, which is a major component of the regional and national economy. Vessel traffic within the Sanctuary was a major issue of concern raised during the Sanctuary designation process and continues today. The historical record of spills for the Pacific Coast indicates that the total number of spills from transiting vessels is relatively small in number, but the potential impacts can be enormous given the number and volume of these vessels and the potential size of a spill.	<p>28.1 Safety should be considered in the westbound lane for ships, fishing vessels, and all watercraft.</p> <p>28.2 Evaluate the need to require tug escorts in other sensitive coastal areas.</p>
29.0 Water Quality	Oceanic water quality along the northern California coast generally ranges from very good to high, except in areas adjacent to population centers. The Sanctuary works with Federal and State agencies to monitor near-shore and estuarine areas of the Sanctuary for pollutant, oxygen, and nutrient levels, and algal blooms. Of special concern are the estuarine habitats of Bolinas Lagoon, Tomales Bay, Estero Americano, and Estero de San Antonio. The watersheds of these areas are subject to runoff from agricultural, livestock grazing, improperly treated effluent, dumping, historic mining and development. These pollutants affect the biological, recreational, economic, and aesthetic resources of the Sanctuary. Since 1970, there have been regular reports of birds with oil on them at the Farallon Islands. The sanctuary’s shoreline monitoring program, BEACH Watch, and the State’s Office of Spill Prevention and Response, have shown that hydrocarbons found on bird feathers and in tarball samples are not from local sources. This suggests that vessels cleaning tanks or discharging their bilges prior to entering the bay are primary source of chronic oil pollution.	<p>29.1 Develop a plan for addressing polluted runoff from agriculture and forestry lands.</p> <p>29.2 Develop a plan for addressing polluted runoff from urbanized and developed areas (homes, streets, storm drains, etc.).</p> <p>29.3 Improve water quality in the Estero de San Antonio</p> <p>29.4 Regulate the dumping of pollutants into Americano Creek</p> <p>29.5 Eliminate sewage discharges in the Sanctuary</p> <p>29.6 Focus water quality protection efforts within local watersheds</p> <p>29.7 Expand BEACH Watch to include a water quality monitoring component.</p>

TABLE 4: Analysis of Gulf of the Farallones National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
		29.8 Provide incentives to farmers (and other non-point source pollutions sources) to improve the quality of runoff into the Sanctuary.
30.0 Wildlife Disturbance	The Sanctuaries provide many opportunities for observation of nature, including whale watching, bird watching, and pinniped pupping and haulout activity. Party boats are used for nature observation tours. Rocky shorelines provide pedestrians opportunities to view the flora and fauna associated with the habitat. With the multitude of opportunities for observation comes the potential for wildlife disturbance which may result in flushing birds from their nesting sites, pinnipeds abandoning pups, potential harassment or even death. Previously in the MBNMS ecotourism operations included white shark viewing with the aid of chumming and other attraction methods. MBNMS has adopted prohibitions for white shark attraction. These activities do occur in the GFNMS or CBNMS, however no regulations for these activities exist.	30.1 Prohibit shark chumming activities for the purpose of wildlife viewing (consistent with the existing MBNMS regulations). 30.2 Regulate shark ecotourism by establishing a limited entry permit system. 30.3 Investigate the impacts of overflight on wildlife. 30.4 Evaluate the impacts of wildlife disturbance from too many people viewing or recreating nearby. 30.5 Protect tidepools from overuse by limiting the number of people.

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
1.0 Acoustic Impacts	<p>A number of studies document impacts to living marine resources, including behavioral changes and physical effects due to exposure to anthropogenic noise and pressure waves in the marine environment. Anthropogenic sources of noise include: large commercial shipping traffic such as container ships, freighters, barges and tankers, recreational and commercial boats, military low frequency testing, research activities and aerial overflights. Marine mammals have been observed to deviate from their migration paths to avoid noise, or interrupt their communications in response to elevated noise levels. Certain anthropogenic noise is thought to mask sounds used for mating, feeding and avoiding predators. Responses vary depending on the acoustic frequency, decibel level, proximity to the source and other species-specific sensitivity factors. Concern about the cumulative impacts of noise from a variety of sources has grown as the ocean has become noisier in past half-century. However, long-term cumulative impacts are uncertain and range from minimal impacts in some situations to behavioral alterations to possible physiological or physical damage to hearing. The MBNMS has been involved in evaluating and requesting limits or alterations of specific proposals to use acoustic devices in the region, such as the Navy’s recent Low-Frequency Array proposal, but has not addressed the overall issue of cumulative noise impacts.</p>	<p>1.1 Restrict harmful sources of marine noise</p> <p>1.2 Ban LFA within MBNMS</p>
2.0 Administration	<p>Administrative roles for governing the MBNMS are led by the MBNMS Superintendent, with direction and support from the National Marine Sanctuary Program (NMSP). The NMSP provides oversight and coordination among the thirteen national marine sanctuaries, taking responsibility for ensuring each site’s management plan is coordinated and consistent with the National Marine Sanctuaries Act while developing a general budget and staffing for the site. The MBNMS Superintendent is responsible for determining expenditures for program development, operating costs and staffing to meet the site’s annual operating plan. Annually, based on Congressional appropriations, the NMSP reviews and adjusts funding priorities and requirements with the Superintendent to reflect resource management needs. The Superintendent and NMSP work together to monitor effectiveness of the management plan and to develop programs or policies that help meet resource management priorities. Since 1992, the MBNMS staff has grown to 12 government employees and about 10 contractors; its budget has grown from about \$450,000 in the first year to \$2,750,000 in fiscal year 2002. Prior to 1998, the GFNMS had shared management responsibilities for the northern half of the MBNMS. Since then, most of the management duties for this region have shifted to the MBNMS, although certain management responsibilities are carried out through joint consultation.</p>	<p>2.1 Pursue additional resources to implement all programs</p> <p>2.2 MBNMS should increase role in conflict resolution among agencies and public</p> <p>2.3 Need increased presence (office, resources) outside of Monterey Peninsula (north, south, inland)</p> <p>2.4 Increase public responsiveness and accountability</p>
3.0 Aquaculture	<p>Currently six aquaculture companies operate within the MBNMS, culturing species such as abalone, algae, steelhead, salmon, and shrimp. NOAA defines aquaculture as, “The propagation and rearing of aquatic</p>	<p>3.1 Increase regulation and education on aquaculture.</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
	<p>organisms in controlled or selected environments for any commercial, recreational, or public purpose.” Aquaculture is used for bait production, wild stock enhancement, fish cultures for zoos and aquaria, rebuilding of populations of threatened and endangered species, and food production for human consumption. One of the concerns about aquaculture is the impact it has on water quality. Other concerns related to aquaculture activities may include: an elevated risk for eutrophication; disease and parasite introduction; accumulation of antibiotics; introduction of exotic species and escapement of hatchery stocks that may lead to interbreeding with native wild stocks altering genetic make-up</p>	<p>3.2 Increase education regarding aquaculture and how facilities can reduce impacts.</p>
<p>4.0 Biodiversity Protection and Ecosystem Conservation</p>	<p>The goals and objectives set forth by the National Marine Sanctuary Act (NMSA) direct each of the sanctuaries to take an ecosystem-based approach to managing these fluid marine environments that have great temporal and spatial complexity, diversity and dimension. Through sanctuary partnerships, our experience has shown that the scientific community, resource agencies and the public have recognized the importance of an integrated ecosystem approach to management of the sanctuaries. Ecosystems include habitat structure, species assemblages and ecological processes, as well as humans and their use patterns. While upholding the main goal of resource protection, sanctuaries do allow for multiple use that is compatible with resource protection. Among other things, Management Plans set out to describe how human use activities will be addressed by the sanctuaries while improving the conservation, understanding, management and wise and sustainable use of marine resources. Many of the comments received during scoping reiterate the goals and objectives of the NMSA. About 7,000 comments were received that directed the MBNMS to actively pursue protection of the ecosystem and enhance biodiversity through management strategies, such as marine reserves, tidepool protection, eliminate fishing gear that damages habitat and boundary changes to better protect ecosystems. Over 1,000 individuals signed a petition stating that any action towards marine reserves must involve affected parties like fishermen and must rely on regulatory authority of other agencies, like Fish and Game and NMFS/PFMC. Clearly this subissue received the most comments during the scoping process.</p>	<p>4.1 Produce one management plan for each ecosystem, not by agency.</p> <p>4.2 Revised management plan and future actions must focus on primary goal of resource protection.</p> <p>4.3 Management should focus on long term sustainability.</p> <p>4.4 Protect biodiversity by MBNMS adopting more fully protected areas, marine reserves, throughout Sanctuary.</p> <p>4.5 Adopt marine reserves in Federal waters; participate with and advise Cal Fish and Game in MLPA process.</p> <p>4.6 Advise and partner with CDFG and PFMC on marine reserves these agencies adopt</p> <p>4.7 Better protection of high use intertidal areas like Pt. Pinos</p> <p>4.8 Need special protection of biodiversity at special places – Salinas River, Pillar Point, all kelp beds.</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
		<p>4.9 Develop MBNMS specific action plans to help recover endangered species, or key species at risk.</p> <p>4.10 Evaluate extent of bycatch in local fisheries; consider further restrictions by fisheries agencies or MBNMS to protect ecosystem function.</p> <p>4.11 Evaluate effects to kelp forest community from nearshore (live fish) fishery; consider further restrictions by fisheries agencies or MBNMS to protect ecosystem function.</p> <p>4.12 Explore methods of balancing protected species populations affecting other protected populations (i.e. pinnipeds and anadromous fish)</p> <p>See also 5.0 Boundary Modifications: many boundary changes were proposed to increase biodiversity protection.</p>
5.0 Boundary Modifications	<p>All three sites have boundaries that define the sanctuary itself, and where applicable, special use zones (like dredge disposal areas for MBNMS) within the sanctuary. These boundaries received extensive debate and analysis when the sites' were designated. Typically, a sanctuary's boundary is set to protect a defined ecosystem; human use zones either allow uses within a zone or prohibit them. Comments have arisen about the need to adjust boundaries for various reasons, and the management plan review process is the proper place to consider those. Reasons for boundary adjustments have included better protection of an ecosystem (Move MBNMS boundary further south), increased biodiversity protection (Include Davidson Seamount in MBNMS; Close "donut hole" off San Francisco), and administrative/operation reasons (Move shared GF/MBNMS boundary south; Create one national marine sanctuary instead of three). Some changes might reduce resource protection (Create buffer zones off urban areas) while others are beyond the initial intent of sanctuary designation, and possibly the NMSA (Move sanctuary boundaries into harbors and up watersheds).</p>	<p>5.1 Move MBNMS boundary south.</p> <p>5.2 Include Davidson Seamount in MBNMS; include all offshore seamounts in MBNMS.</p> <p>5.3 Move Sanctuary boundaries inside harbors.</p> <p>5.4 Close 'Donut Hole' off San Francisco and Pacifica.</p> <p>5.5 Include Santa Cruz City area into MBNMS.</p> <p>5.6 Adopt buffer zones around harbors.</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
6.0 Coastal Armoring	Development along the coast has increased the pressure to protect coastal structures with various types of coastal armoring such as seawalls, bulkheads and revetments to manage erosion. Approximately 14 miles of the coastline is already armored in the MBNMS, and this is estimated to double if trends continue at the current rate. Coastal armoring can damage or alter local coastal habitats, deprive beaches of sand, lead to accelerated erosion of adjacent beaches, and hinder recreational access. MBNMS has reviewed and authorized Coastal Commission permits for seawalls, riprap or other coastal armoring projects at 16 sites since its designation. Conditions imposed primarily focused on minimizing impacts from the construction process rather than long-term impacts from the armoring itself. Only a portion of the total number of coastal armoring projects underway in the region came to the Sanctuary for review. This past year staff has initiated a joint evaluation of coastal armoring with the California Coastal Commission, with a goal of developing a more proactive, comprehensive regional approach to the issue.	6.1 Prohibit armoring (“seawalls”) in the Sanctuary. 6.2 Work with Coastal Commission to reduce emergency permitting and enact Sanctuary armoring policy which avoids sensitive areas. 6.3 Increase beach nourishment projects.
7.0 Coastal Development	It is predicted that the major population centers near all three sanctuaries will continue to grow steadily. Commercial and residential development is concentrated around the Monterey Bay including the Monterey Peninsula, Marina, Watsonville and Santa Cruz, as well as Half Moon Bay and north to San Francisco and Marin. With increases in development, additional pressures will come to install structures both to access the ocean and to protect property from the ocean. These include infrastructure associated with harbors, breakwaters, and jetties as well as forms of coastal armoring. Indirect effects of continued coastal development include increases in point source (increased sewer use) and non point source pollution as well as increased human presence at easily accessible points along the shoreline for the purposes of coastal recreation. Coastal development is typically controlled by local governments and the California Coastal Commission. Because coastal development can harm the marine environment, public comments asked the MBNMS, and to a lesser extent GFNMS, to influence such activity along their shorelines.	7.1 Sanctuaries should take active role in reducing impacts of population growth. 7.2 Restrict all development surrounding coastal wetlands 7.3 Preserve Big Sur area in its existing state
8.0 Community Outreach	<p>Communication and outreach for the MBNMS currently centers around its four facilities. The main thrust remains in Monterey and Santa Cruz, but has recently expanded south to San Simeon and north to Half Moon Bay. Most events and news surrounding the Sanctuary is disseminated through the education staff located in each office. Limited programming at schools and the general public are available. MBNMS just completed a multicultural education plan, targeting the large Hispanic community in Monterey and Santa Cruz Counties. The plan is to have bilingual marine educators working with families in their community groups, at targeted State Beaches and Parks and with Hispanic serving teachers. The majority of current outreach is in the form of informal presentations and distributed print materials.</p> <p>Many suggestions were raised during scoping regarding the need for increased outreach on many resource issues, the direction of outreach, as well as methods of outreach. Some general themes are captured in the subissues, however, please refer to Appendix 1 for specific comments and suggestions</p>	8.1 Build a visitor center and regional interpretive centers. 8.2 Increase marketing, media exposure and public awareness. 8.3 Increase outreach to inland areas. 8.4 Increase multicultural outreach efforts. 8.5 Increase availability of materials at other visitor centers.

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
9.0 Cultural Resources	Submerged cultural resources include shipwrecks, aircraft, wharfs and dock sites, prehistoric archaeological sites and associated artifacts. For hundreds of years mariners transiting this region have been faced with prevailing winds, extreme weather conditions and natural hazards. Although there is not a complete inventory, remnants of hundreds of ships are believed to be off the coast, within Sanctuary waters. With the development of underwater technologies that bring the public virtually closer to the marine environment, there is increasing interest in submerged cultural resources. The continuing discovery, exploration, documentation and study of these resources provides a richer understanding of the region’s maritime community and the larger ecosystem.	9.1 Fully haracterize and protect cultural resources in MBNMS.
10.0 Education	<p>MBNMS programming is designed to promote stewardship of the Sanctuary's natural and cultural marine resources while interpreting the issues affecting the MBNMS and the research being conducted. This is done through a broad array of symposia, student ocean conferences, workshops, print materials, signage, and public events. Programs and priorities are reviewed by the Sanctuary's Education Panel, a consortium educators from over 20 regional marine education/interpretation facilities. Current programming falls into one of three categories: resource issue education, general public education and teacher/student programming.</p> <p>During the scoping process, many people commented about the need for more education regarding the many resource protection issues affecting the sanctuary such as: natural processes, tidepool collection or trampling, population growth, impacts of dogs, resource protection issues, water pollution, regulated activities, fossil fuel use, aircraft overflight, positive aspects of fishing, fishing regulations, marine debris, and wildlife interaction.</p>	<p>10.1 Coordinate education, communication and outreach programs to reach strategic audiences for priority issues.</p> <p>10.2 Increase multicultural education programs.</p> <p>10.3 MBNMS should support special programs such as SeaLab Monterey Bay and Ocean Science Bowl.</p> <p>10.4 Develop plan to better use volunteers and interpretive panels/ kiosks to increase public education.</p> <p>10.5 More education articles in media (newspapers, public television).</p> <p>10.6 Expand Team Ocean kayak program</p> <p>10.7 Develop and implement a regional education plan .</p> <p>10.8 Build and equip effective education team.</p>
11.0 Enforcement of Regulations	The most common reported violations in the MBNMS are jetskis operating outside their designated zones, unlawful discharges from boats or land, and disturbance of marine mammals and seabirds from planes, recreational vessels, fishermen, and the general public. MBNMS enforcement capabilities have increased in the past two years with the addition of an enforcement investigation officer dedicated to the MBNMS. However, MBNMS field presence from a single officer is still quite limited due to the broad expanse of coastline and marine waters necessary to cover with very limited staff hours and vessel capabilities. Training and cross-deputizing CDFG wardens and CDPR rangers to also enforce Sanctuary regulations, as their time and staffing allows, have leveraged enforcement presence. Promotion of voluntary compliance	<p>11.1 Utilize existing enforcement agencies.</p> <p>11.2 Reduce enforcement, focus on data collection and education</p> <p>11.3 Increase enforcement of existing regulations.</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
	<p>their time and staffing allows, have leveraged enforcement presence. Promotion of voluntary compliance is the first alternative for many types of Sanctuary violations, and has led to the establishment of effective programs to reduce harassment of elephant seals at Piedras Blancas and kayaker-sea otter interactions off Cannery Row. For those violations best dealt with by more traditional approaches, MBNMS has the authority to assess fines of up to \$109,000 per day of violation.</p>	<p>11.4 Develop voluntary compliance programs.</p> <p>11.5 Conduct more coastal patrols and obtain more “eyes” for the sanctuary.</p> <p>11.6 Institute an appeal process for MBNMS permits</p> <p>11.7 Streamline permitting process and assist in expediting multi-agency permits.</p> <p>11.8 Modify regulations so MBNMS does not have to issue permits; rely on other agency permits only.</p> <p>11.9 Print regulations in other languages.</p> <p>11.10 Need a tracking system for violations and enforcement action.</p> <p>11.11 Improve getting enforcement actions to prosecution.</p>
<p>12.0 Exotic / Introduced Species</p>	<p>Invasions by non-native aquatic species are increasingly common worldwide in coastal habitats. Estuaries, in particular, harbor large numbers of introduced species. For example, there are about 250 known invasive species in the San Francisco Bay and Delta, and 55 invasive invertebrates in the Elkhorn Slough. Although the effects of many introduced aquatic species on habitats they colonize is unknown, some clearly have had serious negative influences. Impacts often include decreasing abundance and even local extinction of native species, alteration of habitat structure, and extensive economic costs due to biofouling. Probably the most important mechanism for the introduction of aquatic species is transport in ship ballast tanks, though other mechanisms such as disposal of aquarium materials, aquaculture operations, bait and seafood packing, and research operations contribute to the issue. Eradication of introduced species is difficult, and management practices focus largely on prevention of introductions.</p>	<p>12.1 Prohibit disposal of ballast water to reduce threat of introduction</p> <p>12.2 Develop and implement introduced species prevention plan.</p> <p>12.3 Assess species introduction pathway and how to mitigate impacts.</p>
<p>13.0 Fishing / Kelp Harvesting</p>	<p>Fishing is a critical part of the region’s culture and economy, with about 1,000 commercial vessels fishing in the region annually, along with substantial recreational fishing. About 200 species are typically caught in the commercial and recreational fisheries, with the bulk of the commercial landings composed of squid, rockfishes, salmon, albacore, Dover sole, sablefish, mackerel, anchovy, and sardines. The five primary</p>	<p>13.1 Further refine language in Management Plan / EIS to describe MBNMS role in fishery management</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
	<p>gear types used are pots and traps, trawl nets, hook-and-line gear, purse seines, and gill nets. Although some local stocks appear healthy, fishery managers are concerned about declining stocks and habitat threats for other species. MBNMS does not currently manage any aspect of commercial or recreational fisheries. The FEIS indicates that MBNMS should conduct research on harvested species and their ecological status, and use that advise and advocate with fishery management agencies. The FEIS did not envision a regulatory role for the MBNMS on fishing issues; if ecological problems arose , it was to consult with state and federal fishery agencies, and fishing industry, for regulatory or other solutions. The public has expressed concern about effects of fishing and certain gear types on MBNMS resources, habitats and ecosystems, while many fishermen have indicated they do not want MBNMS to regulate fisheries. Current involvement of MBNMS in issues related to fishing include conducting fisheries-related research, sponsoring educational events, occasionally commenting to other agencies on fishery issues, and, during the past year, working collaboratively with a Fishermen’s Alliance committee established to evaluate the potential for marine reserves.</p> <p>Kelp harvesting is also managed by the Department of Fish and Game although the appropriate level of kelp harvest remains an ongoing issue of interest in the MBNMS; In 2001, the Fish and Game Commission adopted a kelp harvesting plan for the Monterey Bay National Marine Sanctuary.</p>	<p>13.2 Abide by existing language in designation documents and FEIS to limit role on fishing</p> <p>13.3 Focus efforts on activities that affect fishing (runoff, oil pollution)</p> <p>13.4 Pursue fishing regulations only in Federal waters</p> <p>13.5 Need further restriction of kelp harvesting in MBNMS</p> <p>13.6 Construct artificial reef for kelp harvesting or as mitigation for kelp harvesting</p> <p>13.7 Install artificial reefs to increase rockfish populations</p> <p>13.8 Develop programs with fishing community to promote positive aspects of fishing, such as fish stocks that are sustainable</p> <p><i>See also 3.0 Biodiversity Protection, and 14.0 Habitat Alteration</i></p>
14.0 Habitat Alteration	<p>All three sanctuaries have regulations that prohibit habitat alteration such as seabed disturbance. Exceptions to this include fishing activities and normal anchoring. Habitat alteration can result from construction activities or repeated activity such as bottom trawling or tidepool trampling. Habitat or environmental alteration can also occur as a form of restoration to a more natural state or by “engineered habitat such as artificial reefs. Placement of seawalls, rip rap, or other coastal armoring also alters the habitat however this issue is included in this summary as Issue 6.0, Coastal Armoring. The impacts of activities that alter the habitat vary depending upon the action or duration of the activity. Sanctuaries received comments calling for stricter regulation or prohibition of fiber optic cables, regulation of coastal sand mining operations, and restrictions on bottom trawling. Many comments also called for restoration activities, primarily in coastal wetlands that have been degraded by past human activity. Other specific comments called for placement of structures on the seafloor to propagate kelp for the purpose of harvesting or to act as habitat in order to mitigate for kelp harvesting activities.</p>	<p>14.1 Ban or restrict construction of commercial submarine cables</p> <p>14.2 Evaluate effects to benthic habitat from trawling; consider further restrictions by fishery agencies or MBNMS to protect habitat.</p> <p>14.3 Restrict sand mining along shores of or in MBNMS</p> <p>14.4 Increase riparian and wetland restoration amd salmonid watershed habitat</p> <p>14.5 Investigate coastal erosion caused by coastal development</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
15.0 Marine Bioprospecting	No Comments specific to MBNMS See Analysis of Crosscutting Issues	<i>See also 6.0 Coastal Armoring</i>
16.0 Marine Discharge and Debris	<p>Discharge or material in the Sanctuary include harbor dredged materials and landslide material related to maintenance and repair of coastal highways. When the Sanctuary was designated in 1992, two existing offshore sites for dredge disposal were identified, and the establishment of new sites was prohibited within its boundaries. Since then, MBNMS has recognized and authorized the use of additional sites at Santa Cruz and Monterey Harbors which were in use prior to designation. MBNMS reviews the composition of the sediment and any associated contaminants and authorizes dredged material disposal at these sites for clean sediments of the appropriate grain size and amounts. Deposition of material from landslides along the Sanctuary’s steep coastline can bury intertidal and subtidal habitat, and increase sand scour which inhibits larval settlement in certain habitats. Some of these slides occur naturally, while other slides are created or exacerbated by highway design, repair and maintenance practices. Sanctuary regulations currently prohibit these discharges. MBNMS is working with Caltrans and others to address this issue, including development of a regional plan to improve highway practices to reduce the need for disposal, and assessments of the relative contribution of natural versus anthropogenic material. A proposal has also been developed to evaluate the sensitivity of various locations and habitats along the coast to deposition, with the goal of identifying appropriate and inappropriate circumstances for disposal adjacent to the ocean. The interagency review process for both dredging and landslide disposal is quite complicated, and improvements in coordination of the process have begun. MBNMS also reviews NPDES permit issuance and renewals for point source discharges such as treated sewage. Growing “discharge” issues in central California also include new desalination facilities.</p> <p>Marine debris along the MBNMS coastline includes litter and trash from the watersheds, beaches and boats which can harm marine life which may mistake them for prey or become entangled. Other marine deposits include oil slicks from bilge pumping, groundings, cargo holds, and sunken vessels. Debris also reduces enjoyment of recreational use of the coastline. MBNMS assists annually with Coastal Cleanup Day and has some urban runoff educational materials which mention debris, but has otherwise not focused heavily on this issue.</p>	<p>16.1 Review and improve MBNMS role in permit process for dredge disposal to ensure efficiency of review and protection of sanctuary resources.</p> <p>16.2 Identify disposal locations and conditions for landslide disposal.</p> <p>16.3 Develop Big Sur landslide / Cal Trans spoils disposal policy.</p> <p>16.4 Develop debris and trash education and reduction program</p> <p><i>See also 14.0 Habitat Alteration, 18.0 Monitoring, and 29.0 Water Quality</i></p>
17.0 Military Activities	<p>Military use of the MBNMS includes air, surface and underwater activity. Some activity includes the use of non explosive ordnance, sonar, smoke markers and the temporary placement of objects for torpedo firing or sonar location training. Air activities include aircraft carrier takeoffs and landing, and low-level air combat maneuvering. The U.S. Navy uses these areas for submarine operations. Navy minesweeping ships in Monterey Bay conduct mine hunting training eight times a year; each exercise lasts about one week. On occasion, U.S. Marines practiced amphibious landings on the beaches adjacent to this area.</p>	<p>17.1 Prohibit non-emergency military overflights</p> <p>17.2 Exempt military use</p> <p>17.3 Prohibit use of LFA sonar in Sanctuaries</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
	<p>week. On occasion, U.S. Marines practiced amphibious landings on the beaches adjacent to this area. Concerns regarding the military activity in the Sanctuary primarily related to conflicts and disturbances with marine life both temporary or long term. Acoustic issues such as the Navy’s LFA Sonar are addressed in Section 1.0. The military also conducts non-combat preparedness activities such as underwater cable repair and breakwater maintenance. Other concerns include the carrier launched jet aircraft and their impact on seabird roosting areas along the coast.</p>	<p><i>See Also 1.0 Acoustics and 14.0 Habitat Alteration</i></p>
<p>18.0 Monitoring</p>	<p>Reports of events such as beach closings, oils spills, harmful algal blooms, exotic species introductions, and habitat losses appear to be increasing in frequency worldwide, and it is now well documented that many marine environments are deteriorating significantly. However, the anthropogenic and natural causes of these changes to habitats and resources are complex and varied, commonly occurring on different temporal and spatial scales. Effective resource management is therefore reliant on integrated approaches to identify and track changes to important and sensitive marine environments. Comprehensive, long-term monitoring, a requirement of the original MBNMS management plan, is a fundamental element of resource management. It has been recognized in numerous reviews and studies that coordinated, standardized approaches to monitoring are essential to effectively determine temporal and spatial trends. However, despite the substantial efforts by private and government organizations, monitoring programs are typically incomplete, inconsistent, fragmented and inaccessible. This is commonly a result of insufficient infrastructure and funding to achieve a comprehensive, long-term perspective. To assure the effective and continuous evaluation of a region and its resources, particularly large areas on the scale of the Monterey Bay National Marine Sanctuary, a commitment towards a stable network of flexible ecosystem and issue-based monitoring programs is needed. With the support of many partners, the MBNMS has recently initiated a Sanctuary Integrated Monitoring Network (SIMoN) to try and address this critical need. The Sanctuary recently established the Citizen Watershed Monitoring Network with volunteers to fill in gaps in monitoring by state and local agencies.</p>	<p>18.1 NOAA needs to fully fund SIMoN.</p> <p>18.2 Increase monitoring of special point sources like Duke Moss Landing Plant and sewage overflow.</p> <p>18.3 Increase monitoring and expand Sanctuary Citizen Watershed Monitoring Network</p> <p>18.4 Employ others, like fisherman and volunteers to help monitor resources</p> <p>18.5 Use / expand Team Ocean to monitor for nearshore activity</p> <p><i>See Also Sec. 24.0 Research</i></p>
<p>19.0 Motorized Personal Watercraft</p>	<p>MPWCs operate in a manner unique among recreational vehicles creating potentially significant impacts on wildlife, water quality and personal safety. The high speed and maneuverability of personal watercraft, and the fact they tend to operate nearshore and in a repeated fashion, within a confined area, results in recurring disturbance to animals and habitats. Suspected impacts include behavior modification of sea birds, fish and pinnipeds; and site abandonment and avoidance by certain porpoises and whales. The Monterey Bay National Marine Sanctuary restricted use of these vehicles with the designation in 1992 and confined them to four zones outside of the four harbors in the Sanctuary. The MBNMS regulation includes a provision that defines a MPWC. Since adoption of this regulation, most MPWC manufacturers have designed vehicles that do not fall under the MBNMS definition. Specifically, certain MPWCs now are capable of carrying two, three or four people in addition to the operator and therefore are not subject to the MBNMS regulation. There have been conflicts between MPWCs and other recreational ocean users due to the noise and operation of MPWCs. Comments received during scoping include calling for a complete ban, adopting the GFNMS definition, using marine zones for buffering the impacts from wildlife, or well as removing regulations related to MPWCs. Some comments regarding MPWC also distinguished between two-stroke and four-stroke motors. These issues also are a concern for noise impacts and water quality.</p>	<p>19.1 Reassess environmental impacts from MPWC and recast regulations accordingly</p> <p>19.2 Ban MPWC entirely, except for genuine lifesaving duties</p> <p>19.3 Close loopholes on definition of larger MPWC in MBNMS</p> <p>19.4 Need additional enforcement of MPWC prohibitions</p> <p>19.5 Make buoy system safer for marking zones – lighting on buoys or remove buoys.</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
	Two-stroke engines are generally louder and do not burn hydrocarbons as efficiently as four stroke engines.	
20.0 Oil and Gas Exploration and Development	<p>Oil and gas activity was one of the major reasons for designation of all three of the north/central California National Marine Sanctuaries. In the past 10 years, the State of California has adopted legal restrictions to prohibit new oil and gas leasing and development. Temporary moratoria have been in place in federal waters since 1982. The most current directive (June 1998, Clinton administration) under the OCS Lands Act prevents any leasing of new areas for oil and gas exploration and development through June 30, 2012. The OCS presidential deferrals do not restrict development of already leased Federal areas. There are 36 remaining undeveloped active OCS leases south of the MBNMS off the coast in San Luis Obispo and Santa Barbara counties.</p> <p>Also of great concern related to oil and gas development, are the impacts on marine resources from an accidental oil spill. The most severe impacts would result from large oil spills usually associated with oil well blowouts, or tanker accidents. Oil spills could have a major impact on foraging birds, marine mammals, and fishes, as well as important habitat like kelp beds, wetlands and rocky shores. Tourism and coastal economies could also be devastated by a large oil spill. Tracts once considered for leasing also exist off of San Luis Obispo County reaching north almost to the southern boundary of the MBNMS. The threat of leasing or development of the existing leases has prompted many comments from individuals requesting a southern expansion of the MBNMS to reduce the possibility of further offshore oil and gas development.</p>	<p>20.1 Expand prohibition on oil and gas drilling and exploration to include slant drilling</p> <p>20.2 Develop Strategies to influence oil and gas development beyond MBNMS, whose impacts could nonetheless affect MBNMS</p> <p><i>See Also Subissue 5.1 Moving MBNMS South</i></p>
21.0 Partnerships with Agencies	The MBNMS and the NMSP are committed to coordinating with other Federal, State and local agencies on a continuous ecosystem management process. The process is designed to ensure the long-term protection of the special resources of this region, while considering the demands of multi-use interests. As such, the existing management plan identifies strategies for cooperation among many agencies and institutions that historically may not have focused on the same goals. Overlapping jurisdictions, different agency mandates and limited resources necessitate the development of a relationship that brings together multiple agencies for the common purpose of ecosystem management. The MBNMS has used such techniques for its Advisory Council, its Water Quality Protection Program, Vessel Traffic Strategies, and resolution of kelp management. Many comments during the scoping process focused on how these shared agency roles can be improved. An area to test true shared agency-public responsibilities may be the Big Sur region, where many related local, state and federal agencies are revising management plans for similar, resource protection and use, missions.	<p>21.1 Establish program for ‘seamless management’ between coastal agencies.</p> <p>21.2 Update MOA with State Water Board.</p> <p>21.3 Expand interaction with Coastal Commission on shared conservation and multiple use objectives.</p> <p>21.4 Continue work with Big Sur Multi-Agency Council and Coast Highway Management Plan</p> <p>21.5 Explore partnership beyond MBNMS, e.g., with Morro Bay National Estuary Program</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
		<p><i>See also 4.0 Biodiversity Protection and Ecosystem Conservation</i> for alternatives for marine reserves which include collaboration with agencies.</p>
<p>22.0 Partnerships with Community Groups</p>	<p>The MBNMS could not function in the many roles it undertakes without the support of its community partnerships. For instance, the MBNMS Sanctuary Advisory Council (SAC) is comprised of 40 agency and user group representatives as well as the public at large. Its advice is critical to understanding the needs of the local communities while protecting the Sanctuary's resources. The SAC relies on an additional 80 individuals on 4 working groups for the best information regarding Research, Education, Conservation, Business and Tourism. Each of these groups is comprised of representatives, who volunteer their time to help develop the Sanctuary's programs, products and viewpoints. 30 Hispanic serving institutions worked with MBNMS staff to develop the multicultural education plan. Partnerships with State and Regional Parks and private nonprofit groups have greatly enhanced the MBNMS's ability to share its mission.</p>	<p>22.1 Expand partnerships with businesses, tourism boards, and chambers of commerce</p> <p>22.2 Expand partnerships with many groups; e.g. Hearst Castle and Friends of the Elephant Seal, Santa Cruz Office of Education, Fitzgerald Marine Reserve.</p> <p>22.3 Hire volunteer coordinator to focus on improved interactions with existing volunteer efforts and expand efforts</p>
<p>23.0 Radioactive Waste</p>	<p>No comments specific to Monterey Bay NMS See Analysis of Gulf of the Farallones NMS</p>	
<p>24.0 Research</p>	<p>The opportunities for marine research within the Sanctuary are abundant, as seen by past research studies that have provided important baseline information about the area. The diversity of habitat types and communities provides a wealth of opportunities for conducting a variety of research programs. For example, the Monterey Canyon provides a unique opportunity to engage in deep- water marine research without extensive voyages offshore. Studies on the processes at the land-sea interface are also feasible due to the accessibility of extensive coastline. Finally, the marine research institutions within the area provide an exceptional resource to draw upon in furthering our understanding, and thus the management of, the Sanctuary's marine resources. Research is necessary to understand how the Sanctuary ecosystem functions and how humans impact it. This can be accomplished by improving our understanding of the Sanctuary environment, resources and qualities, resolving specific management problems, and coordinating and facilitating information flow between the various research institutions, agencies and organizations in the area. Research results can be used for making management decisions about resource protection and to develop and improve education programs for visitors and others interested in the Sanctuary.</p>	<p>24.1 Procure MBNMS research vessel and ROV</p> <p>24.2 Better research on critical species (e.g. krill, squid) or threatened species (e.g. whales, otters)</p> <p>24.3 Need research center in southern region of MBNMS</p> <p>24.4 increase public access to research results</p> <p>24.5 Enhance NOAA Vessel and Aircraft Capability</p> <p>24.6 Link coastal health to ocean productivity</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
		<p>24.7 Participate in regional cabled observatory development</p> <p>24.8 Quantify extractive human impacts.</p> <p>24.9 Quantify non-extractive human use impacts.</p> <p>24.10 Understand transport and sinks of pollution</p> <p>24.11 Update the MBNMS Site Characterization</p> <p>24.12 Coordinate regional research and monitoring</p>
<p>25.0 Sanctuary Advisory Council</p>	<p>The SAC, with its expertise and broad-based representation, offers advice to the Sanctuary Superintendent on: 1) protecting natural and cultural resources and identifying and evaluating emerging or critical issues involving Sanctuary use or resources; 2) identifying and realizing the Sanctuary’s research objectives; 3) identifying and realizing educational opportunities to increase public knowledge and stewardship of the Sanctuary environment; and 4) assisting to develop informed constituency to increase awareness and understanding of the purpose and value of the Sanctuary and National Marine Sanctuary Program. The broad representation of the SAC ensures that the manager has an expanded information base on which to make management decisions. The MBNMS has had a SAC since 1993; GFNMS and CBNMS established theirs in 2002. The MBNMS Advisory Council is comprised of 40 agency and user group representatives and the public at large. The SAC relies on an additional 80 individuals on 4 working groups for the best information regarding Research, Education, Conservation, Business and Tourism. Each of these groups is comprised of representatives, who volunteer their time to help develop the Sanctuary's programs, products and viewpoints. Several issues of SAC governance, SAC seat selection, and its autonomy have been raised.</p>	<p>25.1 Add a recreational fishing seat</p> <p>25.2 Add seat for different commercial fishing gear types.</p> <p>25.3 Add military representative to SAC.</p> <p>25.4 Review SAC appointment process for SAC members.</p> <p>25.5 Review SAC charter and protocols to provide more autonomy.</p> <p>25.6 Remove SAC from NOAA, operate under separate authority.</p> <p>25.7 Require SAC members to disclose financial interests to determine conflicts of interest</p>
<p>26.0 Spill Response and</p>	<p>Emergency response within the Sanctuary ranges from small events associated with fuel and oil discharges, debris and habitat damage from vessel groundings, sinkings and plane crashes, to larger oil spills from offshore shipping traffic, sunken vessels or natural seeps where damages can span hundreds of</p>	<p>26.1 Improve response capabilities along Big Sur coast</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
Contingency Planning	miles of coastline. Interagency response coverage remains inadequate for some portions of MBNMS coastline, such as the Big Sur and Cambria area where rescue vessels and crews must travel long distances. In addition, MBNMS staff have not yet fully defined or held drills regarding their specific roles in the event of a large spill. The USCG and OSPR, with MBNMS participating to provide information and assess damage to resources, lead response to larger spills. Staff also participates on USCG’s contingency planning committee to coordinate response to large spills. For smaller events and vessels, by default MBNMS has often assumed a lead role in ensuring that fuel and oil, debris and where possible, the vessel itself, is adequately removed to minimize damage. MBNMS has recently initiated an interagency subcommittee effort to improve prevention, coordinated interagency response and funding efforts related to small vessel sinkings and groundings.	<i>See Also Table 2 Cross-cutting Issues</i>
27.0 User Conflicts	The San Francisco Bay metropolitan area, home to more than 8 million people, influences the uses, health and three Sanctuaries. Located near some of California’s most urbanized areas, the MBNMS has experiences an increase in the number of users and demands on the resources. This has increased human demands on the resources, including commercial and recreational fishing as well as wildlife viewing, research interests and educational opportunities. Because the area is large and includes adjacent rural and urban areas, management must be responsive and equipped to deal with a broad range of concerns. One tool National Marine Sanctuaries use to address user conflicts is zonal management. The MBNMS uses zonal management to avoid concentration of uses that could result in significant impacts on marine resources; to reduce conflict between uses; provide opportunities for scientific research; and/or to provide for the recovery of resources from degradation or other injury attributable to human uses. Other tools Sanctuaries use to address user conflicts: for uses not compatible with the Sanctuary’s primary purpose of resource protection, the Sanctuary may promulgate regulations; and/or the Sanctuary may recommend voluntary rules of conduct for interacting with Sanctuary resources such as wildlife viewing guideline.	27.1 Complete an MBNMS visitor use survey to identify types of users <i>See Also 19.0 Motorized Personal Watercraft and 30.0 Wildlife Disturbance.</i>
28.0 Vessel Traffic	Due to the high volume of large commercial vessel traffic and the risks and consequences of spills, vessel traffic was a major issue during the MBNMS designation in 1992. NOAA and the Coast Guard used a collaborative “key stakeholder” process to develop recommendations to improve protection of the MBNMS and allow for safe and efficient vessel transportation. These strategies, much of which were approved internationally, move shipping lanes 12 to 20 miles offshore, and keep most tanker traffic out of the Sanctuary (50 nautical miles offshore). Certain individuals commented on this issue during scoping with recommendations to move the vessel traffic lanes further offshore and thereby further reducing the threat potential.	28.1 Develop enforcement and monitoring program for vessel traffic program 28.2. Remove oil tanker traffic from sanctuary <i>See also 26.0 Spill Response and Contingency Planning</i>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
<p>29.0 Water Quality</p>	<p><i>Nonpoint Source Pollution</i> Coastal watersheds immediately adjacent to MBNMS cover over 7000 square miles of land with a mix of land uses including major urban areas, rural communities, agricultural land, and pockets of industrial areas. As rainfall or irrigation water in these watersheds moves downstream, it picks up a variety of contaminants. Offshore areas of the Sanctuary are in relatively good condition, but nearshore coastal areas, harbors, lagoons, estuaries and tributaries show a number of problems including elevated levels of coliform bacteria, detergents, oils, nitrates, sediments, and persistent pesticides such as DDT and toxaphene. These contaminants can have a variety of biological impacts including bioaccumulation, reduced recruitment of anadromous species, algal blooms, transfer of human pathogens and interference with recreational uses of the sanctuary due to beach closures. The Sanctuary’s Water Quality Protection Program has developed multistakeholder plans for urban runoff, marinas and boating, agriculture and rural lands, and water quality monitoring. Implementation of all of these plans have begun, but most of the recommendations are not yet implemented due to lack of funding and staffing for MBNMS and its partners. In addition, recent problems such as recurring beach closures which are in part are probably due to nonpoint sources of coliform pollution have not yet been adequately addressed in the urban runoff and water quality monitoring efforts.</p> <p><i>Point Source Pollution</i> Point sources of pollution are those in which a single discharge point is evident, and they include sewage spills and discharges, desalination plants, and industrial discharges such as power plants. Sewage spills have become more frequent in recent years, in part due to cracks and clogging of aging pipelines beneath many of the region’s cities and small communities. These spills, along with nonpoint sources of coliform, have contributed to more frequent beach closures which reduce recreational use. Pathogens from sewage have also been implicated in sea otter diseases and mortality patterns. In addition, there are currently 15 desalination plants that are existing or in some stage of planning within MBNMS, with an increasing trend towards the development of small independent plants for private developments. Discharges from these plants have potential impacts due to elevated salinity and metal levels, toxic contaminants associated with cleaning and maintenance, and construction impacts from pipelines. MBNMS has previously reviewed these plants on a case-by-case basis to recommend measures to reduce impacts, but has recently initiated an interagency effort to evaluate the issue and develop regional guidelines.</p>	<p>29.1 Fully implement all elements of existing water quality plans produced by Water Quality Protection Program and integrate WQPP into management plan</p> <p>29.2 Develop and implement action plans for coliform contamination / beach closures</p> <p>29.3 Fund DNA pollutant source tracing for coliform</p> <p>29.4 Increase beach closure notification</p> <p>29.5 Prohibit 2-stroke engines in sanctuary</p> <p>29.6 Develop and implement regional desalination policy including prohibitions on private desalination facilities</p> <p><i>See also Issue 16.0 Marine Discharge and Debris</i></p>
<p>30.0 Wildlife Disturbance</p>	<p>The Sanctuaries provide many opportunities for observation of nature, including whale watching, bird watching, and pinniped pupping and haulout activity. Partyboats are used for nature observation tours. Rocky shorelines provide pedestrians opportunities to view the flora and fauna associated with the habitat. With the multitude of opportunities for observation come the potential for wildlife disturbance which may</p>	<p>30.1 Review shark attraction regulation to restrict permit issuance and implement guidelines for interaction.</p>

TABLE 5: Analysis of Monterey Bay National Marine Sanctuary Issues

Issue Area	Description of Issue Area	Summary of Sub-Issues
	<p>result in flushing birds from their nesting sites, pinnipeds abandoning pups, potential harassment or even death. Previously in the MBNMS ecotourism operations included white shark viewing with the aid of chumming and other attraction methods. MBNMS adopted prohibitions for white shark attraction.. Potential impacts to seabird nesting from low-flying aircraft are addressed with a prohibition on low flying (under 1,000 feet) aircraft in certain zones with sensitive wildlife. Some implementation problems have occurred since the overflight regulations are not noted on FAA charts.</p>	<p>30.2 Review overflight regulations to address consistency with FAA charts and guidelines, increase outreach to pilots and to review potential environmental impacts.</p> <p>30.3 Need wildlife viewing guidelines, and enforcement and education effort</p> <p>30.4 Research, and if necessary develop action plan, to nonextractive user impacts (e.g. wildlife viewing, kayaking, diving, research)</p> <p><i>See also 19.0 Motorized Personal Watercraft</i></p>

APPENDIX 1: Full List of Issues Raised at Scoping Meeting and in Writing

ACOUSTIC IMPACTS:

Issues:

- Sanctuary should be proactive in regards to Low Frequency Acoustics in Big Sur. (MB)
- Concerned about acoustic impacts including behavior modification, injuries, or death to marine mammals and humans. (All)

Suggested Strategies and Tools:

- Prohibit and research sources of artificial marine noise. (All)
- Sanctuaries should not allow SONAR and acoustical experimentation. (All)
- There should be a ban on all activities, which cause noise of any type, which kills, harms or changes the behavior of any biota within all the sanctuaries, but especially the MBNMS. (All)
- A study should be conducted surveying existing and potential noise impacts, alternatives and mitigations In the Sanctuary, which should include shipping and military operations. (All)
- Sanctuary should develop a policy prohibiting adverse impacts associated with underwater sound. (All)
- Investigate the issue of marine noise. Combine all underwater sound issues and evaluate both long and short term impacts (All)
- Document baseline and new acoustic conditions at selected representative sites throughout the sanctuaries, to improve the knowledge of ambient and anthropogenic sound sources in marine ecosystems. (All)
- Ban all underwater “acoustical devices” producing sound greater than 80 decibels at the source, until proven safe for marine life. (All)

ADMINISTRATION:

Issues:

- Sanctuary needs much more funding to achieve adequate ecosystem protection. (All)
- Need more money and support for water quality action plans. Currently they are poorly implemented. (MB)
- The Sanctuary needs to respond to public requests in a more timely fashion. (All)
- The name of the Sanctuary should be changed to “Offshore Central California NMS” or something similar. The current name is misleading, since the Monterey Bay is just a small proportion of the total area of the bay. (MB)
- Does not understand whom the Sanctuary program is accountable to. There should be more accountability for the actions of the Sanctuary. (All)
- Dissatisfied with the management style of the Sanctuary: MBNMS does not play well with others, particularly re: coast highway landslide disposal. Does not consider the needs of other stakeholders in many cases. (MB)
- Sanctuary resources should be dedicated to resolving conflicts. MBNMS needs a policy to deal with conflicts more efficiently. Should be based on what has and has not worked in the past. (MB)
- MBNMS is better managed than GF/CB (SAC established). Should be similar management for all three sanctuaries. (All)
- GFNMS and CBNMS need better facilities to serve as meeting rooms for volunteer meetings, and education and outreach. These should include a wet lab. (GF/CB)
- Need procedure for evaluating public comments. (All)
- Supportive of the approach of the Management Plan Review process (outreach, meetings, etc). (All)
- Scoping meeting should have been held in Morro Bay or somewhere on the coast, instead of in San Luis Obispo. (MB)
- NOAA should allocate resources for voluntary implementation. (All)
- Staff the research program with knowledgeable scientists, capable in conducting as well as interpreting research. (MB)
- Integrate research with Sanctuary Education, Conservation and Research Protection Programs. (MB)
- GFNMS Manager is praised by members of the community, and is doing a good job. Consequently, the Sanctuary is expected to be very successful with continued public support. (GF/CB)
- Adoption of new or revised management plans will require NMSP to submit to the Coastal Commission a *consistency determination* pursuant to the CZMA. (All)
- Too much agency emphasis on locking up resources. (All)

Suggested Strategies and Tools:

- NOAA should allocate more resources towards implementation of the agriculture action plan. (MB)
- Sanctuary should help secure funds for additional water quality monitoring. (MB)
- Increase funding for enforcement. (All)

APPENDIX 1: Full List of Issues Raised at Scoping Meeting and in Writing

- More funding should be made available for education in schools (elementary school to college). (All)
- More funding for monitoring of water quality. (All)
- Increase funding for staffing at GFNMS. (GF)
- Encourage funding of “Dock Walk” materials (educational information, bilge sponges, etc). (MB)
- The Sanctuary should be part of the Department of the Interior rather than Department of Commerce. The Sanctuary could learn from the Department of the Interior’s experience. (All)
- National Marine Sanctuary Program should complete a visitor use survey. (All)
- Monterey Bay National Marine Sanctuary should not change its name. (MB)
- Adhere to language in National Marine Sanctuaries Act. (All)
- There must be measurable, quantifiable performance measures. (All)
- A comprehensive cost/benefit analysis of presence of the Sanctuary should be conducted; results should be distributed widely to the public. (All)
- Sanctuary should have “objective based” policy, and regulations should have definite goals. Should educate more about why the policy or regulation is in place. (All)
- Sanctuaries should consider economic impacts on local communities as part of the Joint Management Plan Review (JMPR). Should provide mitigation for impacts on users/communities. (All)
- Sanctuaries should use both breakout sessions (like this JMPR scoping meeting), and an open forum format at the end of the meeting, where comments are limited to 2-3 minutes. (All)
- Increase staffing of sanctuaries to meet goals. (All)
- Sanctuaries should remain as 3 entities. (All)
- Names of Sanctuaries should not be changed but should look at streamlining efforts among the three. (All)
- Would like to see Sanctuary Headquarters in Santa Cruz County not Monterey County. (MB)
- Need to ensure that local voices can be heard over national voices from Washington DC. (All)
- The Sanctuary should hold meetings inland as well as in coastal areas.
- Sanctuary should conduct a cost-benefit analysis of its management programs. Revenues should be tied to benefits. (All)
- Sanctuary should set measurable and defined goals or standards. (All)
- Add language to the Management Plan to include the concept that “ecosystem” includes an understanding of the socio-economic impact on a business or community of any particular sanctuary permit or regulation. (All)
- Sanctuary use and economic opportunities need to be actively promoted. A staff position should be added or current staff time should be directed, to develop a Sanctuary marketing plan and facilitate the use of the Sanctuary. (MB)
- Reconsider the evaluation process for comments received during the JMPR. (All)
- Management plan changes should be based on sound science and hard data.
- Allow public access to all public comments. (All)
- Public should vote on comments provided during scoping process. (All)
- Published list of scoping comments should be in a searchable database.
- Priorities need to be in management plan. (All)
- Sanctuary should be revising its management plan each 5 years. (All)
- Stress in the Management Plan Review that the essential work of the Program is the oil/gas ban, education, research, and the work of the Water Quality Protection Program. Also Stress its need to accomplish goals by working with other agencies rather than becoming a larger and larger organization itself. (All)
- NOAA should allocate more resources towards implementation of the agriculture action plan. (MB)
- Establish some sort of central revenue collection point for habitat protection.
- SIMoN program should receive the highest possible level of financial support. (All)
- Sanctuary should do a socioeconomic study to assess the value of the Sanctuary in terms of natural ecosystem value versus extractive value. (All)
- Sanctuary should acquire public access lands. (All)
- Revised management plans should address staffing needs to accomplish water quality protection goals. (All)
- Create a mechanism for ongoing evaluation of programs and products (All).
- Support and promote Research Activities Panel. (MB)
- Additional staff needed for Half Moon Bay. (MB)
- Add a volunteer coordinator position. (MB)
- Continue to maintain local offices in each county. (MB)
- The revised management plan should include a description of additional staff and resources needed to fully implement and enforce the National Marine Sanctuaries Act, its regulations, and the Water Quality Protection

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Plans, as well as to accomplish any additional goals that are established for the program in the foreseeable future. (MB)

AQUACULTURE:

Issues:

- Concerned about management of kelp resources, and the impacts from abalone farming and other aquaculture operations. (MB)
- Aquaculture (shellfish) operations in Tomales bay introduce disease and alien species. (GF)
- Concerned about the impacts of commercial raising of non-native oysters in Tomales Bay. (GF)

Suggested Strategies and Tools:

- The Sanctuary should explore the potential of artificial reefs to enhance winter harvest of kelp in Del Monte. (MB)
- Sanctuaries should prohibit open water aquaculture, because there is no control over what is broadcast into the ocean. (All)
- Sanctuaries should increase education and outreach regarding aquaculture, further north of Elkhorn Slough. (All)
- Cumulative impacts of aquaculture projects should be considered. (MB/GF)
- Aquaculture of any non-native species should be land grown with closed systems (no ocean outfall) to prevent hybridization with indigenous species and introduction of parasites. (MB/GF)
- Ban all notions of abalone farming. (MB/GF)
- Report should be done and include related impacts, such as the plastic bags associated with Asian oyster growing. (GF)
- Restrict abalone farming because of bacteria and worms that contaminate water. (GF)

BIODIVERSITY PROTECTION AND ECOSYSTEM CONSERVATION:

Issues:

- The less than one percent of the Sanctuary that is currently fully protected, is insufficient to fulfill the Sanctuary's mandate of maintaining its natural biological communities and protecting, restoring, and enhancing its natural habitats, populations, and ecological processes. Appreciates regional approach to scoping process, to capture local issues. (MB)
- Need more conservation in general. (All)
- Goal of MBNMS should be to protect and preserve. (MB)
- It is much better economically (and easier) to save species and ecosystems before they become endangered or compromised in some way. Protection now makes the most long-term sense. (All)
- More attention is needed for maintenance of the Salinas River (vegetation and wildlife). (MB)
- Sanctuary should better protect low tide reef areas at Pillar Point. (MB)
- Concerned about loss of species biodiversity and abundance, impacts to habitat, impacts to predator/prey interactions. (All)
- Any proposals to make multiple use equivalent to resource protection, to have a separate category of "minimal use", to exempt certain areas from jurisdiction, etc. should be viewed with caution. (All)
- Concern that "sanctuary" is a misnomer since the MBNMS does not protect fish in any way.
- Describing sanctuaries as "Marine Protected Areas" leads to public confusion, because the definition of MPA used for the MLPA includes a restriction or prohibition of recreational or commercial fisheries. "Marine Managed Area" would be more appropriate. (All)
- Term "sanctuary" is a misnomer. True sanctuary status is nearly impossible to establish in the marine environment, save some marine caves or extreme deep-water sites populated only by resident species and devoid of any effects of ocean current and free from impacts of pollution. (All)
- Coastal habitat restoration is extremely important. (GF and MB)
- Need better integration of land use planning around the estuaries. (GF)
- Lumber activities upstream detrimental to sanctuary. (GF)
- Intensive agricultural development carries increasing adverse impacts. (GF)

Suggested Strategies and Tools:

- Consider regulation with long-term vision (erosion lasts longer than 50 years). (All)

APPENDIX 1: Full List of Issues Raised at Scoping Meeting and in Writing

- There should be one management plan for each ecosystem, not one management plan per agency. This public thinks of ecosystems as one, not as six agencies with varying degrees of management responsibility. Appreciates regional approach to scoping process, to capture local issues. (All)
- Management should strive for long-term sustainable use (e.g., not taking juvenile fish). Appreciates regional approach to scoping process, to capture local issues. (All)
- The Sanctuary needs to find the right balance between use and protection. (All)
- More protection is needed in general for the ecosystem and biodiversity. (All)
- Resource protection should be the main priority. (All)
- Sanctuary should manage the resources using a holistic watershed approach. (All)
- Strengthen resource protection; do not allow local control to undermine this. (All)
- Expand sanctuary concept to unify and make consistent resource protection, for better management of resources. (All)
- Use holistic management practices that focus on entire watersheds. (All)
- Sanctuary should advocate maintaining the vegetation in riparian corridors for filtration. (MB)
- Sanctuary should look at the big picture of overall environmental impacts, and manage the resources appropriately. For example trawling has significant impacts, yet much more attention is given to fiber optic cables. (All)
- Sanctuaries should ensure comprehensive coverage with overlapping jurisdiction, to improve resource protection. (All)
- Sanctuaries should continue to provide consistent habitat protection. (All)
- Provide protection and conservation to marshes and sloughs, and other wetlands. (MB)
- Recognize intrinsic values and aesthetics as well as ecological values. (All)
- Create more of a policy balance between conservation and use, with a strong educational program being the key to achieving this balance. (All)
- Use of precautionary principle for protection of natural phenomenon.
- More protection of riparian ecosystems. (All)
- Sanctuary should consider ecological trade offs. In some cases terrestrial impacts from alternatives to Sanctuary restrictions are much worse. (All)
- The Sanctuary should be involved in enhancing near-shore ecosystems through research and staff involvement in other agency processes. (MB/GF)
- Do not utilize a marine zoning approach. (All)
- We urge the National Marine Sanctuary Program to ensure that any issues considered during Jmpr process be considered in the context of the National Marine Sanctuaries Act's primary goal of resource protection. We strongly advocate for the adoption and enforcement of strong policies and regulations that provide maximum protection of Sanctuary resources. (All)
- Fish and wildlife breeding habitats, submarine canyons, and giant kelp forests are some of the special areas within the Sanctuary that need protection. Marine reserves are needed and should be large enough to help the many species in trouble recover and also to provide insurance against disasters and management mistakes. (All)
- Sanctuary should take immediate action to adopt a management plan to protect steelhead and salmon from predation by pinnipeds. (MB)
- GFNMS should work with Point Reyes National Sea shore to quickly implement a network of marine reserves to be protected from all harmful activities. (GF)
- Strengthen the Sanctuary's Program of resource protection through zonal management, an important tool in achieving long-term sustainability of our large-scale coastal ecosystem. (All)
- Investigate agricultural certification of farms through such organizations as "Salmon Safe" in order to promote healthy fish habitat in the watersheds. (MB)
- The revised management plans should be designed to help recover species that are most at risk and should reflect a precautionary approach to resource management to avoid future species declines.
- Revised management plans should contain directives and timelines for developing specific action plans focused on protecting, and where necessary, restoring, natural habitats, populations, and ecological processes. Plans should also contain specific directives and management measures on certain issues. (All)
- Revised management plans should also outline enforcement, research, and monitoring needs associated with future marine reserve sites. (All)
- Link coastal health to ocean productivity. (All)
- Integrate marine research in resource management decisions. (All)
- Try thinking of the sanctuary as a gift as well as a resource. (All)
- Think as long term as possible. This plan is designed to last 5 or 10

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- Years, but maybe we also need to identify issues that are considered 50 or 100-year issues. (All)
- Remember to think and plan as systemically as possible, not just about distinct and separate issues, but about all the connections and boundaries and overlaps: coastlines and jurisdictions and regions and ecosystems and partnerships and nexuses and all those connections. (All)
- “Seamlessness” should be the goal of Sanctuary management. (MB)
- Protect impacts to seals from humans by upholding laws such as the Elephant Seal Closure Law. (MB/GF)
- Under present MBNMS administration, rules, guidelines and laws of the National Marine Sanctuaries Act (NMSA) and the Sanctuary Advisory Council (SAC) charter have been neglected, overlooked or dismissed to the detriment of conservation efforts of local organizations that have differing goals and objectives contrary to the MBNMS leadership. (MB)
- Establish a water quality plan for GFNMS and CBNMS with standards and monitoring. (GF, CB)
- Land around Estero should remain agriculture. (GF)
- Agriculture plan/ outreach extended to Sonoma County. (GF)
- Sanctuary should work with land management agencies. (MB, GF).
- Rancher perspective – would like recognition of stewardship of the land. (GF)
- Wrecks are a great resource enhancement. Educate the public on the positive aspects of artificial reefs. (GF, MB)
- Certify agricultural growers along stream with programs such as such as “salmon safe.” (GF)
- Would like to see kayak companies (outfitters) required to obtain permits to operate within GFNMS so they understand the impacts to the ecosystem. (GF)
- Provide incentives to farmers, etc. to comply with sanctuary regulations to enhance water quality. (GF)
- Regulate future and current houses upstream to protect the creek waters. (GF)
- Need to coordinate with NMFS in the recovery plan for coho salmon. (GF, MB)

BOUNDARY MODIFICATIONS:

Issues:

- Don't understand why is there a gap between the Monterey and Channel Island Sanctuaries. (MB)
- Concerned that if boundaries are moved south, the protected status will cause a local increase in human visitation and impacts, as occurred in the Channel Islands. (MB)
- Concerned that if boundary were extended southward to Morro Bay, the existing wastewater outfall would be problematic. (MB)
- Concerned with environmental degradation along San Luis Obispo coastline. Sanctuary should protect this area. (MB)
- Agricultural community has more in common with MBNMS than GFNMS in regards to the boundary issues. (MB/GF)
- Affiliation of communities to Sanctuary (identity). Not a good idea to combine all 3 sanctuaries to one name. (All)
- MBNMS does not have the resources to care for our marine environment with its extensive range from Cambria to San Francisco. GFNMS is a small sanctuary and is willing to work on marine issues in the region from the Southern tip of San Mateo County, to current northern boundary of MBNMS. (MB/GF)
- MBNMS is too busy to deal with San Mateo County marine resources. (MB/GF)

Suggested Strategies and Tools:

- Moss Landing Harbor should be included in the Sanctuary boundaries, to protect Elkhorn Slough. (MB)
- Do not combine the Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries, into one large sanctuary. (All)
- Do not include any buffer or exclusion zones. (All)
- Do not change boundaries. (MB)
- Do not reduce current boundaries of MBNMS. (MB)
- Expand boundaries to include seamounts and more of the continental shelf. (MB)
- Boundaries should be defined by ecological data. (MB)
- Sanctuary should implement buffer zones around recreational/urban areas. (MB)
- Move Sanctuary boundary south to Point Sal. Move Sanctuary boundary south to Point Sal. (MB)
- Sanctuary should not expand its boundary southward. (MB)
- Need to investigate the pros and cons for all stakeholders and the general public of extending the MBNMS South to protect the San Luis Obispo coast. The Management Plan should clearly discuss these pros and cons. (MB)
- Sanctuary boundary should be expanded further offshore. (MB)

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- Current uses (power plants, commercial fishing, etc.) should be grand fathered into the management plan, if the boundaries change. (MB)
- Expand the Sanctuary boundary south to the Gaviota Coast or Pt. Conception. (All)
- Expand the current MBNMS sanctuary boundary south to the Santa Barbara County line. (MB)
- The Sanctuary boundary should be extended 1.5 miles south. (MB)
- Consider including harbors as part of Sanctuaries. (MB)
- Sanctuary boundaries should be moved to protect San Luis Obispo coast from offshore oil drilling. (MB)
- The economic impact of the Sanctuary is positive; boundaries should be adjusted to include the San Luis Obispo area. (MB)
- Sanctuary should articulate why current boundaries are located where they are.
- Sanctuary boundary should be extended south, to protect the “Harmony Coast” between Cambria and Cayucos. (MB)
- Sanctuaries should adopt buffer zones for all harbors. MBNMS is currently restricting natural human activities in harbors. Buffer zones should be 2 miles (rough estimate). (MB)
- The Southern boundary of GFNMS should be extended to include Pillar Point Harbor, because it makes sense geographically. (MB)
- The Southern boundary of GFNMS should be moved to Año Nuevo, for political, geographical, and ecological reasons. Also because GFNMS already has a presence there in the form of education programs, oil incidents response, and about 30 volunteers in San Mateo County. (MB/GF)
- The southern boundary of GFNMS should be extended to Pigeon Point, because it is an easily identifiable point for fisheries and research. (MB/GF)
- The “doughnut hole” in the northern MBNMS (off Pacifica and San Francisco) should be included in the GFNMS. Boundary of GFNMS should be moved south to San Mateo/Santa Cruz County line. (MB/GF)
- The Davidson Seamount should be included within the boundaries of MBNMS, to protect abundant seabirds and marine life, and to preserve its current pristine state. (MB)
- Do not include the Davidson Seamount as part of the MBNMS. (MB)
- Southern boundary of the MBNMS “doughnut hole” should be moved as far north as possible. (MB)
- Extend the GFNMS boundary South to the point where it is being co-managed.
- Sanctuaries should explore the feasibility of adopting marine zones where no human activities are allowed, with the exception of research. (MB/GF)
- All three sanctuaries should be combined into a “Central California Sanctuary” which manages all these areas. (All)
- Año Nuevo reserve should remain part of MBNMS. (MB)
- GFNMS boundary should be moved southward to just north of Santa Cruz. (MB/GF)
- Close the donut hole off of San Francisco. (MB)
- Resolve the donut hole issue. (MB)
- Do not expand Sanctuary boundaries with out comments from local communities. Especially from fishermen. (All)
- Extend boundaries of MBNMS to Channel Islands NMS (Create a California Sanctuary). (MB)
- San Francisco and Marin areas should be part of GFNMS. (GF)
- Small staff of Cordell Bank could benefit by joining Sanctuaries into 1. (GF/CB)
- Sanctuary boundaries should be changed to include the near shore waters off of the City of Santa Cruz. (MB)
- Extend Sanctuary to the Oregon border. (All)
- Extend the MBNMS boundary to the southern range of the California Sea Otter. (MB)
- Resolve the issue of joint management of the northern MBNMS, this joint management does not optimize resource protection, and revised management plans should definitively establish jurisdiction of this area. (MB/GF)
- Extend Sanctuary protections into areas above mean high tide line for inter-tidal, wetland, related habitats (such as dunes) and inlet areas. (MB/GF)
- GFNMS boundaries should be expanded to include the area from Santa Cruz County to the Mendocino-Humboldt County line. (GF).
- Do not increase existing boat marina boundaries. (MB)
- Is sanctuary status is to be considered for San Luis Obispo and northern Santa Barbara Counties, then it should be a stand alone sanctuary, and not an expansion of MBNMS. (MB)
- Area from mussel rock at the North end of Pacifica, to San Pedro Point at the South end should be included in the GFNMS. (GF)
- Have GFNMS boundary extend into the SF Bay and up to Sacramento. (GF)
- Reexamine the boundaries to be a more realistic representation to oceanographic conditions. (GF, MB)

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- Consider changing the boundary to inland areas and watershed areas. (GF, CB).
- Would like to see sanctuary boundary extended north. (GF, CB)
- The GFNMS boundary should be extended to the south to incorporate the entire Marin coast. (GF)
- Cordell Bank should be extended northward considerably and extend inward to the coast as the other two sanctuaries do. (CB)

COASTAL ARMORING:

Issues:

- Concerned about coastal armoring. (MB/GF)
- Armoring of the shoreline can lead to loss of sand flow to beaches, beach erosion, impact to surf breaks, loss of public access to beach, and aesthetic impacts. (MB/GF)
- Thirty percent of the coastline in northern Monterey Bay is already armored. Hardening of the coast disrupts natural processes, and sometimes destroys sensitive habitat. (GF/MB)

Suggested Strategies and Tools:

- Sanctuary should ensure that shoreline armoring is appropriately carried out. Sensitive areas where armoring should not occur must be identified, as should more developed areas where armoring is appropriate. (MB)
- Shoreline armoring should be prohibited in the sanctuaries, because it leads to the transfer of wave energy to another location and encourages development too close to the water. (GF/MB)
- Sand from the Guadalupe oil field cleanup project, could be used for beach nourishment projects. (MB)
- No emergency permits should be given for coastal armoring projects. (MB/GF)
- Concerned that riprap being used on the golf course at the Ritz-Carlton is causing erosion of adjacent land. (MB)
- Stronger regulations against coastal armoring. (MB)
- Create Sanctuary wide policy (with other agencies) to address shoreline management in a manner that protects and restores natural shorelines and processes. (MB)
- Investigate alternatives to coastal armoring. (MB/GF)

COASTAL DEVELOPMENT:

Issues:

- Concerned about large coastal development projects (Hearst Corporation), and their impacts on coastal ecosystems. (MB)
- Concerned with existing facilities such as Diablo Canyon and Morro Bay, and how they should be dealt with if the MBNMS is expanded southward.

Suggested Strategies and Tools:

- Sanctuary should be involved with keeping coastline as free as possible from further development. (MB)
- Sanctuary should be active in preventing the impacts of population growth. (MB/GF)
- Sanctuaries should be more involved in coastal development issues such as golf courses and sea walls. (MB/GF)
- All development (commercial, private or public) should be halted on coastal wetlands around the Sanctuary on state land. (MB)
- Keep Big Sur wild. (MB)
- Big Sur residents want to preserve the area in its current state. Resist any external forces from changing that. (MB)
- Support for preserving natural state of coast; keep natural without any more structures, or development on coast. (MB/GS)
- Resist any effort to relax sanctuary regulations around areas of high population density or activity. These are precisely the areas where the most protection is needed. However, work with cities and harbors to accommodate their needs to the greatest possible. Permits may be granted for prohibited activities from time to time (e.g., piling replacement). (MB)
- No wharf extensions or additional breakwater structures. (MB)
- Oppose public access on any privately held land. (GF, MB)
- Sanctuaries should be strong voice for alternatives to development along coast. (GF, MB)

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COMMUNITY OUTREACH:

Issues:

- More community communication is needed. (All)
- Sanctuary is doing a good job with the management plan review process, in reaching out to the public to get input. (MB)
- Concerned about erosion in public support for the Sanctuary. (MB)
- Appreciates regional approach to scoping process, to capture local issues. (All)

Suggested Strategies and Tools:

- Sanctuaries should increase general awareness of their programs, as well as education about issues such as water quality. (All)
- Increased sharing of information with the public and other agencies.
- Sanctuary should market itself more, and should work collaboratively with local businesses, for outreach. (All)
- Sanctuary should increase outreach to general public. (All)
- Sanctuary messages need to be short, simple and positive. (All)
- Conduct more outreach through restaurants, industry posters, airports and public libraries. (All)
- Sanctuary should conduct more outreach to bring diverse user groups together. (All)
- Sanctuary should concentrate on community relation efforts in order to optimize the education program. (All)
- Increase outreach to civic organizations, volunteer groups, and local neighborhood establishments. (All)
- Sanctuary should better promote, package, and distribute accomplished products. (All)
- Sanctuary should extend education and outreach to inland areas. (All)
- Sanctuary should conduct outreach on the effects of marine mammal populations on fishery resources. (All)
- Sanctuary should publish a handout regarding respectful viewing of marine wildlife at sea or on land such as “Guidelines for Responsible Whale Watching”. (All)
- Sanctuary should establish an interpretive center in the Cambria region for the 800,000 plus tourists that visit the area each year. Involve the business and tourism sectors in establishing this visitor center. (MB)
- Sanctuary should utilize existing interpretive centers (Hearst Castle), for education and outreach, by setting up exhibits or video documentaries. (MB)
- Concerned about over-harvesting of intertidal invertebrates, by certain ethnic communities. Sanctuary should do outreach to these communities to help address this issue. (MB)
- MBNMS should build visitor centers, and consider co-locating with other visitor centers. Fitzgerald Marine Reserve would be an ideal location. (MB)
- Sanctuaries should do a better job in distributing educational materials to Fitzgerald Marine Reserve and other recreational sites. (All)
- Great GIS/Ed materials coming out of CINMS; duplicate for northern Sanctuaries. (All)
- Sanctuary should investigate increasing nation-wide education and outreach efforts. (All)
- Sanctuary should identify regional contacts for communities. (All)
- Sell apparel/gear to advertise. (All)
- Need a MBNMS license plate. (MB)
- The Sanctuary needs to be clear in informing the public, on management plan review activities, so they can get involved and influence any major decisions. (All)
- Sanctuary should involve community, to arrive at solutions. (All)
- Sanctuary should attempt to increase a sense of personal responsibility among the public, for resource protection. (All)
- Sanctuary should increase its attention of the San Mateo Coast. The San Mateo Coast does not get much overall attention from MBNMS (in terms of regulations, education etc.). (MB)
- Increase education, outreach and media exposure for the JMPR process. (All)
- Would like to see more outreach to communities and schools as part of the extension and development of the Beach Watch Program. This would increase awareness and perhaps draw in more volunteers and donations. (GF)
- Consider lowering the minimum age for Beach Watch volunteers to draw in more participants. (GF)
- Sanctuary needs to work on linking people “living” in the Sanctuary. More comprehensive/interactive outreach. (All)
- Acknowledge that harbors are the access corridors to the Sanctuary for commerce, education, research, and law enforcement. (MB)
- Increase knowledge of volunteer efforts within the region. (MB)
- Develop visitor centers in each county. (MB)

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- GFNMS should expand the publication of the Adopt-A-Beach program so that all schools and major businesses in the San Francisco Bay Area get notifications about the program and its benefits. (GF)
- Results of Beach Watch and similar projects should be more widely publicized, through press releases to newspapers and television. (All)
- GFNMS should work with chamber of commerce to offer educational seminars to adults. (GF)
- Expand sanctuary lecture series and make it more accessible to the public. (GF)
- SEALS programs should continue in GFNMS. (GF)

CULTURAL RESOURCES:

Issues:

- Improved technologies for location of shipwrecks and other cultural resources could make existing cultural resources within sanctuary waters new targets for recovery. (All)

Suggested Strategies and Tools:

- Characterize and protect cultural resources. (All)
- Within the Sanctuary boundaries are very rich culture and communities. Sanctuary program should work on enhancing those cultures to preserve their traditional activities that are now within sanctuary boundaries. (GF, MB)

EDUCATION:

Issues:

- Scenic trail could be better equipped with interpreters and signage. (MB)
- Appreciates Sanctuary Currents Symposium and education program. (MB)
- Provide leadership for regional marine education through effective connections with education community.

Suggested Strategies and Tools:

- More education and outreach in general. (All)
- Focus on ongoing education of user groups about the Sanctuary. (All)
- More multicultural education programs. (All)
- Provide leadership for regional marine education through effective connections with education community. (All)
- The Sanctuary needs to educate people about kelp life cycles and natural processes. (MB/GF)
- The Sanctuary should try to write more articles for the local papers. (MB)
- More education (kiosks) must occur surrounding tide pool issues, and the impacts that occur from extraction of organisms. Kiosks that distribute brochures should be placed strategically at tide pool locations. (All)
- Utilize a Sanctuary-wide network of volunteers for public education. (All)
- Educate the public on why the Sanctuary was created. (MB)
- Develop a Sanctuary visitor center in Santa Cruz County, as well as implement the Sanctuary scenic trail in Santa Cruz County. (MB)
- Develop a visitor center in the City of Monterey. (MB)
- The Sanctuary needs more education staff and an increase in the budget. (All)
- More support for existing non-profit educational programs such as clean boating. (MB)
- More outreach and education about what people can do to help. (All)
- More education about sustainability and the balance of ecosystems. (All)
- More education on the environmental impacts related to population growth. (All)
- Improve educational material on website regarding regulated and prohibited activities. (All)
- Sanctuary should conduct a study on the effectiveness of education vs. regulation in changing behaviors. (All)
- Increase public support for the Sanctuary through more education.
- Increase education of schoolchildren. (All)
- More K-12 educational materials for classroom curricula, including audio/visual, and Internet. (All)
- Utilize all available outlets for education, including public access cable. (All)
- More education of politicians and elected officials. (All)
- More interpretive displays. (All)
- Increase education on resource protection issues and specific regulations. (All)
- Focus on educating communities/groups that are not currently involved with the Sanctuary. (All)
- Sanctuary should educate people who live inland, about how their actions can affect the ocean. (All)
- Utilize models and hands on exhibits for education throughout Sanctuary area. (All)

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- Investigate the possibility of hosting a series of regularly scheduled presentations in Cambria and other areas on any subjects related to the ocean environment. (MB)
- Sanctuary/NOAA should support Sea Lab Monterey Bay, and make it a model program for all sanctuaries. (All)
- Expand the Team Ocean program. (MB)
- Hold workshops that bring people together to discuss common objectives. (All)
- Sanctuaries should increase resources for developing programs in schools, to educate about ecosystems, and interconnectedness between human and biological communities. (All)
- Sanctuaries should develop better educational programs in schools to equip children with the knowledge to address issues. (All)
- Sanctuaries should increase education that relates specifically to consequences of actions, and what people can do to help. (All)
- Sanctuaries should use more on-site educational tools like visitor centers and signage. (All)
- Need public education regarding gas use and drilling connection. (All)
- Sanctuaries should encourage more marine biology education at the high school level. This education should include more technical programs such as shoreline monitoring. (All)
- Sanctuaries should support academic/science competitions e.g. “National Ocean Science Bowl”. (All)
- Maintain GFNMS, MBNMS, and CBNMS education programs, but improve funding and staff (especially GFNMS). (All)
- Sanctuaries should encourage increased marine biology education opportunities to average or disadvantaged high school students, as well as more in-class guest speakers on marine related topics. (All)
- Sanctuaries should hold more public forums on research within the sanctuaries. (All)
- Sanctuaries should conduct more watershed education. (All)
- Public Education-lots of people with different skills-need to reach out to them and get them involved. Example –artist. (All)
- Continue use of political figures for message delivery. (All)
- Need signs on Coast Highway. When crossing boundary lines, cite stats: population of species, area, etc. (MB/GF)
- A Team Ocean kayak team (minimum of 2 person) should be stationed in Monterey, Elkhorn Slough, and Santa Cruz. A study should be done to assess the need for additional teams at San Simeon and Half Moon Bay. (MB)
- Not happy with Sanctuary education program’s lack of focus on fishing. Sanctuary should emphasize positive aspects of fishing (food, jobs, recreation). (MB)
- Develop and implement a regional education plan. (MB)
- Sanctuary should develop a network of regional interpretive facilities to convey Sanctuary messages. Would provide a hub of marine education and send visitors to partners, and provide a tangible location for information dissemination.
- Reduce threats through resource issue education. (All)
- Sanctuary should infuse current scientific information in education programs. (All)
- Increase public awareness and educate the public about current research. (All)
- Articulate and educate the public about the meaning of the concept "Sanctuary." Also help the public understand the various meanings of conservation, protection, and preservation, and maybe have a simpler set of definitions. (All)
- Define more clearly as well the concept "stewardship" which is used in various documents (local and NOAA) - how does this relate to conservation, protection and preservation. (All)
- In general, I think we need to be clearer and more consistent on our uses of some terms, and try to educate the public about them. (All)
- Sanctuary should put out a newsletter that could be included in local newspapers. Would be geared towards informing readers about what is going on in the National Marine Sanctuaries, what they can do to help, giving opportunity to discuss concerns with the public. (For sample newsletter see “The water Down Under” in the comment letters). (All)
- GFNMS educational efforts should focus on: endangered marine mammals, fishing, pollution, and a new visitor center. (GF)
- Estuary Action Challenge program (EAC) should be expanded to educate all students in middle schools and high schools all over the bay area. Local chambers of commerce in all major cities of the SF Bay Area should conduct training programs to educate adults on the same material covered by EAC. (GF)
- Utilize high school and college in Northern California to do specific research projects on items of concern to Sanctuary. (GF)

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- Educate the California Legislature and Federal Government about accomplishments and issues of concern to sanctuary. (All)
- Posted regulations at marinas. (MB, GF)
- Offshore sanctuaries should use technology to bring the sanctuary to the public. (GF, CB)
- Adopt program like FKNMS' school education program (ensures every schoolchild in FK visits the FKNMS). (GF, MB)
- Need education for private landowners to protect wildlife. (MB, GF)
- Continue Beach Watch. (GF)
- Agriculture plan/ outreach extended to Sonoma County. (GF)

ENFORCEMENT OF REGULATIONS:

Issues:

- In situations requiring immediate attention, more enforcement and evaluation of issues is needed. (All)
- State should regulate, not Sanctuary. (All)
- New regulations and enforcement should be uniform across the board for all user groups. Sanctuary must acknowledge need for fairness, and should not specifically target certain users (i.e. Commercial fishers). (All)
- Need more enforcement—"eyes" for the Sanctuary. (All)
- Never restrict surfing. (All)
- Permitting process should be more streamlined when permits are required by different agencies. (All)
- Sanctuary should not have a regulatory or permitting program, should concentrate only on data collection and dissemination. (All)
- Permitting process has too many layers and should be simplified. (MB)
- Sanctuary should not be involved in permitting of activities. It is better left to agencies like the California Coastal Commission. The Sanctuary should serve an advisory role to other agencies. (All)
- Concerned about additional regulations in inter-tidal habitats, that are not scientifically substantiated. (GF, MB)
- Not sure who investigates and enforces Sanctuary violations. (All)
- Concerned that additional regulation would become an obstacle to harbor maintenance. (MB)
- It is not clear what constitutes "harm" to Sanctuary resources. (MB)

Suggested Strategies and Tools:

- Involve the Coast Guard in enforcement of Sanctuary regulations. (All)
- Up-stream enforcement should be a priority. (All)
- Loosening of the language would allow Sanctuary Manager to use discretion in permit language will fix most of the problems faced by harbor administrators. (For specific recommendations on rewriting CFR sections see Santa Cruz Port District letter attachment). (MB)
- More Sanctuary enforcement on resource protection issues. (All)
- Do not increase enforcement. (MB)
- Assist with enforcement cases in getting them to the level of adjudication and prosecution. (All)
- Sanctuary should develop more voluntary compliance programs, and focus on self-regulation. (All)
- Increase funding for enforcement. (All)
- Increase enforcement staff. (All)
- Increase enforcement of kayakers. (MB)
- A land-based officer should patrol the coast along the sanctuaries. (All)
- Sanctuary should be more proactive and creative in enforcement. (All)
- More regulation of recreational users. (All)
- Consider cross deputization with other agencies, for enforcement. (All)
- Utilize the "polluter pays" principle. (All)
- More Sanctuary enforcement on resource protection issues. (All)
- More enforcement of Sanctuary regulations. (All)
- The Sanctuary needs to clarify its regulations, especially with regard to fishing practices. (MB)
- Generally, the Sanctuary should not add another layer of permit regulation if other Federal/State/Local/permit authorities are already in place. (All)
- Sanctuary should help expedite any multi-agency permit process. (MB)
- There should be an appeal process for MBNMS permits, and other public concerns/issues. (MB)
- The Sanctuary should keep the existing regulations on jade collection. (MB)

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- Regulate emissions from boat engines. (All)
- Sanctuary should regulate discharge into ocean by industrial plants/facilities. (MB)
- MTBE discharge should be prohibited in the Sanctuary. Jet fuel discharge should also be prohibited. (All)
- Avoid duplicative regulations or excessive “red tape”. (All)
- Regulations should be changed to treat sediment as a nutrient, and not a pollutant, as it is currently considered. (MB)
- MBNMS should evaluate current regulations, and eliminate restrictive policies that are not forwarding the goals of Sanctuary. (MB)
- GFNMS should remove permit requirements for researchers. (GF)
- Public should apply for access permits the same way researchers do. (All)
- The regulations for all National Marine Sanctuaries should be the same. They should all be standardized. (All)
- GFNMS regulatory structure should be maintained; enforcement must be adequately funded and staffed. (GF)
- Would like assistance from Sanctuary in the form of technical assistance help instigate a permit process for restoration projects –Help with navigating through the permitting process. (MB)
- Regulations should be made available in the most frequently used languages. (All)
- Evaluate whether Sanctuary needs to be a regulating authority for dredging. (MB)
- Sanctuary should develop adequate enforcement capability and follow-through on all violations that occur. In addition, there should be a comprehensive reporting system and an ability to compile violations and track enforcement actions. (All)
- The revised management plans should clearly describe the statutory authorities applicable to sanctuary water quality, and how these laws will be enforced. (All)
- Create a comprehensive reporting system with an ability to compile violations and track actions. (All)
- Sanctuaries should look at their existing regulatory activities, maintain those that are solely within Sanctuary jurisdiction and eliminate those that overlap other agencies’ authority. If these other agencies are deemed ineffective in their stewardship of the environment, then some mechanism should be devised by which the sanctuary can step in and effect positive changes. (MB)
- MBNMS should not engage in conduct or regulation that would impair or prevent ocean-dependent commercial enterprises or recreation activities from continuing. (MB)
- The Sanctuary’s regulatory process is not well defined. The Sanctuary’s interpretation of its regulations creates duplication and sometimes inconsistencies with other state and federal policies. Better define this process in the updated management plan. (MB)
- GFNMS needs an enforcement officer. (GF)

EXOTIC/INTRODUCED SPECIES:

Issues:

- Non-native invasive species can cause displacement of native species and adverse ecosystem change. (All)

Suggested Strategies and Tools:

- Concerned about invasive and introduced species – the Sanctuary should educate the public about how to dispose of seaweed used to pack bait and species in bilge water. (All)
- Sanctuaries should be more active in the prevention of the proliferation of non-native invasive species. (All)
- Perform an assessment of introduction pathways for non-native invasives in the Sanctuary. (MB)
- Develop prevention and contingency plans and work with aquariums, marine labs, and mariculture operations to filter water before disposal. (MB)
- Update Water Quality Protection Program to include invasives. (MB)
- Support outreach programs for boaters regarding hull cleaning and boat washing. (MB)
- Create policy on discharges and invasives associated with cruise ships. (MB)
- Develop alternative ways of eliminating the transmittal of invasive species through ships’ ballast water, such as sterilization, or other more sophisticated means. Consider working through EPA and State Water Resources Control Board to address the issue. (All)
- Aquaculture (shellfish) operations in Tomales bay introduce disease and alien species. (GF)

FISHING and KELP HARVESTING:

Issues:

- Concerned about impacts from fisheries. (All)

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- Fisheries are currently being micro managed, and regulation has increased, while practices have remained the same. (All)
- The fishing community supports programs such as the Salmon Stamp Program. (MB)
- The Gulf of the Farallones NMS was a good model for working with fishermen. (GF)
- There would be a loss of credibility (the Leon Panetta promise) if the Sanctuary gets involved in fishery regulation. (MB)
- The Sanctuary should realize that commercial and recreational fishing interests are two separate entities, and are not in agreement on all issues.
- The Sanctuary should not be involved in the State's MLPA process. (All)
- Concerned about impacts from the live fish fishery on fish populations. (MB)
- Concerned about decline in catches by recreational fishermen. (All)
- Concerned about the live fish fishery, and depletion of fisheries by marine mammals. (All)
- Concerned about declining fish populations. Sanctuary should play a role in preserving fish populations, while preserving fishery lifestyles. (All)
- If marine reserves must occur, then they should not be located short distances from harbors, boat launch ramps, or boat rental facilities. These are the most practical, easily accessible, and popular areas to fish. (All)
- Concerned about impacts to fishes from catch and release recreational fishing. (All)
- Existing DFG/NMFS rules on by catch are wasteful. Sanctuary & Fisherman could work together on this. (All)
- Alternative foods (to kelp) are available for abalone aquaculture operations. (MB)
- Concerned with the inadequate discussion on sea otter/kelp harvesting issues, potential impacts of harvesting on the entire ecosystem, and the failure to adequately address legal issues. (MB)
- Concerned because there is a significant lack of studies documenting the impact of kelp harvesting on local sea otter populations and other marine mammals. (MB)
- Trawling alters Benthic organisms and bottom habitats, causes displacement of rocks that serve as cover for fish and invertebrates, disruption of bottom affects species diversity, abundance, and distribution. (GF/MB)
- Concerned with over fishing of geoducks and Horse neck clams. (GF)
- Concerned about over fishing such as abalone. (GF)

Suggested Strategies and Tools:

- The Sanctuary should not regulate fishing. (All)
- Concerned about agricultural runoff and its impacts upon fisheries. (All)
- The current language in the Federal Register with relation to fisheries regulation in the Sanctuary should remain. (MB)
- More resource protection regulations including no-take reserves. (All)
- The knowledge of members of the fishing industry should be utilized for data collection and research purposes, as well as for environmental monitoring. (All)
- The Sanctuary should focus efforts on other activities, which impact fisheries (farming runoff and oil), leaving fisheries regulation to the California Department of Fish & Game and the National Marine Fishery Service. (All)
- The Sanctuary should explore fisheries regulation only in offshore federal waters, not State waters. Existing agencies do a better job, and more regulation is not necessary. (MB)
- The Sanctuary research program should provide fisheries data to California Department of Fish and Game. (All)
- Sanctuary should assist CDFG with enforcement, but should not create new regulations. (MB)
- The Sanctuary should seriously consider the contribution of sport fishing to the area's economy. (MB)
- The Sanctuary should adopt marine reserves. (All)
- The Sanctuary should restrict trawling. (All)
- Investigate the possibility of a consumer "fish tax". (All)
- Use money from fishing industry to fund monitoring and replenishment projects. (All)
- Any fishing regulations that are developed should support the fishing community. (All)
- Any zones or regulations proposed by the Sanctuary which affect fishing should only occur if they are the result of a cooperative effort with the fishing and or aquaculture communities and they have the support of those communities. (All)
- The Sanctuary should be used as a model for researching new fishing techniques. (MB)
- Sanctuary should regulate gill net fishing. (All)
- Sanctuary should not regulate fisheries in state waters. (MB)
- Sanctuary should increase education about fishing regulations. (MB)

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- Consider use of Individual Transferable Quotas. (All)
- Clarify language about fishing. (All)
- Sanctuary should regulate spear fishing, by requiring a license and increasing fines. (MB)
- Sanctuary should play an education role rather than regulatory role with commercial fishing. (All)
- The Sanctuary should not regulate fisheries, with the exception of trawling. (All)
- Sanctuary should not allow trawling. It caused significant degradation of seafloor. (All)
- Recommend changing terminology to “fishing culture” instead of “fishing industry” which has negative connotation. (All)
- Do not become another layer of bureaucracy in dealing with fishing and dredging. (All)
- Sanctuary should promote/educate community about commercial fishing efforts in the Sanctuary. (All)
- Fishing in the Sanctuary should be limited to techniques that do not produce by-catch, as do gill nets and bottom trawling. (All)
- The Sanctuary should endorse commercial fisheries within its boundaries. (All)
- The Sanctuary should ban all forms of net fishing. (All)
- Live fish fishery should be restricted or outlawed by the Sanctuary. (MB)
- Marine reserves in temperate environments are not effective. The sanctuaries should focus their efforts on partnering with other users to educate about impacts, and not on managing fisheries. (All)
- Sanctuary should assist CDFG with the MLPA process in banning fishing in Fitzgerald Marine Reserve. A 2-mile closure is too much, however a 1/2-mile closure would be better. (MB)
- Sanctuaries should “grow” marine reserves over the years. (All)
- Sanctuaries should require low impact gear for bottom trawling. (All)
- Fishers should be compensated for marine reserve areas that have been taken out of access. (All)
- Sanctuaries should give financial support to research on marine reserves. Creation of reserves should be based on “good science”. (All)
- Sanctuaries should actively support the State’s Marine Life Protection Act (MLPA) process, in lieu of sanctuaries’ adoption of reserves. (All)
- Marine reserves established by the State, should be extended into federal waters by the National Marine Sanctuary Program. (All)
- There should be a marine reserve network across all three sanctuaries. Don’t wait for MLPA. (All)
- The Sanctuary should not regulate fishing. Language in the management plan should clarify that. (All)
- Fishing gear should be examined for problems: non-degradable, entanglement. Sanctuary should look for ways to partner with existing agencies to address issue. (All)
- Look to other regions with fisheries collapsing and learn. (All)
- Sanctuary could work with PFMC using existing regulatory structures. (All)
- Recognize in writing that Sanctuary policies affecting fishing may integrate with management tools promulgated by the state and federal governments, but are not intended to augment or supersede them. (All)
- MBNMS with California Department of Fish and Game, the National Marine Fisheries Service, the research community, fishermen and other stakeholders should 1) evaluate physical and biological impacts of bottom trawling within the Sanctuary and 2) ensure protection of species diversity, abundance and habitat. In working with CDFG and NMFS the Sanctuary and its sister agencies should consider gear selectivity if adverse effects of bottom trawling are identified. (All)
- Number of sport and commercial fishing licenses should be limited, quotas should be enforced, and spot checks should be performed on catch of sport fishermen. (All)
- Sanctuaries must seek out more ways to limit by-catch, making gill netting economically feasible today and in the future. (All)
- Sanctuaries should take a stronger stand against gill netting. (All)
- Only fishing techniques that do not harm marine mammals should be permitted in the Sanctuary. (All)
- All fishermen should be required to pass a test, before being given a license, to show that they know how to reduce environmental impacts. (All)
- Treat shore fishermen separate from commercial and sport fishermen in regards to management and possible fishing closures. (MB, GF)
- If kelp harvesting is to be allowed, then it should only occur at a set distance from shore (1 mile), and quantity should be regulated. (MB)
- Have separate regulations for mechanical and manual kelp harvesting. (MB)
- Fish and Game should manage kelp harvesting. (MB)
- Do not change existing kelp harvesting regulations. (MB)

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- Sanctuary should review the state kelp plan during their five-year review. (MB)
- Kelp harvesting should be restricted in a reserve along Cannery Row. (MB)
- Sanctuary should investigate the effects of kelp harvesting on a variety of kelp forest inhabitants, including sea otters. This should be adequately discussed in the final management plan. (MB)
- Sanctuary should further restrict kelp harvesting. (MB)
- The Sanctuary should prohibit mechanized kelp harvesting. (MB)

HABITAT ALTERATION:

Issues:

- Concerned about impacts to the seafloor from dredging and disposal and continued bottom trawling. (MB)
- Concerned about the current state of Bolinas Lagoon. It must be preserved and protected. (GF)
- Fiber-optic cables can cause benthic and water quality impacts associated with burial, repair and removal stages of cable project, potential for marine mammal entanglement, impacts of coastal landings (disturbance of marine mammals and birds) and impacts to commercial fisheries (such as gear entanglement).
- MBNMS contains large areas of hard bottom habitat and submarine canyons that would make cable burial very difficult if not impossible. (MB)
- For the past 10 years, the Monterey Bay Aquarium has removed an undocumented amount of rocks and substrate from the Pacific Grove Marine Gardens Fish Refuge. (MB)
- Sanctuary should not allow the gravel and sand mining operation at Piedras Blancas. (MB)

Suggested Strategies and Tools:

- Sanctuary should focus on riparian restoration and protection. (MB)
- Do not allow fiber optic cables in Sanctuary. (All)
- Removal of sand and gravel should not be permitted at Piedras Blancas Hotel (San Luis Obispo County), both north and south of the facility. (MB)
- Why is there still an active sand mining operation just north of Marina? Sanctuary should investigate and address this operation. It should be stopped, and restoration measures should be considered. (MB)
- Fiber Optic cables running north and south should be located on land not in ocean. (All)
- Continue to allow disposal of clean fine-grained sand in sanctuary. (MB)
- Work with national NOAA to adopt fiber-optic cable installation policies including fees system that clearly discourages installation in sanctuaries. (All)
- If fiber-optic cable proposal is considered: require use of out of Sanctuary alternative where feasible; require showing of need for capacity; limit cable installation to corridors based on habitat sensitivity. (All)
- Build permanent moorings for canoes and sailboats (avoiding anchors tearing up the bottom). (GF, MB)
- Restore the indigenous flora and fauna to naturalize the coastline as much as possible. (GF, MB)

MARINE BIOPROSPECTING:

Issues:

Suggested Strategies and Tools:

- Bioprospecting should be addressed in all sanctuary management plans. Strict prohibitions should be established now. (All)

MARINE DISCHARGE AND DEBRIS:

Issues:

- Concerned about the significant amount of marine debris (including balloons) washing ashore. More education to various user groups (party boats) is needed. (MB/GF)
- Sanctuary policy regarding harbor dredging does not account for naturally occurring, increased sediment volumes over time; does not allow scientific finding in ocean currents, wave forces, or bathymetry to alter dredge disposal techniques or location for the overall benefit of the harbor and/or the environment; does not recognize “beneficial use” of dredge material as a concept. This is a federally recognized course of study which seeks to re-use sediment in productive ways, and concurrently not to waste clean materials. (MB)
- Concerned about the impacts of dredging on natural resources. (MB/GF)
- Concerned because landslides occur frequently on the Big Sur coast, and feel that Sanctuary position that prohibits the dumping into the ocean is inappropriate. Ocean disposal should be considered a viable option. (MB)

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- Sanctuary is doing a good job working with Cal Trans on landslide issues, making good and conscientious progress. (MB)
- Sanctuary should consider economic needs of Big Sur residents regarding Highway 1 closures. Should consider marine disposal from time to time. (MB)
- Dissatisfied with the management style of the Sanctuary: MBNMS does not play well with others, particularly re: coast highway landslide disposal. Does not consider the needs of other stakeholders in many cases. (MB)
- Dredging and dredge disposal can cause burial of Benthic organisms; water quality impacts associated with suspended sediments, and contamination concerns.
- Disposal of landslide sediments can cause burial and increased sedimentation to tide-pools and other near-shore resources. Visual impacts and pedestrian access problems. (MB)
- Concerned about environmental degradation associated with water intake, discharge of brine, population growth issues and energy use related to desalination. (MB)
- Sanctuary view of dredging has been “painted with a single brush and single color”; this prejudiced view does not reflect the abundant science discriminating beneficial dredging from harmful dredging. (MB)
- Concerned about the proliferation of desalination plants and the potential expansion of offshore drilling. (MB)

Suggested Strategies and Tools:

- Concerned about the effects of marine debris and trash. The Sanctuary should conduct an education program to address this issue. (All)
- Concerned about litter and trash generated by tourists. Sanctuary should develop and implement an educational program that includes signage, and impose fines for littering to address this issue. (MB/GF)
- Sanctuary should investigate potential negative impacts of desalination on resources, and provide more input to the Regional Water Quality Control Boards. (MB)
- Improve desalination technologies; investigate use of transportable desalination barges. (MB)
- Restrict small private project specific desalination plants; allow desalination only for public benefit. (MB)
- Encourage regional solutions regarding desalination. (MB)
- The Sanctuary should prohibit desalination, because brine discharge would affect the ecosystem. (MB)
- Desalination should be addressed in the revised management plan. (MB)
- Sanctuary should develop a regional desalination policy. (MB)
- Sanctuary should be open to the possibility of desalination (local communities need water). (MB)
- Beach nourishment and marine disposal should be addressed in the revised management plan. (MB/GF)
- Concerned about DDT in Moss Landing. Should be deposited at hazardous waste site. (MB)
- Streamline the permitting process for dredging. Sanctuary should establish an interagency dredging permit coordination process, based on the SF model. (MB)
- Sanctuary should not regulate dredging beyond other agencies. (MB)
- Harbor dredge spoils should be disposed of at land disposal facilities. (MB)
- Harbors should continue dumping dredge spoils into designated sites. (MB)
- Sanctuary should address issue of management of dredge spoils and DDT contamination. (MB)
- Sanctuaries should not require permits for dredging. (MB/GF)
- Sedimentation occurs naturally during storm events at Pillar Point Harbor. Sanctuary should allow harbor to dredge, and dispose of dredge spoils on the other side of the breakwater, where the beach area is eroding. (MB)
- Clarify that the Sanctuary does not regulate or issue permits for dredging. (MB)
- Any Sanctuary policy on dredging should be no more restrictive than other directly responsible regulatory agencies. (MB)
- Moss Landing should be dredged and deposited in the ocean. Onshore disposal costs too much, is labor intensive and highly polluting. More damage is caused by onshore disposal than is being protected. (MB)
- Consider using non-contaminated dredge materials for beach replenishment. (MB)
- Sources of sediment material from landslides should be examined; if the landslide is determined to be due to natural processes, then material should be disposed of in the Sanctuary. (MB)
- MBNMS must establish a reasonable protocol to clear landslide debris from roadways during sudden closures. (MB)
- Sediment disposal sites must be pre-designated in Big Sur. (MB)
- Sanctuary should take a proactive approach, in implementing emergency protocols during sudden road closures, to insure passage of emergency vehicles. (MB)
- Monitor Cal Trans activities and prevent disposal of landslide material into Sanctuary. (MB)
- No wholesale side-casting of landslide sediments. (MB)

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- Sanctuary needs to identify sensitive habitats where landslides must NOT be permitted, and sediments must not be deposited. (MB)
- Sanctuary should identify locations where beach replenishment is necessary to preclude shoreline armoring. Landslide sediment is an obvious source for beach nourishment materials. (MB)
- MBNMS should better coordinate with Cal Trans in regards to disposal of sediment from landslides. Sanctuary should listen to the geologists. (MB)
- No-discharge zones should be established in special sanctuary sites, such as Areas of Special Biological Significance established by the State of California. (All)
- Complete development of landslide disposal policy. (MB)
- Regarding landslide disposal activities: avoid impacting sensitive biological and archeological areas and resources. (MB)
- Prohibit disposal of highway landslide materials that exceed predicted natural inputs (i.e., differs in volume, composition, location, and timing from naturally occurring landslides in the area). (MB)
- More garbage and recycle containers needed at coastal sites. (GF, MB)
- Organized clean up parties to scour the beaches ASAP after yearly floods. (GF, MB)

MILITARY ACTIVITIES:

Issues:

- Concerned about Naval Post Graduate School's missile launching activities. (MB)
- Concerned about military over flights. MBNMS should exert greater influence regarding this issue. (MB)
- Opposed to Navy Sonar due to marine mammal impacts / migratory problems. (All)
- It is extremely important for the Navy to conduct operations "off" the waters of California. Activities currently carried out by the Navy within these sanctuaries are essential for the national defense. Continued unrestricted access for these purposes is not incompatible with the protection and proper management of sanctuary resources. (All)
- Concerned about pollution from military experiments. (CB, GF)

Suggested Strategies and Tools:

- Sanctuary should continue to resist militarization in the area. (MB)
- Sanctuary should allow no automatic exemptions for military. (MB)
- Sanctuary should not condone or allow military use (including marine invasion drills). (MB)
- Sanctuary should prohibit: 1) all non-emergency military flights over Sanctuary wildlife zones, and 2) non-emergency underwater military ops. (MB)
- Sanctuary should not endorse marine invasion drills. (MB)
- All non-emergency military underwater operations in MBNMS and within behavior altering distance of Sanctuary resources should be prohibited. All other Military underwater operations within Sanctuary should require a discretionary permit and NEPA environmental review. (MB)
- Regarding military activities, revise the regulations to specify those activities, which are considered "pre-existing" in order to avoid continued ambiguity. (MB)

MONITORING:

Issues:

- Cambria locals have observed growth of new algae in the intertidal, and are concerned. Sanctuary should increase monitoring of coastal environments for change. (MB)

Suggested Strategies and Tools:

- The Sanctuary should concentrate on more monitoring of human activities. (All)
- More rigorous monitoring of water quality, and better access to results by public. (All)
- More monitoring of all types of pollutants. (All)
- Sanctuary should have monitoring data from all agencies and organizations, on the website. (All)
- Investigate the feasibility of testing deer for bioaccumulation of pesticides etc. (MB)
- More monitoring of runoff from golf courses. (MB)
- Increased monitoring of outflows from rivers, and desalination plants. (MB/GF)
- Sanctuary should help secure funds for additional water quality monitoring. (MB)
- Monitor the activities Monterey Bay Aquarium for fish deaths and extraction. (MB)
- Sanctuary should do more monitoring and tracking of non-point source pollution. (All)

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- Sanctuary should conduct testing for pesticide residue. (All)
- Sanctuary should monitor water for detergents and conduct bacteriological sampling. (All)
- Utilize fishermen for monitoring efforts. (All)
- Sanctuary should investigate sources of non-point pollution for pathogens. (All)
- Sanctuary needs to be an advocate in ensuring that sewage outflows are carefully monitored. Septic systems (i.e. Garrapata) may overwhelm natural processes and require a sewage treatment plan. (MB)
- Not sure how MBNMS can effectively monitor 300 miles of coast. Sanctuary should investigate the use of volunteer surveys for monitoring. (MB)
- MBNMS should develop a policy and guidelines to monitor water quality in streams, rivers, creeks, etc. emptying into the Sanctuary. These should be clean enough to swim in. (MB)
- Use satellite technology to monitor health of the environment and observe possible harmful impacts (enforcement). (All)
- Sanctuary should work cooperatively with federal and state agencies on monitoring water quality. (All)
- Duke Energy facility should be monitored for potential impacts. (MB)
- A special adjunct to the Team Ocean program should focus on monitoring the Monterey Harbor/Cannery Row area for various petroleum-based spills. (MB)
- The NMSP should view the Monterey Bay Citizen Watershed Monitoring Network as a model for citizen monitoring efforts in other sanctuaries nation-wide. (All)
- The revised management plans should address continued support for, and expansion of citizen monitoring efforts such as the Snapshot Day and First Flush events as well as the Urban Watch Program. (All)
- Monitor target species, resources, key processes, and physical parameters. (All)
- Improve rapid response capacity to document impacts of specific events. (MB)
- Check status of red abalone in Bodega Bay (continue monitoring). (GF)
- Need monitoring of sea lion populations. (GF)
- Increase monitoring of radioactive barrels, mercury, and other pollutants. (GF)
- Need long-term monitoring of the rocky intertidal areas. (MB, GF)
- Expand SIMoN to include all three Sanctuaries. (GF, CB)

MOTORIZED PERSONAL WATERCRAFT:

Issues:

- Concern about the use of personal watercraft – no increase in use. (All)
- Environmental studies on PWCs have not been site specific. There is a lack of current science in the studies. New Technology in PWC is not being considered. (All)
- Concerned about the use of PWC in and around the surf zone, especially in areas where non-motorized recreational activities are common. (MB/GF)
- Pollution from PWC emissions is not an issue when compared to other sources of pollution. (MB/GF)
- Concerned about separations of seal pups from parent, and other impacts to marine mammals and waterfowl, from PWC operation. (MB/GF)

Suggested Strategies and Tools:

- Sanctuary should ban all motorized personal watercraft and 2-stroke engines. (All)
- Strengthen motorized personal watercraft regulations. (MB)
- Modify motorized personal watercraft regulations to include 3-4 person craft. (MB)
- The current Personal watercraft zones should remain the same. (MB)
- There should not be a general ban on motorized personal watercraft (PWC) in Monterey Bay, Cordell Bank, or Gulf of the Farallones National Marine Sanctuaries; however offensive activities relating to PWC operation should be identified and banned where appropriate, and banned activities should be sufficiently enforced. (All)
- PWCs are a valuable tool for certain activities such as search and rescue, enforcement, and research, and their use for these activities in the sanctuaries should not be restricted. (All)
- Concerned because use of PWCs in the surf zone of Half Moon Bay is not safe. Enforcement of this activity must be improved. (MB)
- MBNMS should consider including Mavericks in the PWC use zone. (MB)
- PWC regulations for MBNMS should be the same as those for GFNMS. (MB)
- Concerned about the long-term impacts of PWC use in near shore areas. Sanctuaries should conduct environmental impact studies on this activity. (All)

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- PWC regulations in MBNMS should be made less specific, to prevent loopholes and other opportunities for circumvention of the regulations. (MB)
- If Motorized Boating is allowed in area, then Motorized Personal Watercraft (PWC) should also be allowed. (All)
- There should be a more collaborative process regarding PWC regulation similar to the Florida Keys. (MB)
- Apply a noise standard for the Sanctuary regarding PWCs. (MB)
- Consider seasonal zones for jet skis. And limited conditions. (MB)
- All three sanctuaries should have a consistent policy that allows for PWC use. (All)
- Site-specific environmental assessments should be conducted regarding PWCs, which should include air, water, and sound quality testing, and should consider those impacts in relation to any other activities that are permitted in the sanctuaries. (All)
- Strengthen motorized personal watercraft regulations. (All)
- Other than access lanes to PWC zones, no PWC should be allowed closer than 250 yards of the shore. (MB)
- PWCs should be banned from approaching within 200 feet of any non-motorized user of the MBNMS or within 200 feet of any non-human species at the surface of the waters of the MBNMS. (MB)
- PWC use in surf zone should be banned. (MB)
- Support a 3-year trial period of self regulation by big wave surfing teams at a small number of locations including Mavericks, and perhaps 3-4 other locations during the heaviest surf conditions only. If after this trial period, the NMSP determines that there are issues, then a rigorous licensing program should be implemented. (MB)

OIL AND GAS EXPLORATION AND DEVELOPMENT:

Issues:

- MBNMS policy stopping oil drilling off the Central California Coast complicates foreign policy in regards to Muslim oil exporting nations after September 11th. (MB)
- Concerned about mineral extraction in sanctuaries. (All)

Suggested Strategies and Tools:

- Never allow drilling for oil in the Sanctuary. (All)
- Oil and gas exploration/Drilling in the Sanctuary should continue to be banned. (All)
- Oil and gas development should be permanently banned within GFNMS, MBNMS and CBNMS. (All)
- Concerned about the potential impact drilling outside the sanctuaries could have on sanctuary resources; NMSP should address this threat in the revised management plans. (All)
- Prohibit slant drilling into the Sanctuary. (All)

PARTNERSHIPS WITH AGENCIES:

Issues:

- Need a better means of coordinating and working with other agencies to develop solutions and notify local businesses and the public, including posting of access points when sewage spills occur. (All)
- The positive accomplishments of the Sanctuary Program should be actively supported and lauded by the City of Monterey. The creation of Sanctuary-related signage along the recreation trail is an example of a way the City could actively support the Sanctuary educational goal. (MB)
- State rights more important than federal. (All)
- Fishery management agencies should work more cooperatively together on issues. (All)
- Concerned because CDFG Sea Otter Game Refuge regulations overlap with Sanctuary regulations. Evaluate whether both agencies should be required to regulate or protect this area. (MB)
- MBNMS needs to be more accommodating of management styles and priorities of other agencies. (MB)
- More cooperation should occur between the State and Federal governments in setting up marine reserves. (All)
- The Sanctuary should support watershed groups –Sanctuary won't come to meetings and won't fund watershed group projects. (MB)
- Need to clarify which agencies have jurisdiction over tide pools, and life in tide pools. This is currently not clear and there appears to be a lot of overlap between agencies. (MB/GF)
- The Ag and Rural Plans need to have more flexibility in how they are carried out by different agencies. (MB)
- Need better coordination/ interaction with San Francisco Bay/ Delta (pollution, invasive species). Melting of government bodies to oversee water issues. (MB/GF)

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Suggested Strategies and Tools:

- Update MOA with State incorporate NPS Plan, Oceans Plan, Storm Water, BTTP, Consolidated THS, and TMDL Programs. (MB)
- Sanctuary should attend quarterly Blue Circle meetings (of all watershed groups).
- Use US Environmental Protection Agency authority to enforce environmental regulations within the Sanctuary. (All)
- The Sanctuary should be involved in Ricketts underwater park and the State Marine Life Protection Act process. (MB)
- Better coordination must occur between the Sanctuary and Asilomar State Park, especially in addressing impacts to rocky intertidal habitat. (MB)
- Sanctuary should give input to the City of Salinas on the update of its general plan. (MB)
- Work more with other agencies to achieve a goal of watershed protection. (All)
- Regulatory jurisdiction needs to be streamlined– making for better collaboration and less confusion about overlapping regulations. (All)
- Sanctuary should help cities and municipalities obtain funding for infrastructure and urban runoff and water quality improvement efforts. (MB)
- Work with local jurisdictions to remove impediments in streams and preserve habitats. (MB/GF)
- MBNMS should continue working as a key participant in the Big Sur multi-agency council and the Coast Hwy Management Plan (CHMP). (MB)
- More collaboration with state and local regulatory agencies on sewage discharge. (All)
- Continue involving State in management plan issues. (All)
- More interaction with the California Coastal Commission. (All)
- Sanctuary should provide advice to city planners on how to address the problems of storm drains, sewage treatment plants. (MB)
- Sanctuary should coordinate better with other agencies and landowners regarding management of waterways. (MB)
- Sanctuary should better coordinate with other local agencies, specifically Morro Bay National Estuary. (MB)
- More cooperation and collaboration with existing regulatory agencies should occur, not more regulations. Sanctuary should examine current interactions and explore ways to improve coordination. (MB/GF)
- Sanctuary could provide information and advice concerning marine ecosystems, to other government agencies and the public, to facilitate sounder resource management decisions. (All)
- Continue current degree of communication and cooperation with other resource management agencies. (MB)
- Increase communications among all regulatory agencies. (All)
- Increase partnerships with the regional water quality boards. (All)
- Sanctuary should serve as a neutral facilitator in issues involving overlapping jurisdictions. (MB)
- More coordination/collaboration and active problem solving among agencies, to address the issue of sediment management. (MB/GF)
- Sanctuary should be involved in the state Coastal Sediment Management Working Group. (MB)
- In cases where multiple agencies overlap in their jurisdictions, more Memoranda Of Understanding (MOU) are needed. MOU should determine a lead agency to oversee natural resource issues. (All)
- Sanctuary should increase collaboration with other agencies regarding wastewater treatment and water purification systems. MBNMS should take primary role in this collaboration, and should develop model education and implementation Programs. (MB)
- Sanctuary should work collaboratively with BLM, which is also in planning for its California Coastal National Monument. This is a great opportunity to work collaboratively. (MB/GF)
- Sanctuaries should increase cooperation with other agencies, especially regarding estuaries. (All)
- Sanctuaries should examine the overlapping regulatory structure and investigate ways to streamline the process. (All)
- Sanctuaries should become mandatory members of the Coastal Commission. (All)
- Sanctuaries need to ensure that planning commissions are aware of their regulations. (All)
- Sanctuaries should work in tandem with other agencies to enforce water quality regulations. (All)
- Sanctuaries should coordinate with other agencies to create one joint interpretive center, rather than 1 center for each agency. (All)
- Coordinate master planning efforts and share data with USFWS regarding refuge mgmt plans. (All)
- Work with State Water Resources Control Board on coordination and encourage survey of resources through monitoring – S.W.A.M.P. Program. (All)

APPENDIX 1: Full List of Issues Raised at Scoping Meeting and in Writing

- Sanctuary should discuss with USACOE to make improvements to harbors and improve technology for dredging. (MB)
- Need stronger MOUs to tie all jurisdictions together. Need to have all agencies work together. (All)
- Require the city and County of San Francisco public works departments to comply with Sanctuary standards so that waters off Ocean Beach can be included in the Sanctuary. (MB)
- Expand out joint management plan model to other agencies. (All)
- Sanctuary should work closely with the California Department of Fish and Game, Pacific Fisheries Management Council, fishermen, divers, conservationists, and the public to establish marine reserves within Sanctuary waters. (All)
- AMBAG (and MBNMS) should convene a staff level local governments and affected special districts liaison group (similar to Urban Runoff Task Force), to address upcoming MBNMS programs/projects. The purpose of the group would be to assist Sanctuary in early identification of issues affecting local governments. (MB)
- MBNMS should utilize the local elected officials forum provided through the AMBAG Board of Directors to obtain policy input on all sanctuary issues affecting local governments. (MB)
- MBNMS should contract with AMBAG to develop and maintain an ongoing local government liaison and outreach program. (MB)
- Explore opportunities for collaboration between MBNMS and Morro Bay National Estuary Program, perhaps regarding research, public education, or resource management. (MB)
- Sanctuaries should engage as a full and active partner in the MLPA and PFMC MPA efforts, which should include roles in decision making, providing assistance such as scientific research, socioeconomic data collection, resource protection recommendations, stakeholder outreach and involvement, monitoring and enforcement, but not to defer to marine reserve processes under the jurisdiction of other agencies. (All)
- Sanctuaries should improve coordination among themselves. (All)
- MBNMS, CBNMS, and GFNMS should be working closely with relevant state and federal agencies, to ensure that marine reserves and other MPAs provide adequate protection of marine biodiversity and habitat within the sanctuaries' boundaries. (All)
- Sanctuary should integrate with the statewide study on state waters that will be initiated in 2003.
- New Management plan needs to consider updating the MOU on the Water Quality Protection Program and integrate with the state wide WQ program. (MB)
- New management plan should reflect a closer collaboration between sanctuary and Elkhorn Slough NERR. Issues to address collaboratively include tidal scour, invasive species, recreational use of the slough, and water quality issues. (MB)
- Sanctuary should develop a comprehensive plan to educate, encourage support of, and coordinate activities with all local governments and community organizations. Plan would address such topics as water quality, urban runoff, catch-basin improvements, street sweeping, best restaurant practices, posting for beach closures, Zone 5 practices, and sewage spills. (MB)
- Sanctuary Program should support the State's Marine Life Management Act, by coordinating input to management plans from research institutions around the bay. (All)
- Existing cooperative relationships and management activities should be described in detail, to help the public better understand the significant degree and complex nature of joint management activities in sanctuaries. (All)
- Update of management plan should include a renegotiation of the Memorandum of Understanding (MOU) between various State and Federal agencies. The MOU should reflect the *Plan for California's Nonpoint Source Pollution Control Program* that has received federal approval since Sanctuary designation. (All)
- Sanctuaries should work with local jurisdictions, county health departments, regional water quality control boards, and other agencies to study nearshore water quality. (GF, MB)
- Better coordination between sanctuaries and Coast Guards/Navy/Commercial planes during breeding season on Farallones Islands. (GF)

PARTNERSHIPS WITH COMMUNITY GROUPS:

Issues:

Suggested Strategies and Tools:

- More partnerships with businesses that use or cause impacts to the Sanctuary. (All)
- Sanctuary should work more closely with ports and harbors to identify reasonable prudent approaches to dredging, that allow for safe operation of those ports with minimal impacts to Sanctuary resources. (MB)

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- Should work collaboratively with the City of Salinas, and environmental groups regarding water quality in creeks that flow into the Sanctuary. (MB)
- Work with local communities on habitat restoration projects. (MB/GF)
- Increase public involvement. (All)
- Sanctuary should work collaboratively with diverse user groups, to reach consensus on issues. (All)
- Sanctuary should be more proactive with the tourism industry in future years. (All)
- The Sanctuary should work more closely with, and utilize the business and tourism sector. (All)
- There needs to be better collaboration and communication between the Sanctuary, Hearst Castle, and visitors regarding opportunities to see the elephant seals. (MB)
- Sanctuary should work with harbors and marinas, on a program promoting alternatives to toxic bottom paints. (MB)
- Maintain collaboration between Farm Bureaus and MBNMS. The Sanctuary now works effectively with the coalition of farm bureaus in reducing siltation and transport of pollutants. The MBNMS had added staff to work with this coalition, and there is concern that we will lose this staff if the MBNMS boundary moves south to the county line. (MB)
- Continue working in collaboration with the agriculture industry, utilizing a non-regulatory approach. (MB)
- Collaboration between the staffs of MBNMS and Fitzgerald Marine Reserve should be improved. (MB)
- Sanctuary needs to partner with local organizations to educate the public. Need resources to make happen on a larger scale (higher priority). (All)
- Santa Cruz County Office of Ed needs to be better linked to Sanctuary. (MB)
- Terrwiliger Nature Center and Audubon Canyon Ranch Visitor are developed as pilot programs, perhaps they can share information, create partnerships. (MB)
- Sanctuary should be the leader of all regional groups/institutions. (All)
- Sanctuaries should work with Chambers of Commerce and hotels, in educating the public. (All)
- Input from local users is overshadowed by academic input. Sanctuary should involve and work directly with local users and those that would be regulated. (All)
- Encourage more local involvement with Sanctuary. (All)
- Sanctuary should work more with volunteers. (All)
- JMPR needs to include a thorough re-visitation of the Sanctuary's commitments to the original communities of interest that supported the formation of the Sanctuary (i.e., agriculture, fishing, harbors etc.). (All)
- Sanctuary needs to be more accommodating of the needs of Big Sur residents. (MB)
- Big Sur residents are not currently threatened by MBNMS, things should continue to be this way. (MB)
- Surfrider has had positive experience working and communicating with the MBNMS. (MB)
- Sanctuaries should develop more full their working relationships with affected stakeholders. Potential cooperative studies that could aid in protection of sanctuary resources include fisheries stock assessments, impacts of commercial fishing and particular gear types to the wildlife and habitat of the sanctuary, impacts of permitted discharges into sanctuary waters, and effectiveness of habitat restoration efforts. (All)
- MBNMS should actively support practices, which will ensure the continuance of the goals of the Monterey Bay Salmon and Trout Project (STEP), and should recognize STEPs' unique productive work. (MB)
- Participate in regional/national science and resource management initiatives.
- Participate in regional cabled observatory development. (MB)
- Coordinate regional research and monitoring – add value to existing programs and help avoid duplicative efforts. (MB)
- NMSP should support the continued development of the Monterey Bay Citizen Watershed Monitoring Network, as well as specific programs such as First Flush, Urban Watch, and Snapshot Day. (MB)
- The sanctuary should work with the Steinhart Aquarium. (GF)
- Surfrider is interested in working at Ocean Beach with the Sanctuary. (GF, MB)

RADIOACTIVE WASTE:

Issues:

- Concerned about the radioactive waste barrels that are decaying out in the ocean. (GF)

Suggested Strategies and Tools:

- GFNMS should continue efforts to assess the potential impacts of the radioactive material disposal site on Sanctuary resources. (GF)

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- Consider further collaboration with the U.S. Navy to develop a formal assessment of the extent of the disposal site, and an analysis of options such as removal or capping, for addressing the waste. (GF)
- Sanctuary should petition the Federal Government to spend the money needed to monitor radioactive dumpsite. (GF)
- Assess potential impacts of historic dumping of radioactive materials on resources of the GFNMS. (GF)
- Do biological and ecological survey of barrels, sediments and fish/ invertebrate/ algae. (GF)
- Bottom trawling should cease at once in radiation-affected areas. (GF)
- Funds allocated by responsible parties to characterize the nuclear disposal site, develop a clean up plan. (GF)
- Sanctuary should be educating the public about radioactive dumping. (GF)

RESEARCH:

Issues:

- It is not realistic for the Sanctuary “to maintain the natural biological communities”...and “restore and enhance”. This is impossible because there is not enough of an understanding of the natural history of the area. (MB)

Suggested Strategies and Tools:

- The Sanctuary should continue to conduct research on resource management issues. (All)
- The Sanctuary should promote balance between different species by supporting research into coastal streams and fish stocks interaction with marine mammals. (All)
- The Sanctuary should promote research to assess natural versus human caused changes in rocky intertidal and near-shore ecosystems. (MB/GF)
- Sanctuary should conduct a study on the effectiveness of education vs. regulation in changing behaviors. (All)
- Fully fund SIMoN and integrate it into the Management Plan. SIMoN should be the top priority. (MB)
- Investigate sea otter disturbances by kayakers and other recreational users. (MB)
- Sanctuary should utilize commercial fishermen for collecting data/research. (All)
- Sanctuary needs to conduct research to assess the current biological condition of the resources today. It is necessary to have these baseline data in order to measure future success. (All)
- Sanctuary should investigate the effects of bottom trawling for potential environmental changes. (All)
- Sanctuary should conduct research on dynamics of fish populations and ecosystems. Need to understand ecosystems better in order to make wise management decisions. (All)
- The Sanctuary research program should provide fisheries data to California Department of Fish and Game. (MB)
- Sanctuary should investigate the decline of steelhead populations in San Carpoforo Creek (Cambria). (MB)
- Sanctuary should establish a “Monterey Bay NMS South” research center in the Cambria area. (MB)
- Need to investigate impacts to marine life and seabirds, from dogs that are not kept on a leash. (MB/GF)
- Sanctuary studies and research findings must be subject to scientific peer review. (All)
- SIMoN program is an example of good research –database to not be redundant in efforts in the region. (MB)
- Need research initiative on shelf break area. Re: whales, krill, fish, birds. (MB)
- Sanctuaries should investigate erosion rates along San Mateo coast. (MB)
- Sanctuary should conduct research on tide pools, in order to better understand ecosystem dynamics. (MB)
- Sanctuary should increase research and public access to information on the resources. (All)
- GFNMS and Point Reyes National Seashore should immediately launch a rapid assessment of the region’s marine biological diversity. (GF)
- Provide additional support to build the scientific underpinnings for more effective resource management policies, in particular, through SIMoN (Sanctuary Integrated Monitoring Network) program. (MB)
- Sanctuaries should serve as outdoor laboratories where current and future generations can study biological and marine sciences and the application of scientific knowledge to improving marine resource conservation and management. (All)
- Revised management plans should include language, which expands SIMoN to include MBNMS, CBNMS and GFNMS. (All)
- Revised management plans should include research action plans that identify research and monitoring programs (with timelines) focused on conservation issue -i.e., research that directly guides management decisions. (All)
- Conduct paleo-ecological and archeological studies to determine historic conditions. (All)
- Identify, locate, analyze, archive and, when possible build upon historical data sets. (MB)
- Sanctuaries should be a conduit for provision of additional funding for research. (All)
- Characterize water flow, erosion processes, and monitor key biological communities in Elkhorn Slough. (MB)

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- Assess, quantify extractive and non-extractive human impacts. (All)
- Assess, quantify effectiveness of regional marine reserves at the ecosystem level. Investigate financial impacts to fishermen, resulting from reserves. (All)
- Understand transport and sinks of pollution (particularly in sediments, water, and through the food web). (All)
- Post research findings on web site. (MB)
- Update the MBNMS Site Characterization. (MB)
- Enhance and promote Ecosystem Observations and Sanctuary Currents. (MB)
- Integrate regional research with national program. (MB)
- Support growing research needs with MBNMS research vessel and remotely operated vehicle. The research vessel must be of sufficient size to reach all corners of the sanctuary. (This may mean a vessel of 100 ft. length or larger). (MB)
- Prioritize joint taxa inventory within GFNMS with Point Reyes National Seashore. (GF)
- Encourage white shark research e.g. and other biosystems study. (GF)
- Study the effects of chumming on sharks. (GF)
- Water quality- research needed to identify how much pollution coming from SF Bay (especially industries). (GF, CB)
- Would like to see more research on the effects of pollution on the food chain in GFNMS. (GF)
- GFNMS and CBNMS should play a coordinating role relating to research activities on sanctuary resources. (GF, CB)

SAC:

Issues:

- The SAC is a great tool. It acts as the eyes and ears for the Resources Agency and is a two way street in terms of informing the public and informing agencies. (All)
- The SAC is experiencing growing pains but just needs its role firmed up. (MB)
- SAC Agendas and correspondence should not need NOAA concurrence. (All)
- SAC rules too constraining. (MB)
- The number of public agency seats on the SAC, relative to communities of interest seats seems disproportionate. (MB)
- Changing the advisory council to a management council is an extremely bad idea. Having SAC members elected by the community is also a bad idea.
- The Superintendent's perceived selective appointments to the SAC raises serious questions about conflicts of interest. (MB)

Suggested Strategies and Tools:

- Business and Tourism Advisory Panel should become active in education. (MB)
- Sanctuary should reconsider the appointment process for its Advisory Council. (MB)
- Sanctuary should reconsider the role of the SAC. (MB)
- Recreational fishing should be represented on the Sanctuary Advisory Council. (MB)
- There should be a separate "fishing working group". (MB)
- SAC should remain an advisory body. (MB)
- SAC protocols regarding congressional relations must be reevaluated. (MB)
- Sanctuary Advisory Council (SAC) members should be chosen by their constituency rather than by the Sanctuary, and the SAC. Selection committees should be avoided. (MB)
- Sanctuary should advertise SAC seat openings better, to get a larger pool of applicants. (MB)
- Multiple gear types for fishing should be represented on the SAC. (MB)
- Sanctuary Advisory Councils should be strengthened, and should better represent the local voice regarding local issues. (All)
- The Sanctuary Advisory Council should have a representative from the military to increase awareness of proposed military activities. The Sanctuary could also take advantage of certain military expertise and opportunities. (MB)
- Sanctuaries should not control or overrule SACs, nor should they choose SAC members, or "censor" SAC issues/positions. (All)
- MBNMS should make SAC meetings more accessible to working public. (MB)
- SAC Charter and Protocols should be changed to allow the SAC freedom in setting agendas and drafting correspondence (including to members of Congress). SAC communication to members of Congress should be

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limited to policy issues, not include “grass roots” lobbying for increased funding, and only occur if representing a majority view of the SAC. (MB)

- If the SAC Charter and Protocols cannot be changed, then SAC should not be organized within NOAA, but rather under State law, or through a local joint powers arrangement or MOU. (MB)
- A conflict of interest disclosure statement should be required of SAC members, similar to what is required of public officials throughout California. (All)
- The Sanctuary and NOAA should be completely removed from the SAC appointment process for all SAC seats. The appointment process needs to be turned over to an independent review panel with no input from the Sanctuary and NOAA. (All)
- SAC Charter and Protocols should be changed to allow the SAC to set its own agenda and write letters without Sanctuary Superintendent concurrence. (MB)
- Sanctuary regulations should be changed to declare that employees or principles of companies or corporations that have a direct financial interest in SAC and Sanctuary decisions are ineligible to become SAC members. This financial interest would also include companies or corporations that receive Sanctuary Foundation money or perform any work or services for, or with, the Sanctuary. Certain SAC seats like commercial fishing, business, and tourism would be allowed a variance but the appointee would have to show that the applicant is an officer in an associated industry group representing the industry. (MB)
- Strengthen the SAC membership, while clarifying and reaffirming its proper advisory role as currently constituted. (MB)
- Emphasis should be given to appointing on the Sanctuary Advisory Council, members that represent (in an official capacity, if feasible) their area of interest. Each group on the Sanctuary Advisory Council should recommend nominees to be seated in specific classes. (MB)
- SAC should not micro-manage Sanctuary staff. (MB)
- Sanctuary should consult with specific communities that are represented by a SAC seat, and ask them to develop a process to select a SAC representative. (MB)
- Regarding SAC appointment process: Sanctuary should identify either all or at least the major organizations that represent each community that is represented by a SAC seat, and consult with them in making SAC selections. For example the appointment of a fishing representative should be made by joint selection from the Pacific Coast Federation of Fishermen’s Associations, the Alliance of Communities for Sustainable Fisheries, and United Anglers of California. For the business seat the Chambers of Commerce should jointly make the appointment. For tourism, the various visitor and convention bureaus should select, and the agriculture seat should be selected through a consensus of the three farm bureaus. The conservation seat should be selected through the membership of the Conservation Working Group, the research through the RAP, and the education seat through the SEP. The at-large seats should be appointed by the board of supervisors of their counties. (MB)
- SAC should include representatives from each recreational user group, such as recreational boaters, windsurfers, kite surfers etc. (All)

SPILL RESPONSE AND CONTINGENCY PLANNING:

Issues:

- Oil spills are always a danger and a plan should be developed in case of an oil spill within Sanctuary boundaries. (All)
- Concerned about the lack of cohesiveness regarding emergency response to coastal incidents (oil spills etc.). (All)
- Concerned about potential impacts of oil tanker spills. (All)
- Concerned about Sanctuary’s vulnerability to ship spills, break-ups and collisions. A major event could potentially wipe out sea otter population. (MB)
- Multitude of small spills from smaller boats, etc. is a concern. (All)

Suggested Strategies and Tools:

- Sanctuary should investigate the occurrence of oil/tar balls. Sanctuary should work with OSPR to identify sources, and clean-up when found. (All)
- Sanctuaries must be consistent in their response to oil spills. (All)
- Sanctuary should develop a dispersants policy, improve oil response capabilities for the Big Sur and Cambria coast, develop an interagency plan to minimize the numbers and reduce impacts of small wrecks and groundings and address vessel and debris removal. (MB)

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- Revised management plans should contain stricter penalties for at sea discharges of oil by ships, enhancement of spill-source tracking efforts and a process with timeframes for review of the adequacy of oil spill response throughout sanctuary waters, particularly in more remote areas such as the southern end of MBNMS. (All)
- Sources of oil/tar balls on beach should be investigated to determine whether from natural seeps or anthropogenic sources. (All)
- Sanctuary should consider supporting programs for rapid response to new threats. (All)
- Sanctuaries should encourage the adoption of state and federal energy and transportation policies that foster a shift away from current high levels of petroleum use, and educate the public about the connection between high levels of petroleum use in our society and the oiled beaches, and animals that inevitably follow the release of oil into the ocean. (All)
- Must stage adequate oil spill response supplies in Bodega Bay, not just San Francisco Bay. (GF, CB)
- Vessel traffic lanes pushed out to address oil spill impacts at Farallon islands and impact to sea bird colonies and pinnipeds. (GF)

USER CONFLICTS:

Issues:

- Facilitation of multiple uses should be a higher priority for the Sanctuary. (MB)
- Need to balance human use with resource protection. Might need to restrict some activities. (All)
- Sanctuary is managing human activity more than managing resources. (MB)
- Concerned about the impacts from recreational use off Elkhorn Slough. (MB)
- Kayaking is lower impact in ocean waters than in Elkhorn Slough. (MB)
- Concerned about marine mammals approaching kayaks. Monterey Bay Aquarium has tried to teach avoidance behaviors tootters which have been in their care. (MB)
- Since it is nearly impossible for human activity not to create some impact on Sanctuary resources, there is concern that this will lead to more and more restrictions on human use of the Sanctuary, given the current language in the management plan that “multiple uses” are allowed as long as they are consistent with resource protection. (MB)
- The facilitation of human use of the Sanctuary is a stated program goal, yet very little has been done to promote this goal. (MB)
- Intensive agricultural development carries increasing adverse impacts. (GF)
- Concerned about allowing divers and sportsmen into the Sanctuary with out regulating them. (MB, GF)
- “Extreme sports” not compatible with sanctuary protections. (GF)

Suggested Strategies and Tools:

- Need to investigate impacts from research, diving, kayaking, and spear fishing. (MB)
- Sanctuary should not restrict access to habitats or resources. (All)
- Increase public access. (All)
- Concerned about the impacts of too many kayakers, increase in tourists, and growing population in general. Sanctuary should restrict use to a sustainable level. (MB)
- Never restrict surfing. (MB/GF)
- GFNMS needs to resolve conflicts between commercial, recreational and research users at the Farallones Islands. (GF)
- Sanctuary should protect the rights indigenous people (traditional users). (MB)
- Conscientious (through education) use of the Sanctuary should be as much of a goal as research and conservation. (All)
- JMPR process should include an analysis of jurisdictional issues. This analysis should consult with all coastal jurisdictions and property owners, and be available for public comment. The benefits of the Sanctuary status for very near shore urban areas should be weighed against any jurisdictional issues. If jurisdictional problems are evident, a possible solution would be to create an ‘urban buffer zone’ which would still be within the Sanctuary boundary and would continue to allow for Sanctuary education, conservation and research programs, but which would not be subject to Sanctuary Permit Authority. (MB)
- Clarifying language needs to be added to the Management Plan to allow for human uses as long as there is no significant and sustained impact that permanently damages the resource, (i.e. allow for minor impacts). Include a guidance statement to help Sanctuary staff define major/minor impacts. (All)
- Need regulatory and educational signage at harbor launch ramps for kayakers– signage reaches more people than brochures. (MB/GF)

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- MBNMS to preserve areas of recreation to better accommodate recreational users: outstanding surf breaks, SCUBA areas, wetlands, and dunes systems are examples of places that should be preserved for recreational and education use. (MB)
- All divers should be prohibited from killing, removing, or otherwise harming any plants or animals in the sanctuaries. (ALL)
- Limit recreational use to non-motorized vessels such as wind surfing, kayaks, skin diving, and sailing. (MB)
- Sanctuary should be as thorough in protecting fishing heritage, surfing culture, kite surfing, windsurfing, boating and other recreational activities as it is in protecting the endangered species in the Sanctuary. (All)
- Need to ensure that uses by others (hikers, kayakers) do not impact wildlife on ranches. (GF)
- Consider whether regulations on kayaks and boats in Tomales Bay are necessary. (GF)

VESSEL TRAFFIC:

Issues:

- Concerned about cruise ships and similar activities in the Sanctuary that currently are not an issue, but have the potential for impact. Sanctuary should adopt a proactive approach regarding these activities. (All)
- Concerned about diesel exhaust pollution from large shipping vessels. (All)
- Worried about oil transportation over Cordell Bank. (CB)

Suggested Strategies and Tools:

- Sanctuary should support the use of environmentally sensitive vessels for transportation. (MB)
- Only specific vessels that don't impact Sanctuary resources should be allowed, such as hovercraft. Avoid vessels that pollute. (MB)
- Sanctuary should require liners on oil tankers. (MB)
- Oil vessel traffic should only occur outside Sanctuary boundaries. (All)
- Sanctuaries should require that all vessels enter the San Francisco Bay from the westbound lane. (MB)
- Need to prohibit the dumping of bilge water in the Sanctuary. (All)
- Keep cruise ships out (docking) because of pollution, noise, quality of experience). (MB)
- Sanctuary should develop a method to enforce and monitor vessel traffic for compliance with recommended tracks. (MB)
- There should be some method of testing vessel operators for drug or alcohol use while they are working. (All)
- Two-stroke engines should be prohibited in Sanctuary waters. (All)
- Passage of oil tankers should be banned, except between Point San Pedro and Rocky Point. (MB)
- Commercial traffic that traverses Sanctuary should have to pay a fee that could be used to enhance the coastal ecosystem. (All)
- Need to add tug escorts especially at potato patch. (GF)
- Safety should be considered in westbound land for ships, fishing vessels, and all watercraft. (GF)

WATER QUALITY:

Issues:

- Sewage plants-should have proper pre-treatment. (MB/GF)
- Concerned about repeated sewage spills and quality of water. (All)
- Concerned about sewage spills at San Carlos beach, which cause monthly closures. (MB)
- Sanctuary should regulate point and non-point sources of pollution in bay, to protect wildlife. (MB)
- Concerned about water quality of sub-watersheds and Elkhorn Slough. (MB)
- Concerned about impacts of storm drains to water quality, and the lack of public awareness about this issue. Sanctuary must address this issue. (MB)
- Concerned about sewage issue in Pacifica area. (MB)
- Concerned about the lack of water flowing through some creeks. (MB)
- Concerned about 2-stroke engines polluting Sanctuary waters. (All)
- Water Quality partnership is a model for how the Sanctuary should operate. (All)
- Sanctuary has done a good job with water quality program and reaching out to others. (MB)
- Concerned about the beach closures and water quality in San Mateo County. There are not enough sampling sites to adequately notify people of conditions. (MB)
- Dolan Road / Elkhorn Slough – Xmas court hazardous fluids pouring into slough. (MB)
- Nutrient levels should be reduced in our coastal waters. (All)

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- Concerned about soap in runoff reaching the ocean. (All)
- Water quality affects surfing businesses and is their “bread and butter”. (MB/GF)
- Concerned about pollutants along Cannery Row. (MB)
- Concerned about sewage issue in Pacifica area. (MB)
- Concerned about the dumping of hundreds of tons of sediment annually by CAL Trans into MBNMS at the Waddell Bluffs area. (MB)
- Concerned about sewage from San Simeon Acres and Ragged Point Inn and Restaurant. These locations have inadequate sewage treatment. (MB)
- Concerned about dumpsites for hazardous material and dredged material in Sanctuary waters. (MB)
- Concerned about farm runoff at surfing locations (3 mile north of Santa Cruz). (MB)
- Sanctuary should mitigate urban and agricultural runoff. (MB)
- Concerned about scrubbing of heavy metal bottom paint; Paint residue ends up in the water. (All)
- Concerned about cumulative effects of continuous discharges such as that from desalination plants or power plants. (MB)
- Concerned about oil sheen in harbors. (MB/GF)
- Problem with inadequate notification of beach closures. (MB/GF)
- Concerned that harbors are not in Sanctuaries and subject to pollution. (MB/GF)
- Concerned about the effect that energy production has on water quality. (MB)
- Staff vacancies have seriously interfered with the Water Quality Protection Program’s ability to accomplish its goals. (MB)
- Concerned about the Union Pacific railroad line, which runs alongside the Elkhorn Slough. The Parson’s Slough Bridge is in poor condition and there is the threat of a toxic spill with potentially severe environmental damage. (MB)
- When the Sanctuary was being negotiated, harbors were told that the Sanctuary would not have permit authority over dredging, but it does. (MB)
- The existing language characterizes all dredging as bad and does not allow for minor impacts. (MB)
- Existing language concerning dredging seems to constrain the staff from being as helpful to harbors as they could be. (MB)
- Concerned about the effect of certain activities, such as improper disposal of cat litter and introduction of contaminants into coastal waters, on southern sea otter populations.
- Concerned about water quality and habitat in Estero de San Antonio. (GF)
- Concerned about the Petaluma Mushroom Farm dumping into Americano creek. (GF)
- Concerned about transportation-related run-off. 80% of non-point source pollution is from roads (tires and pipes of autos). (GF)
- Water-borne pollutants come from the watersheds into SF bay and then into the GFNMS. (GF)
- Watershed issues in Bodega Bay and Esteros. (GF)
- Be aware of Pacifica’s new water quality system. (GF, MB)
- Erosion at San Francisco’s sewage treatment plant is an issue. (GF, MB)
- Sewage from the village of San Simeon Acres is contaminating Sanctuary waters. (GF)

Suggested Strategies and Tools:

- Different measures should be taken against large polluters versus uneducated members of the public. Expand awareness through beach cleanup or other programs, which would incorporate education (in terms of what exactly are the violations). (MB/GF)
- What extent is data from Urban Watch being used? Make information more available to public through education, PSA, Nova, public broadcasting. General public needs information readily available without seeking Sanctuary. Possibly use a monthly newspaper insert. (MB)
- Sanctuary should educate public equally on all forms of water pollution. (All)
- Sanctuary should distinguish between past and current sources of contaminants in describing pollution in outreach materials and programs. (MB)
- The existing water quality action plans should be incorporated directly into the revised management plan. Don’t start over with the next management plan. (MB)
- More rigorous monitoring of water quality. (All)
- There should be language put in the management plan that reflects the positive benefits of harbors. (MB/GF)
- Sanctuary should better address land based point and non-point source pollution. (MB/GF)

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- Beach closure information should be made more readily available to the public. Better posting of water quality alerts at beaches and access points for swimmers, surfer, divers and kayakers. (MB/GF)
- More regulation of activities that affect water quality. (All)
- MBNMS should investigate all forms and sources of contaminants, not just agriculture. (MB)
- Sanctuary needs to do WQ monitoring in an ongoing program. (All)
- Marine Sanctuary's main job is to protect resources, should increase water quality protection projects. (All)
- Concerned about the effects of MTBE that has been found leaking into local streams. This could impact the immune systems of marine mammals. Sanctuary should investigate the effects of MTBE and other spills and discharges on aquatic species. (MB)
- Sanctuary should prioritize which water quality issues are most important and pursue them. (All)
- Sanctuary should lobby at all levels for improved water quality. (All)
- Implement and staff the Water Quality Protection Program. (MB)
- Expand Citizen Monitoring Network. More funds or resources to implement water quality protection program. (MB)
- Dedicate more effort to investigating and preventing point and non-point source pollution. (All)
- NMSP should adopt a Water Quality Protection Program for CBNMS and GFNMS, and should work with local regional water quality control boards to review discharge permits and waivers for these 2 sanctuaries. (CB/GF)
- Water quality standards should be established in all federal waters within the sanctuaries. (All)
- Within state waters, water quality standards should be comprehensively reviewed to ensure that they adequately protect sanctuary resources. (GF/MB)
- Include on website, water quality data on various river systems affecting the Sanctuary. (All)
- Concerned about near-shore water quality. Sanctuary should conduct education and outreach regarding wastewater issues. (All)
- The revised management plan should emphasize the importance of fully implementing the recommendations contained in the Water Quality Protection Plans. Management plan should also identify additional WQ plans yet to be completed such as one dealing with point sources and one addressing riparian and wetland issues. (MB)
- Concerned about the effects of cooling water from the Duke Moss Landing power plant. Other options should be investigated that have less impact (sewage water).
- Concerned about near-shore water quality. Sanctuary should conduct education and outreach regarding wastewater issues. (MB/GF)
- Sanctuaries should investigate the root causes of water quality degradation. More resources should be made available for infrastructure of sewage treatment facilities. (All)
- MBNMS should develop a policy and guidelines to monitor water quality in streams, rivers, creeks, etc. emptying into the Sanctuary. These should be clean enough to swim in. (MB)
- Sanctuary should develop and implement a plan addressing riparian/wetland resources. (MB)
- Sanctuary should conduct a strong and diligent review and comment on all NPDES permits and projects in and affecting the Sanctuary. (MB)
- Expand GFNMS Beach Watch program to include water quality monitoring and subsequent beach posting advisories when state water quality standards are exceeded for water contact recreation.
- GFNMS focus watershed protection efforts locally. More support (financial, technical, programmatic, fiscal, staffing). (GF)
- Review permits for city and county of San Francisco for discharge. (GF, MB)
- Engage in and support proactive efforts in Marin County to adhere to the Clean Water Act. (GF)
- Regulate future and current houses upstream to protect the creek waters. (GF)

Point Source

- Sanctuary should be concerned about the impacts of desalination plants from construction and brine effluent discharge. (MB)
- Sanctuaries should encourage jurisdiction partnerships to combine desalination facilities, for public use only. (MB/GF)
- Sanctuary should work with harbors and marinas, on a program promoting alternatives to toxic bottom paints. (MB)
- Sanctuary should increase collaboration with other agencies regarding wastewater treatment and water purification systems. MBNMS should take primary role in this collaboration, and should develop model education and implementation Programs. (MB)

APPENDIX 1: Full List of Issues Raised at Scoping Meeting and in Writing

- Concerned about intake pipelines for power plants. Entrainment and impingement kill millions of larvae and small species. Sanctuary should impose limitations or measures to reduce these types of impacts. (MB)
- Sanctuary should address the issue of run off occurring from restaurants. (MB)
- Sanctuaries should take a far more active role in reviewing point source discharge permits issued by the regional water quality control boards to ensure that permit conditions are sufficiently stringent to protect sanctuary resources (especially with respect to storm water runoff). (All)
- Sanctuary should explore progressive technology for purification of private and municipal wastewater. (MB)/GF)
- Tertiary treatment should be required for all sewer systems that empty into sanctuaries. (All)

Non-Point Source

- Sanctuary should conduct a study on nutrient runoff. (MB)
- Consider a ban of all pets from beaches in the National Marine Sanctuary as part of the Resource Protection Program. (MB/GF)
- Sanctuary should regulate the use of fertilizer through a permitting system. Should investigate alternatives and mitigation. (MB)
- Dogs should not be allowed off their leash in Spanish Bay and Pebble Beach, due to potential impacts to water quality. (MB)
- Sanctuaries should hold accountable, operations such as golf courses and nurseries that use chemicals or other pollutants, which enter into the ocean. (All)
- Utilize volunteers to educate dog owners and encourage leash use. (MB/GF)
- Sanctuary should conduct more education programs for informing farmers about agricultural runoff and pesticide use. Should encourage coastal farmers to incorporate organic methods. (MB)
- MBNMS agriculture action plan should have a specific timeline, goals, and audits. It should be open to the public, and not be self-regulating. (MB)
- The existing Agriculture Action Plan should not be changed, in order to maintain momentum that has already built up. (MB)
- NOAA should continue to support the implementation of the Agricultural Action Plan and commit all necessary resources to ensure the success of its implementation. (MB)
- Storm water discharges from new and existing development into the sanctuaries should be stringently controlled under the Clean Water Act. (All)
- Concerned about harmful algal blooms. Cooperative research should occur in the Sanctuary to learn how such blooms relate to non-point source pollution, and the consequences of such blooms in the Sanctuary. (All)
- Sanctuaries should develop programs to address the pollution that enters the sanctuaries from San Francisco Bay. (All)
- Sanctuaries should work with local jurisdictions, county health departments, regional water quality control boards, and other agencies to perform studies on near shore water quality to assess human health risks from the viral pathogens that have been documented on the shoreline. (MB/GF)
- Sanctuaries should assess the effect of pollution on the near shore ecosystems and to determine the sources of pollution and identify methods of prevention and control. (All)
- Recommend a halving of the amount and significant reduction of the toxicity and persistence, of pesticides, which are used in the Salinas, Carmel, and Pajaro Valleys, because of their immediate harm to Endangered Species Act (ESA) listed anadromous species. (MB)
- Sanctuary should mitigate urban and agricultural runoff. (MB/GF)
- Sanctuary should conduct a study on pesticide runoff from agriculture and golf courses. (MB)
- Increase funding for sewage system/storm drain infrastructure improvements. (MB/GF)
- No new regulations that will affect agriculture industry. (MB)
- Heavy metal concentration in fish should be addressed by guidelines set on discharges from any source on these metals. (All)

WILDLIFE DISTURBANCE:

Issues:

- Snowy Plover education and presence is good. (MB)
- Concerned about peregrine falcon populations in Monterey Bay. (MB)
- Concerned about peregrines feeding on shorebirds, while fishermen are taking the blame. (MB)
- Sanctuary should address overpopulation of pinnipeds, which cause destruction of property, and financial loss to fishermen. (MB)

APPENDIX 1: Full List of Issues Raised at Scoping Meeting and in Writing

- Concerned about commercial feeding of marine mammals. (All)
- Concerned about the poor quality of some of the marine mammal studies. On the water studies can be very limited. (All)
- Concerned about overpopulations of pinnipeds. Sanctuary should investigate the feasibility of controlling these populations. (All)
- Concerned about white shark disturbances in GFNMS, due to people approaching them too closely, and using inappropriate means to attract them. (GF)
- Concerned about the vagueness of the GFNMS regulations regarding white sharks. (GF)
- Concerned because of lack of shells on the beach after storms. There a far fewer than there used to be, which might indicate that these invertebrate species are dying out. Sanctuary should investigate the cause for the decline. (MB)
- Concerned about seabirds being harmed by recreational fishing on Santa Cruz Wharf. (MB)
- Would like to get anadromous fish back up the streams. (MB)
- Concerned that harbor seals in the rivers are eating the salmon. (MB)
- Concerned about the current status of tide pools. They used to be teeming with life, but are now desolate. Sanctuary should concentrate on more protection of tide pool areas. (MB)
- Concerned about the influx of people who utilize tide pools as a food source at Pfeiffer Beach, Kirk Creek, and Pebble Beach. (MB)
- Concerned with non-native salmonid smolt stocking (Feather R. system) on ecosystem. Research is needed on effects. (MB)
- Concerned about the growing number of diseased and unhealthy marine mammals off the West Coast and especially in GFNMS. (All)
- For the past 10 years, the Monterey Bay Aquarium has used the Pacific Grove Marine Gardens Fish Refuge to gather kelp, invertebrates, and fin fish. (MB)
- There have been recent reports of canine distemper among harbor seals in Monterey Bay. (MB)

Suggested Strategies and Tools:

- Must have more regulations/guidelines for public shark viewing, similar to those for whale watching. (All)
- More interpretive signage at kayak launch sites and dive entry points in regard to marine mammals viewing etiquette (especially otters). (MB)
- There should be a “season” on sea lions, like there is a season for salmon, to bring the ecosystem back into balance again. (MB)
- Sanctuary should increase conservation and protection for sea otters. (MB)
- Sanctuary should increase protection for all wildlife. (All)
- Investigate the impacts that pinniped populations are having on fishery resources. (MB)
- Sanctuary should investigate and address the effects of feral animals acting as disease vectors, and their connection to sea otter mortalities. (MB)
- Heavy metal concentrations in fish should be addressed by guidelines set on discharges from any source of the metals. (All)
- Extend MBNMS and CBNMS regulations regarding white sharks to cover GFNMS, or implement a new rule for limited entry for charter boats. (GF)
- Sanctuaries should potentially implement minimum approach distances and approach speed limitations for white sharks. (All)
- All sanctuaries should prohibit the attraction and harassment of white sharks. (All)
- More education of the public and recreational boat operators regarding etiquette for shark viewing and interaction. (All)
- Shark chumming should be banned in GFNMS. All shark-related activities should be permitted through the manager. (GF)
- Sanctuary should help implement management practices that allow the expediting of the required permit processes utilized by STEP. (MB)
- Need to investigate impacts to marine life and seabirds, from dogs that are not kept on a leash. (MB)
- GFNMS is the older sanctuary but has a better regime for birds. (All)
- Sanctuaries should adopt a set of standards for all wildlife viewing. This should include a “controlled speed perimeter” for recreational boaters and wildlife watchers. (All)
- Sanctuaries should consider adopting a limited entry policy and code of conduct for commercial wildlife watching vessels. (All)

APPENDIX 1: Full List of Issues Raised at Scoping Meeting and in Writing

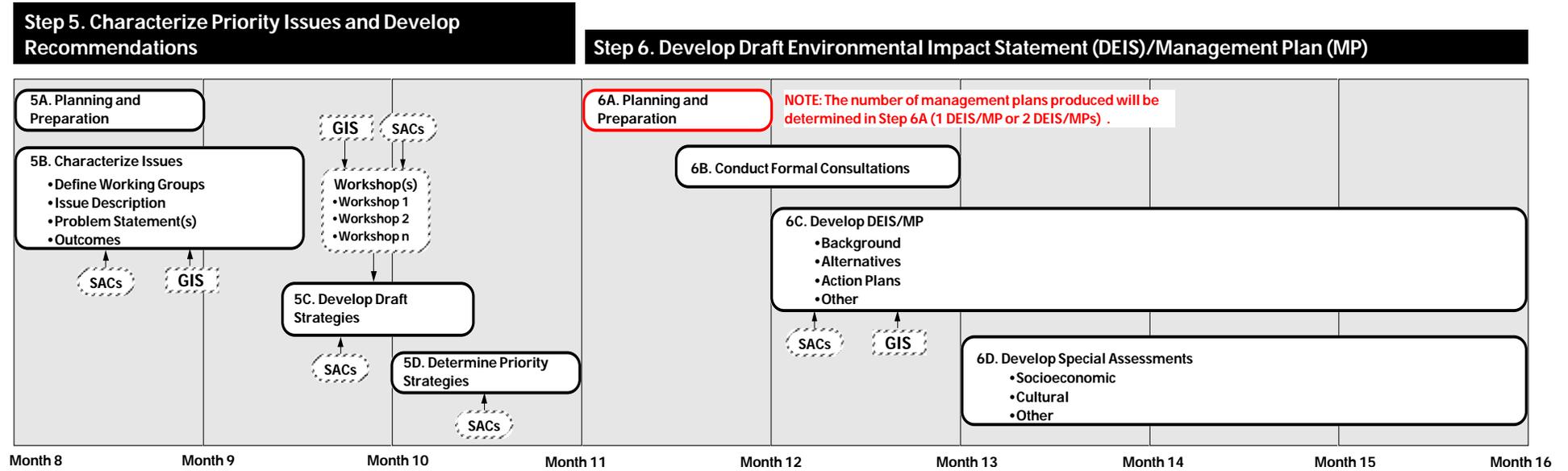
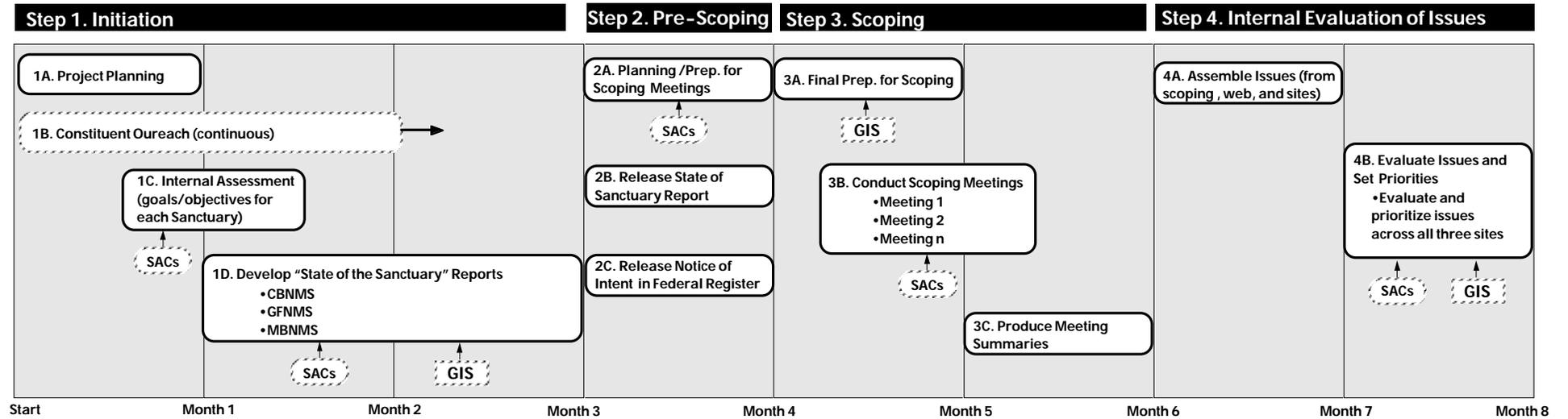
- Sanctuaries should strive to reach a balance between research and wildlife viewing. (All)
- Shark attraction should be banned completely in GFNMS (including research). (GF)
- Sanctuary should support City of Santa Cruz in closing wharf to fishing to protect the Brown Pelicans from being entangled in fishing hooks/lines during times when sardines are there. (MB)
- Concerned with the current status of abalone in California, including habitat loss, over harvesting, and illegal poaching. Sanctuaries should support the California Department of Fish and Game's Abalone Recovery and Management Plan. (All)
- Sanctuaries should do whatever is necessary to restore original population of birds (such as the Ashy Storm Petrel, Rhinoceros Auklet and Double Crested Cormorants), on Farallones Islands. Sanctuaries should reinstall structure of cables, or another effective setup to decrease gull predation. (All)
- Concerns about tide pool trampling. Sanctuary awareness should be increased, possibly education through local schools. (MB)
- Too many overlapping jurisdiction regarding over flight regulation. This issue needs to be resolved. (MB)
- Over flight restriction should be more specific, "blanket prohibition" of over flights below 1000 feet should be changed. (MB)
- Sanctuary should assess the constitutionality of its over-flight regulations and fines. (MB)
- Concerned with Sanctuary denial of over flight permits. (MB)
- Over flight regulation should be based on realistic potential for disturbance of marine life. Current regulations often restrict flights that would have no impact on marine mammals or seabirds. (MB)
- The FAA over flight restrictions of 500 feet are adequate, MBNMS regulations are excessive. (MB)
- Is noise is an issue then boat traffic should be addressed instead of aviation. Sound from boat engines travels considerable distances underwater, while most general aviation airplanes are not major noise generators. (MB)
- Aircraft restrictions being proposed are a violation of the federal commerce clause and only able to be imposed by the FAA and Congress. (MB)
- Over flight restrictions should be expanded to cover entire Sanctuary. Limits should be raised to 2000 or 3000 feet. (MB)
- Sanctuary should conduct more education and outreach to pilots about flight regulations. (MB)
- Sanctuary should not regulate aviation activities. The FAA regulations are sufficient. (MB)
- The Sanctuary should work with the FAA on developing over flight regulations. (MB)
- Sanctuary should collaborate with the FAA to get the regulations placed in the FAR. (MB)
- Over flight regulations need to be changed, they should be based on realistic probabilities of marine mammal and seabird disturbances, not an arbitrary altitude limit. (MB)
- Aerial flights don't seem to disturb marine mammals; over flight regulations should be reevaluated. (MB)
- The Sanctuary should work with the FAA on developing over flight regulations. FAA should make the final call. The FAA is qualified to deal with this issue while the Sanctuary is not. (MB)
- Navy jets, Marine helicopters, and very low flying private aircraft should be restricted from flying along the coast. (MB)
- Removal from documentation of prohibitions and fines with respect to over flight will show good faith. (MB)
- If penalties are to be imposed for violation of over flight regulations, then regulators should explain how they are going to determine altitude of violator. (MB)
- All non-emergency military flight operations over the Sanctuary, and within behavior altering distances of Sanctuary resources should be banned. All other military flight operations should require a permit. (MB)
- Don't take away fireworks on July 4th. (MB)
- Sanctuary should refer to the Marine Mammal Protection Act (MMPA), and develop and implement an educational campaign regarding harassment/disturbance of marine mammals, especially on beaches/rookeries. Participate in education campaigns to influence fishers regarding compliance with MMPA.
- Concerned about the fate of the harbor seals in the GFNMS. (GF)
- GFNMS should become adopt reserves to increase natural seal populations and protect pupping beaches; and should continue to work to reduce stress on seal populations (from pollution habitat destruction, etc.). (GF)
- Concerned about fate of seabirds in GFNMS. (GF)
- Concerned about wildlife disturbances in Elkhorn Slough, from increasingly heavy kayak use. Sanctuary should coordinate a study of these disturbances. (MB).
- Sanctuary should adopt a policy of serious enforcement of the Endangered Species Act. (All)
- Send coastal communities a brochure informing them about the need for lagoon habitat, water flow and restrictions on breaching sandbars at river mouths for threatened and endangered anadromous fish. Brochure should also inform them on penalties involved with such activities. (MB/GF)

APPENDIX 1: Full List of Issues Raised at Scoping Meeting and in Writing

- Sanctuary should have in place science based policies to address the contentious issues of expansion of the range of the Southern Sea Otter (such as interaction with fishermen and their target species), to ensure unimpeded recovery of this species. (MB/GF)
- Would like to see kayak companies (outfitters) required to obtain permits to operate within GFNMS so they understand the impacts to the ecosystem. (GF)
- Limited viewing entry to boats that target White Shark feeding events
- Protect the Gulf of the Farallones Sanctuary tide pools and estuaries from overuse by limiting visitor numbers. (GF)
- Better coordination between sanctuaries and Coast Guard /Navy/Commercial planes during breeding season on Farallon Islands. (GF)
- Blinds for non-invasive wildlife viewing. (GF, MB)
- Create a buffer region of at least four nautical miles around the islands. (GF)

Appendix 2 - Proposed Joint Management Plan Review Process (CB, GF & MB NMSs)

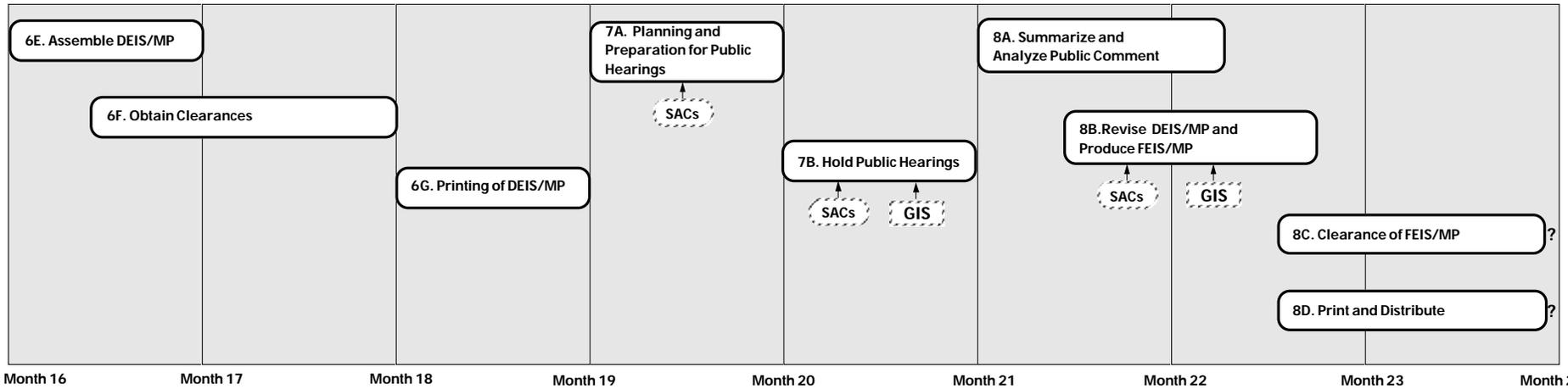
You are here !
Summary Document pertains to Step 4



Step 6. Continued

Step 7. Public Comment on DEIS/MP

Step 8. Produce FEIS/MP



APPENDIX B

SUMMARY OF PROPOSED ACTION PLANS

APPENDIX B

SUMMARY OF PROPOSED ACTION PLANS FOR CBNMS, GFNMS AND MBNMS

The proposed action plans for each sanctuary are summarized below and are described in detail in each sanctuary's forthcoming final management plan (Volumes I through III). Action plans calling for new or modified sanctuary regulations are described in more detail in Section 2.2 of the Final EIS.

Cross-Cutting (Multi-Sanctuary) Action Plans

Several cross-cutting plans would be implemented through coordination among each of the three sanctuaries. The following action plans will be included as appendices to the sanctuary management plans:

Administrative and Operations

This action plan will outline coordination and cooperation across all three sites and will identify methods to work and function as an integrated team.

Community Outreach

This action plan will build awareness about the existence and purpose of the three sanctuaries and why they are relevant to their communities. Implementation will identify how sanctuary administrators work with constituents and how groups can help accomplish sanctuary goals.

Ecosystem Monitoring

This action plan provides a framework to coordinate the various monitoring activities and to conduct a monitoring needs assessment. MBNMS will also coordinate with the other sites in expanding the Sanctuary Integrated Monitoring Network (SIMoN) to integrate the numerous ecosystem monitoring operations throughout the sanctuary.

Maritime Heritage

Implementing this action plan will establish a maritime heritage program at each of the three sites, will outline how the administrators of the West Coast marine heritage program will conduct a submerged-site inventory and assessment, will identify and address submerged hazards, and will provide for extensive education and outreach.

Northern Management Area (NMA)

This action plan outlines how this area will be managed, given the recent transfer of management and administrative functions from MBNMS to GFNMS in the NMA, an area of MBNMS extending from the Santa Cruz-San Mateo county line north to the adjacent GFNMS boundary.

Cordell Bank Action Plans

The CBNMS proposed management plan includes five action plans addressing education and outreach, ecosystem protection/fishing impacts, partnerships with community groups, conservation science, and administration.

Education and Outreach

The action plan for this broad category includes numerous strategies to increase public awareness of sanctuary resources by building community support and partnerships, developing a volunteer training program, using local and national media opportunities, conducting educational programs, and establishing an education working group.

Ecosystem Protection

The goal of this proposed action plan is to better understand impacts from various activities on sanctuary resources and to promote ecosystem health. Action plan strategies are to accomplish the following:

- Establish ongoing regionwide sanctuary representation at the PFMC and CDFG meetings;
- Establish processes to track human use activities and evaluate impacts;
- Develop policy recommendations to address impacts from human use activities on sanctuary resources;
- Work with GFNMS and MBNMS to support actions prohibiting the commercial harvest of krill;
- Develop a socioeconomic profile of fishing activities and coastal communities;
- Assess impacts from acoustics on sanctuary resources; and
- Assess impacts from marine debris on sanctuary resources and conduct mitigation activities.

Partnerships with Community Groups

This proposed action plan would develop partnerships with the research community to increase opportunities to fulfill the sanctuary's research goals, raise the profile of the Sanctuary Advisory Council as a link to the community, use media opportunities to promote research programs, and identify mechanisms to raise additional sources of revenue and in-kind services.

Conservation Science

The proposed action plan includes numerous strategies to characterize and monitor sanctuary habitats and communities.

Administration

The administration action plan includes provisions to address operations, staffing, partnerships, interagency coordination, protected resources enforcement, emergency response, regulations and permitting, new and emerging issues, boundary modifications, planning and evaluation, and performance evaluation.

Gulf of the Farallones Action Plans

GFNMS proposes action plans related to water quality, wildlife disturbance, introduced species, ecosystem protection, vessel spills, education, conservation science, resource protection, and administration.

Water Quality

Estuarine and Nearshore Environments. This proposed action plan would develop a program to coordinate partnerships in implementing a comprehensive water quality monitoring program to track impacts on the estuarine and nearshore environment, to address anthropogenic pathogens and pollutants in these areas from boating and marinas, to coordinate with agencies to address land-based discharges, and to evaluate vessel discharge effects on areas of special biological significance (ASBS) within the sanctuary.

Open Coastal Environment. Continuation of the long-term data collection efforts related to the Mussel Watch program would occur under this plan.

Additional Areas: Related water quality issues would be addressed through establishing a water quality working group of the Sanctuary Advisory Council, developing administrative capacity to support a coordinated water quality protection plan, developing an annotated bibliography of water quality research and monitoring programs to evaluate data and determine the overall water quality in the Sanctuary, and educating local decision makers on land-based water quality impacts.

Wildlife Disturbance

Several strategies are proposed to address wildlife protection, including creating an accessible database to house information on wildlife disturbance, monitoring human activity impacts, coordinating with other agencies and programs to better understand and address impacts from vessels and low-flying aircraft, developing interpretive enforcement and law enforcement efforts to address human behavior impacts, developing wildlife viewing guidelines, and maximizing media venues to augment outreach efforts and increase public awareness of wildlife disturbance issues.

Introduced Species

The proposed action plan for this issue includes measures to develop a native and introduced species inventory and database, to develop programs to detect and monitor introduced species, to establish a volunteer program for outreach monitoring, to develop partnerships with other agencies and organizations, to design and implement procedures to control introduced species, and to provide public outreach efforts to increase awareness of pathways through which introduced species may enter the Sanctuary.

Ecosystem Protection

Fishing Activities. This action plan would develop a resource characterization of the Sanctuary to better understand habitats, species, and processes; to develop a socioeconomic profile of fishing activities and communities; to evaluate impacts from fishing activities on Sanctuary resources; to develop policy recommendations to address impacts; to increase public awareness about importance of maritime communities and reliance on healthy Sanctuary waters; to establish region-wide Sanctuary representation at the PFMC and CDFG meetings; and to work with CBNMS and MBNMS to ensure that impacts from krill harvesting are addressed.

Ecosystem Protection. General ecosystem issues would be addressed by developing a resource protection plan, creating a “Living Resource and Habitat Protection” working group, and developing a strategy to protect habitats that are known to be “special areas of concern.”

Vessel Spills

This action plan proposes numerous strategies to improve and expand data to analyze vessel spill risks in the Sanctuary, to participate in regional forums regarding vessel traffic issues, to establish an on-going vessel spills working group, to revise the Sanctuary's emergency response plan, and to outreach to mariners.

Education and Outreach

In addition to education and outreach programs identified for individual issue areas, the Sanctuary proposes a general plan with a suite of measures to educate students, teachers, and the public about Sanctuary resources.

Conservation Science

Under this proposed action plan, sanctuary staff would maintain the Beach Watch Program to monitor marine life and human activities, would conduct research to guide permit conditions for white shark viewing, and every other year would host a research workshop for information exchange among researchers conducting research activities in and around GFNMS.

Resource Protection

New and Emerging Issues. This action plan would set up procedures for addressing new issues that arise in the future. The plan calls for establishing a framework to identify, track, and address emerging issues on a timely basis and to develop a coordinate communication system among the National Marine Sanctuaries and other resource management agencies to stay informed about new and emerging issues.

Regulatory Development. The Sanctuary proposes to develop a formalized review program to consistently and continuously review and evaluate effectiveness of Sanctuary regulations.

Permitting. A permit program is in place for the Sanctuary. The action plan calls for developing a formalized permit program that would include continuing to review permits on a case-by-case basis, establishing a national Web-based permit application program, and conducting outreach on the permit process.

Protected Resources Enforcement. To increase resource protection through compliance with Sanctuary and other applicable regulations, under this proposed plan interpretive enforcement would be used and legal enforcement priorities would be developed.

Emergency Response. In order to be prepared to respond to an incident that may affect Sanctuary resources, sanctuary staff will regularly review and revise their emergency response plan.

Damage Assessment and Restoration. The Sanctuary proposes to develop a formal plan to respond to incidents that damage its resources and qualities, by coordinating with the Office of Response and Restoration and other NOAA offices to assess damage and implement ecosystem restoration projects, to monitor restoration efforts, and to take legal action, if appropriate.

Boundary Modifications. The proposed action plan includes strategies to provide a framework to re-examine, evaluate, and, as appropriate, redefine the Sanctuary's boundary based on new information that may be developed in the future.

Collaborative Planning and Management. To provide an opportunity for public input in identifying and resolving resource management issues, this plan would continue to culture partnerships and coordinate collaborative processes.

Radioactive Waste Dump. This proposed action plan addresses the area referred to as the Farallon Islands Radioactive Waste Dump. Under the plan, the condition of the dump area would be evaluated through a coordinated agency effort, and an outreach campaign to inform the public of potential risks would be developed.

Administration

The administration action plan includes provisions to address operations, staffing, partnerships, interagency coordination, and planning and evaluation.

Monterey Bay Action Plans

The proposed MBNMS management plan includes twenty-two action plans that will guide the Sanctuary for the next five years. Most of the action plans are grouped into four main marine management themes: coastal development, ecosystem protection, water quality, and wildlife disturbance. Two additional sections, partnerships, and opportunities as well as operations and administration, compose action plans and strategies that address how the Sanctuary will function and operate.

Coastal Development

Coastal Armoring: The armoring of the coastline for protection of private and public structures continues to expand throughout the Sanctuary. This action plan proposes to address coastal armoring issues through development of a program to coordinate with the California Coastal Commission and other agencies to identify planning regions and guidelines and where possible, alternatives to armoring.

Desalination: Increased demand for water in various communities adjacent to the Sanctuary, together with advancements in technology, has made desalination an attractive source of fresh water. The Sanctuary proposes development of a regional program and policy regarding desalination facility locations. The action plan also includes development of facility siting guidelines and a modeling and monitoring program for desalination discharges.

Harbors and Dredge Disposal: The Sanctuary will continue to review the disposal of dredged material in approved locations at sea or along the shoreline. This action plan proposes several agency coordination improvements, and the development of review guidelines. It would also implement a sediment monitoring and reduction program, address fine grain material disposal at sea, and evaluate alternative disposal methods for the four harbors in the Sanctuary.

Submerged Cables: The installation, operation, and removal of submerged cable may disturb sensitive habitats and negatively impact areas of the seafloor. Implementation would provide administrative

guidelines for applications and define sensitive Sanctuary habitats that should be avoided. This would include a program to provide siting guidelines in a Geographic Information System (GIS) to identify environmental constraints.

Ecosystem Protection

Big Sur Coastal Ecosystem Plan: The Sanctuary is proposing development of a program to coordinate and integrate management plans from seven coastal agencies with jurisdiction in the Big Sur area. Full implementation would integrate management plans into one comprehensive regional plan and identify potential methods and locations of disposal associated with landslides and maintenance of Highway 1 in Big Sur.

Bottom Trawling Effects on Benthic Habitats: The effects of bottom trawling on benthic habitats in areas of the Sanctuary are not completely known. Implementation of this action plan would include development of a program to examine where trawling occurs and its impacts to sanctuary resources, and if necessary, to present potential protective measures to the National Marine Fisheries Service, the Pacific Fishery Management Council, and the California Department of Fish and Game.

Davidson Seamount: The Davidson Seamount is a pristine undersea volcano that is proposed for inclusion in the Sanctuary as part of the Jmpr. Inclusion of the Davidson Seamount would provide additional protection of the seamount, additional regulations, and a new management zone. Implementation of the action plan would initiate monitoring, research, and education activities focused on the Davidson Seamount increasing the public's knowledge of seamounts, and the variety of deep sea flora and fauna inhabiting the area.

Emerging Issues: This action plan provides a framework for staff to evaluate and adequately address emerging resource issues in a timely and responsible manner. The strategies outline a process to provide adequate staffing and operations.

Introduced Species: The introduction of non-native species can destroy natural biological communities and potentially harm commercial activities. The Sanctuary would develop a program to prevent introduction, collect baseline information, and develop a research and monitoring program. The action plan also includes development of a detection and response program for potential introductions or releases of non-native species.

Sanctuary Integrated Monitoring Network (SIMoN): Comprehensive, long-term monitoring is a fundamental element of resource management and conservation. The MBNMS, in collaboration with the regional science and management community, designed SIMoN to identify and track natural and human induced changes to the MBNMS. This action plan outlines how SIMoN integrates and interprets results of individual efforts in a large ecosystem-wide context and continuously updates and disseminates data summaries to facilitate communication between researchers, managers, educators, and the public. Timely and pertinent information is provided to all parties through tools such as a SIMoN web site, an annual symposium, and a series of technical and public reports.

Marine Protected Areas (MPAs): The action plan outlines how the Sanctuary will examine the utility of additional marine protected areas (MPAs) in maintaining the integrity of biological communities. It also outlines a program for identifying various types of ocean uses, integrated management, MPA

design criteria, socioeconomic impact analysis, MPA enforcement, outreach, and monitoring. This plan also provides a framework to identify how the Sanctuary will coordinate with the National Marine Fisheries Service, Pacific Fishery Management Council, and California Department of Fish and Game.

Operations and Administration

Operations and Administration: This action plan provides the administrative guidelines for programs such as operational planning, staffing and infrastructure needs, volunteer programs, administrative initiatives, interagency coordination, and reviewing requests to conduct prohibited activities that may injure Sanctuary resources. Other activities consist of streamlining the permit review process, including improved outreach and interagency coordination; improved permit compliance; and monitoring and enforcement of permit conditions. Part of this action plan also addresses operation of the Sanctuary Advisory Council and the standing working groups (Conservation Working Group, Sanctuary Education Panel, Business and Tourism Advisory Panel, and Research Activities Panel).

Performance Evaluation: MBNMS will effectively and efficiently incorporate performance measurement into the regular cycle of management. This action plan details how strategy and related activities are to be measured for effectiveness during implementation by staff. This action plan also details the process by which the Sanctuary will measure its management performance over time and report its progress in meeting goals and objectives.

Partnerships and Opportunities

Fishing-Related Education and Research: The Sanctuary will work with the fishing community to develop education programs; enhance stakeholder communication; promote understanding of sustainable fisheries; increase involvement in education and research; promote fishery, socioeconomic, cultural, and historical data collection and distribution; and help educate the public on the role of healthy ecosystems and fish stocks.

Interpretive Facilities: This action plan describes the need for and location of interpretive facilities including visitor centers, kiosks, virtual experiences, and signage at various locations along the coastline. Implementation would include development of a Sanctuary Exploration Center in Santa Cruz and provide for a key education and outreach tool component for all of the priority action plans.

Ocean Literacy and Constituent Building: This action plan addresses the need to cultivate an informed, involved constituency who cares about restoring, protecting and conserving our precious ocean resources. The Sanctuary will implement an integrated outreach program to pull together specific outreach and education activities outlined in other sections of this management plan and coordinate their execution, further developing the Sanctuary's relationships with its constituencies.

Water Quality

Beach Closures and Microbial Contamination: In the last ten years, beach closures and warnings due to microbial contamination have become more common. This action plan provides a program to identify sources of contamination; research pathogen sources; increase monitoring, education, and enforcement; expand notification and emergency response; and develop a database and a source control program to reduce beach closures and postings due to microbial contamination.

Cruise Ship Discharges: Cruise ships can carry upwards of 3,000 people, and the discharge of waste may harm the water quality and resources. The Sanctuary proposes to prohibit discharges from cruise ships and conduct outreach and coordination with the cruise ship industry, providing it with information about the MBNMS. The MBNMS would also monitor and enforce potential cruise ship discharges.

Water Quality Protection Program Implementation: Pollutants running off the land often lower the quality of the water as both a habitat and resource for recreational and commercial use. The Sanctuary has four existing action plans that are in place to prevent pollution and facilitate water quality improvements as part of the Water Quality Protection Program: Urban Runoff, Regional Monitoring, Marinas and Boating, and Agriculture and Rural Lands. This action plan integrates the four existing plans into the Sanctuary management plan and provides for full implementation to address pollutants and their sources.

Wildlife Disturbance

Marine Mammal, Seabird, and Turtle Disturbance: Various activities occurring on the water, in the air, or on land have the potential to harm the sensitive wildlife inhabiting the Sanctuary. Through increased monitoring, education, outreach, and enforcement, the Sanctuary will address disturbance to marine mammals, birds, and turtles from vessels, aircraft, shore-based activities, marine debris, commercial harvest, and acoustic disturbance.

Motorized Personal Watercraft (MPWC): MPWC use has increased in the Sanctuary with the development of larger and more powerful vehicles for use in the marine environment. The MBNMS is proposing an updated definition of MPWC in order to address the original intent of the existing MBNMS regulation, which was to restrict them to four zones outside of the surf area. This action plan includes education and enforcement procedures and exploration of the need for certain exceptions.

Tidepool Protection: The MBNMS will evaluate and prioritize high-visitation tidepool areas and address possible impacts associated with potentially excessive use. The action plan includes education and enforcement programs, and implementation would include the development of guidelines for tidepool access and enjoyment.

APPENDIX C
BIOLOGY TABLES

Table C-1
All Species Lists for CBNMS

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal Use of ROI	Breeding Season	Sanctuary
Vertebrates						
Birds						
Red-throated Loon	<i>Gavia stellata</i>	-	S?	Oct-Apr	May-Aug	B
Pacific Loon	<i>Gavia pacifica</i>	-	I	Oct-Apr	May-Aug	B
Common Loon	<i>Gavia immer</i>	-	I	Oct-Apr	Apr-Aug	B
Red-necked Grebe	<i>Podiceps grisegena</i>	-	D	Nov-Mar	May-Aug	B
Shy Albatross	<i>Thalassarche cauta</i>	-	?	Aug-Oct	Aug-Mar	C
Light-mantled Sooty Albatross	<i>Phoebastria palpebrata</i>	-	?	Jul	Aug-Mar	C
	<i>Phoebastria</i>					
Laysan Albatross	<i>immutabilis</i>	-	D	Nov-Jul*	Nov-Jul	B
Black-footed Albatross	<i>Phoebastria nigripes</i>	-	D	Nov-Jul*	Nov-Jun	B
Short-tailed Albatross	<i>Phoebastria albatrus</i>	E	I	Nov-Jul*	Nov-Jun	B
Northern Fulmar	<i>Fulmarus glacialis</i>	-	S	Nov-Mar	May-Sep	B
Great-winged Petrel	<i>Pterodroma macroptera</i>	-	?	Jul-Aug	Sep-Mar	C
Murphy's Petrel	<i>Pterodroma ultima</i>	-	?	Apr-Jul	Jan-Dec	B
	<i>Pterodroma</i>					
Mottled Petrel	<i>inexpectata</i>	-	?	Oct-Dec	Sep-Mar	B
Dark-rumped Petrel	<i>Pterodroma phaeopygia</i>	E	I	May-Sep	Mar-Sep	B
Cook's Petrel	<i>Pterodroma cookii</i>	-				C
Streaked Shearwater	<i>Calonectris leucomelas</i>	-				C
Pink-footed Shearwater	<i>Puffinus creatopus</i>	-	S	Mar-Nov	Sep-Mar	B
Flesh-footed Shearwater	<i>Puffinus carneipes</i>	-	?	Sep-Dec	Sep-Mar	B
Buller's Shearwater	<i>Puffinus bulleri</i>	-	S	Jul-Nov	Sep-Mar	B
Sooty Shearwater	<i>Puffinus griseus</i>	-	D	Feb-Nov	Sep-Mar	B
Short-tailed Shearwater	<i>Puffinus tenuirostris</i>	-	D?	Sep-Dec	Oct-May	B
Manx Shearwater	<i>Puffinus puffinus</i>	-	?	Jan-Dec	Mar-Oct	B
Black-vented Shearwater	<i>Puffinus opisthomelas</i>	-	D?	Aug-Jan	Feb-Sep	B
Wilson's Storm-Petrel	<i>Oceanites oceanicus</i>	-	?	Jun-Nov	Oct-Feb	B
Fork-tailed Storm-Petrel	<i>Oceanodroma furcata</i>	-	S	Jan-Dec*	Apr-Sep	B
	<i>Oceanodroma</i>					
Leach's Storm-Petrel	<i>leucorhoa</i>	-	D	Feb-Dec*	Mar-Sep	B
	<i>Oceanodroma</i>					
Ashy Storm-Petrel	<i>homochroa</i>	-	D	Feb-Nov	Apr-Oct	B
Black Storm-Petrel	<i>Oceanodroma melania</i>	-	?	Aug-Oct	Feb-Aug	B
	<i>Oceanodroma</i>					
Least Storm-Petrel	<i>microsoma</i>	-	?	Aug-Oct	Feb-Aug	C
Brown Pelican	<i>Pelecanus occidentalis</i>	E	D	Jul-Dec	Feb-Jun	B
	<i>Phalacrocorax</i>					
Brandt's Cormorant	<i>penicillatus</i>	-	S	Jan-Dec*	Mar-Sep	B
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	-	I	Jan-Dec*	Feb-Jul	B
	<i>Phalacrocorax</i>					
Pelagic Cormorant	<i>pelagicus</i>	-	S	Jan-Dec*	Feb-Aug	B
Magnificent Frigatebird	<i>Fregata magnificens</i>	-	?	Jun-Oct	Feb-Sep	B
Brant	<i>Branta bernicla</i>	-	S?	Nov-Mar	May-Sep	B
Surf Scoter	<i>Melanitta perspicillata</i>	-	D	Oct-Apr	May-Sep	B
Red-necked Phalarope	<i>Phalaropus lobatus</i>	-	S	May-Oct	May-Aug	B
Red Phalarope	<i>Phalaropus fulicaria</i>	-	S	Aug-Apr	May-Aug	B
	<i>Catharacta</i>					
South Polar Skua	<i>maccormicki</i>	-	I?	May-Nov	Sep-Apr	B

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal		
				Use of ROI	Breeding Season	Sanctuary
Pomarine Jaeger	<i>Stercorarius pomarinus</i>	-	I	Feb-Nov	Apr-Sep	B
Parasitic Jaeger	<i>Stercorarius parasiticus</i>	-	S?	Mar-Oct	May-Aug	B
	<i>Stercorarius</i>					
Long-tailed Jaeger	<i>longicaudus</i>	-	I?	May-Oct	May-Sep	B
Bonaparte's Gull	<i>Larus philadelphia</i>	-	S	Oct-Apr	Apr-Aug	B
Heermann's Gull	<i>Larus heermanni</i>	-	S	May-Dec	Feb-Jun	B
Mew Gull	<i>Larus canus</i>	-	D	Oct-Mar	May-Aug	B
California Gull	<i>Larus californicus</i>	-	S	Jan-Dec*	Apr-Aug	B
Herring Gull	<i>Larus argentatus</i>	-	I	Oct-Mar	Apr-Aug	B
Thayer's Gull	<i>Larus thayeri</i>	-	I?	Oct-Apr	May-Aug	B
Western Gull	<i>Larus occidentalis</i>	-	D	Jan-Dec*	Apr-Aug	B
Glaucous-winged Gull	<i>Larus glaucescens</i>	-	I	Oct-Apr	May-Aug	B
Glaucous Gull	<i>Larus hyperboreus</i>	-	S?	Nov-Feb	May-Aug	B
Sabine's Gull	<i>Xema sabini</i>	-	I	May-Nov	May-Aug	B
Black-legged Kittiwake	<i>Rissa tridactyla</i>	-	S	Oct-Mar	May-Aug	B
Caspian Tern	<i>Sterna caspia</i>	-	I?	Mar-Oct*	Apr-Sep	B
Elegant Tern	<i>Sterna elegans</i>	-	I?	Jul-Nov*	Feb-Jun	B
Common Tern	<i>Sterna hirundo</i>	-	D?	May-Sep	May-Sep	B
Arctic Tern	<i>Sterna paradisaea</i>	-	S?	May-Sep	May-Aug	B
Forster's Tern	<i>Sterna forsteri</i>	-	S?	Jan-Dec*	Apr-Sep	B
Sooty Tern	<i>Sterna fuscata</i>	-				C
Common Murre	<i>Uria aalge</i>	-	I	Jan-Dec*	Mar-Jul	B
Pigeon Guillemot	<i>Cepphus columba</i>	-	S	Mar-Sep*	May-Sep	B
	<i>Brachyramphus</i>					
Marbled Murrelet	<i>marmoratus</i>	T	S	Jan-Dec*	Apr-Sep	B
	<i>Synthliboramphus</i>					
Xantus's Murrelet	<i>hypoleucus</i>	-	D?	Jun-Nov	Feb-Jul	B
	<i>Synthliboramphus</i>					
Craveri's Murrelet	<i>craveri</i>	-	D?	Jul-Oct	Feb-Jul	B
	<i>Synthliboramphus</i>					
Ancient Murrelet	<i>antiquus</i>	-	S	Oct-Apr	Mar-Aug	B
	<i>Ptychoramphus</i>					
Cassin's Auklet	<i>aluticus</i>	-	D	Jan-Dec*	Mar-Sep	B
Parakeet Auklet	<i>Aethia psittacula</i>	-	D	Nov-Feb	May-Aug	B
Rhinoceros Auklet	<i>Cerorhinca monocerata</i>	-	I	Jan-Dec*	Mar-Sep	B
Horned Puffin	<i>Fratercula corniculata</i>	-	I?	Nov-May	May-Aug	B
Tufted Puffin	<i>Fratercula cirrhata</i>	-	S	Mar-Sep	Apr-Aug	B
Mammals						
Common Name	Scientific Name	FS	PT	NMSSEAS	BRSEAS	GC
Blue Whale	<i>Balaenoptera musculus</i>	E	I	Apr-Nov	Nov-Feb	B
Fin Whale	<i>Balaenoptera physalus</i>	E	I	Apr-Oct	Nov-Feb	B
Sei Whale	<i>Balaenoptera borealis</i>	E	S?	Jun-Oct	Nov-Feb	B
	<i>Balaenoptera</i>					
Minke Whale	<i>acutorostrata</i>	-	S?	Aug-Nov	Nov-Feb	B
	<i>Megaptera</i>					
Humpback Whale	<i>novaeangliae</i>	E	I	Jul-Nov	Nov-Mar	B
Gray Whale	<i>Eschrichtius robustus</i>	D	S	Nov-May	Dec-Mar	B
Northern Right Whale	<i>Eubalaena glacialis</i>	E	I	Aug-Oct	Nov-Feb	B
Harbor Porpoise	<i>Phocoena phocoena</i>	-	D?	Jan-Dec*	May-Jul	B
Dall's Porpoise	<i>Phocoenoides dalli</i>	-	S?	Mar-Nov*	Jul-Sep	B
Pacific White-sided Dolphin	<i>Lagenorhynchus obliquidens</i>	-	S?	Feb-Nov*	Jul-Oct	B

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal Use of ROI	Breeding Season	Sanctuary
Northern Right Whale Dolphin	<i>Lissodelphis borealis</i>	-	S?	May-Nov*	Feb-Jul	B
Long-beaked Common Dolphin	<i>Delphinus capensis</i>	-	D?	Aug-Nov	Apr-Oct	B
Striped Dolphin	<i>Stenella coeruleoalba</i>	-	S?	Aug-Oct	Jan-Dec	B
Risso's Dolphin	<i>Grampus griseus</i>	-	S?	Mar-Nov*	no data	B
Killer Whale	<i>Orcinus orca</i>	-	S?	Feb-Nov*	Jan-Dec	B
	<i>Globicephala</i>					
Short-finned Pilot Whale	<i>macrorhynchus</i>	-	S?	Mar-Jul	Jan-Dec	B
Sperm Whale	<i>Physeter macrocephalus</i>	E	I?	Aug-Oct	Nov-Mar	B
Pigmy Sperm Whale	<i>Kogia breviceps</i>	-	S?	Aug-Oct	Nov-Apr	B
Dwarf Sperm Whale	<i>Kogia simus</i>	-	S?	Feb	Nov-Mar	B
Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>	-	S?	Aug-Oct	no data	B
Baird's Beaked Whale	<i>Berardius bairdii</i>	-	S?	May-Nov*	Dec-Jun	B
Hubb's Beaked Whale	<i>Mesoplodon calrhubbii</i>	-	S?	Mar	Apr-Aug	B
Blainsville's Beaked Whale	<i>Mesoplodon densirostris</i>	-	S?	Oct	no data	B
Steller Sea Lion	<i>Eumetopius jubatus</i>	T	D	Jan-Dec*	Apr-Jul	B
California Sea Lion	<i>Zalophus californianus</i>	-	I	Jan-Dec*	Apr-Aug	B
Northern Fur Seal	<i>Callorhinus ursinus</i>	-	I	May-Oct*	Apr-Jul	B
	<i>Mirounga</i>					
Northern Elephant Seal	<i>angustirostris</i>	-	I	Jan-Dec*	Dec-Mar	B
Harbor Seal	<i>Phoca vitulina</i>	-	I	Jan-Dec*	Mar-Jun	B
Fish						
black hagfish	<i>Eptatretus deani</i>	-	S?	Jan-Dec	Feb-Oct	C
Pacific hagfish	<i>Eptatretus stoutii</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific lamprey	<i>Lampreta tridentata</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Notorynchus</i>					
sevengill shark	<i>cepedianus</i>	-	S?	Jan-Dec	Feb-Oct	B
sixgill shark	<i>Hexanchus griseus</i>	-	S?	Jan-Dec	Feb-Oct	B
spiny dogfish	<i>Squalus acanthias</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific sleeper shark	<i>Somniosus pacificus</i>	-	S?	Jan-Dec	Feb-Oct	B
prickly shark	<i>Echinorhinus cookei</i>	-	S?	Jan-Dec	Feb-Oct	?
brown catshark	<i>Apristurus brunneus</i>	-	S?	Jan-Dec	Feb-Oct	B
longnose catshark	<i>Apristurus kampae</i>	-	S?	Jan-Dec	Feb-Oct	B
filetail catshark	<i>Parmaturus xanthurus</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Carcharodon</i>					
white shark	<i>carcharias</i>	-	I?	Jan-Dec	Mar-Jul	B
shortfin mako shark	<i>Isurus oxyrinchus</i>	-	S?	Aug-Nov	Feb-Oct	B
salmon shark	<i>Lamna ditropis</i>	-	S?	Jan-Dec	Feb-Oct	B
brown smoothhound shark	<i>Mustelus henlei</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific electric ray	<i>Torpedo californica</i>	-	S?	Jan-Dec	Feb-Oct	B
sandpaper skate	<i>Bathyraja kincaidii</i>	-	S?	Jan-Dec	Feb-Oct	B
black skate	<i>Bathyraja trachura</i>	-	S?	Jan-Dec	Feb-Oct	B
big skate	<i>Raja binoculata</i>	-	S?	Jan-Dec	Feb-Oct	B
California skate	<i>Raja inornata</i>	-	S?	Jan-Dec	Feb-Oct	B
longnose skate	<i>Raja rhina</i>	-	S?	Jan-Dec	Feb-Oct	B
starry skate	<i>Raja stellulata</i>	-	S?	Jan-Dec	Feb-Oct	B
white skate	<i>Bathyraja spinosissima</i>	-	S?	Jan-Dec	Feb-Oct	B
deepsea skate	<i>Bathyraja abyssicola</i>	-	S?	Jan-Dec	Feb-Oct	B
Bering skate	<i>Bathyraja interrupta</i>	-	S?	Jan-Dec	Feb-Oct	B
manta	<i>Manta birostris</i>	-	S?	Jan-Dec	Feb-Oct	?

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal		
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Pacific ratfish	<i>Hydrolagus collieri</i>	-	S?	Jan-Dec	Feb-Oct	B
green sturgeon	<i>Acipenser medirostris</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Acipenser</i>					
white sturgeon	<i>transmontanus</i>	E	S?	Jan-Dec	Feb-Oct	B
Pacific herring	<i>Clupea pallasii</i>	-	S?	Nov-Mar	Feb-Oct	B
Pacific sardine	<i>Sardinops sagax</i>	-	I	Jan-Dec	Feb-Oct	B
American shad	<i>Alosa sapidissima</i>	-	S?	Jan-Dec	Feb-Oct	B
northern anchovy	<i>Engraulis mordax</i>	-	S	Jun-Nov	Feb-Oct	B
		E & T				
rainbow trout	<i>Oncorhynchus mykiss</i>	regional	D	Jan-Dec	Feb-Oct	B
chum salmon	<i>Oncorhynchus keta</i>	T	D	Jan-Dec	Feb-Oct	?
sockeye salmon	<i>Oncorhynchus nerka</i>	E	D	Jan-Dec	Feb-Oct	?
	<i>Oncorhynchus</i>					
pink salmon	<i>gorbuscha</i>	-	D	Jan-Dec	Feb-Oct	?
	<i>Oncorhynchus</i>	E & T				
chinook salmon	<i>tshawytscha</i>	regional	D	Jan-Dec	Feb-Oct	B
silver (coho) salmon	<i>Oncorhynchus kisutch</i>	T	D	Jan-Dec	Feb-Oct	B
longnose lancetfish	<i>Alepisaurus ferox</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Alepocephalus</i>					
California slickhead	<i>tenebrosus</i>	-	S?	Jan-Dec	Feb-Oct	B
slender snipe eel	<i>Nemichthys scolopaceus</i>	-	S?	Jan-Dec	Feb-Oct	B
threadfin slickhead	<i>Talismania bifurcata</i>	-	S?	Jan-Dec	Feb-Oct	B
bobtail snipe eel	<i>Cyema atrum</i>	-	S?	Jan-Dec	Feb-Oct	?
surf smelt	<i>Hypomesus pretiosus</i>	-	S?	Jan-Dec	Feb-Oct	B
eulachon	<i>Thaleichthys pacificus</i>	-	S?	Jan-Dec	Feb-Oct	C
whitebait smelt	<i>Allosmerus elongatus</i>	-	S?	Jan-Dec	Feb-Oct	B
night smelt	<i>Spirinchus starksi</i>	-	S?	Jan-Dec	Feb-Oct	B
benttooth bristlemouth	<i>Cyclothone acclinidens</i>	-	S?	Jan-Dec	Feb-Oct	B
bigeye lightfish	<i>Daphnos ocellatus</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific argentine	<i>Argentina sialis</i>	-	S?	Jan-Dec	Feb-Oct	B
snubnose blacksmelt	<i>Bathylagus wesethi</i>	-	S?	Jan-Dec	Feb-Oct	?
popeye blacksmelt	<i>Bathylagus ochotensis</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific blacksmelt	<i>Bathylagus pacificus</i>	-	S?	Jan-Dec	Feb-Oct	B
dollar hatchetfish	<i>Sternoptyx sp.</i>	-	S?	Jan-Dec	Feb-Oct	?
slender hatchetfish	<i>Argyropelecus affinis</i>	-	S?	Jan-Dec	Feb-Oct	C
	<i>Argyropelecus</i>					
spurred hatchetfish	<i>hemigymnus</i>	-	S?	Jan-Dec	Feb-Oct	?
silvery hatchetfish	<i>Argyropelecus sladeni</i>	-	S?	Jan-Dec	Feb-Oct	B
silver hatchetfish	<i>Argyropelecus lychnus</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Macropinna</i>					
Pacific barreleye	<i>microstoma</i>	-	S?	Jan-Dec	Feb-Oct	?
highfin dragonfish	<i>Bathophilus flemingi</i>	-	S?	Jan-Dec	Feb-Oct	?
longfin dragonfish	<i>Tactostoma macropus</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific viperfish	<i>Chauliodus macouni</i>	-	S?	Jan-Dec	Feb-Oct	B
daggertooth	<i>Anotopterus pharao</i>	-	S?	Jan-Dec	Feb-Oct	?
northern pearleye	<i>Benthalbella dentata</i>	-	S?	Jan-Dec	Feb-Oct	?
ribbon barracudina	<i>Notolepsis risso</i>	-	S?	Jan-Dec	Feb-Oct	C
	<i>Aristostomias</i>					
shiny loosejaw	<i>scintillans</i>	-	S?	Jan-Dec	Feb-Oct	?
scaly paperbone	<i>Scopelosaurus barryi</i>	-	S?	Jan-Dec	Feb-Oct	?
California headlightfish	<i>Diaphus theta</i>	-	S?	Jan-Dec	Feb-Oct	C
	<i>Protomyctophum</i>					
California flashlightfish	<i>crockeri</i>	-	S?	Jan-Dec	Feb-Oct	B
northern lampfish	<i>Stenobranchius</i>	-	S?	Jan-Dec	Feb-Oct	B

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal Use of ROI	Breeding Season	Sanctuary
blue lanternfish	<i>leucopsaurus</i> <i>Tarletonbaenia crenularis</i>	-	S?	Jan-Dec	Feb-Oct	B
California lanternfish	<i>Symbolophorus californiensis</i>	-	S?	Jan-Dec	Feb-Oct	C
broadfin lampfish	<i>Lampanyctus ritteri</i>	-	S?	Jan-Dec	Feb-Oct	B
brokenline lampfish	<i>Lampanyctus jordani</i>	-	S?	Jan-Dec	Feb-Oct	C
pinpoint lampfish	<i>Lampanyctus regalis</i>	-	S?	Jan-Dec	Feb-Oct	C
plainfin midshipman	<i>Porichthys notatus</i>	-	S?	Jan-Dec	Feb-Oct	B
spotted cusk eel	<i>Chilara taylori</i>	-	S?	Jan-Dec	Feb-Oct	B
basketweave cusk eel	<i>Ophidion scrippsae</i>	-	S?	Jan-Dec	Feb-Oct	B
California grenadier	<i>Nezumia stegidolepis</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific grenadier	<i>Coryphaenoides acrolepis</i>	-	S?	Jan-Dec	Feb-Oct	B
hundred fathom codling	<i>Physiculus rastrelliger</i>	-	S?	Jan-Dec	Feb-Oct	?
finescale codling	<i>Antimora microlepis</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific hake	<i>Merluccius productus</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific cod	<i>Gadus microcephalus</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific tomcod	<i>Microgadus proximus</i>	-	S?	Jan-Dec	Feb-Oct	B
walleye pollock	<i>Theragra chalcogramma</i>	-	D?	Jan-Dec	Feb-Oct	B
giant grenadier	<i>Albatrossia pectoralis</i>	-	S?	Jan-Dec	Feb-Oct	B
shoulderspot grenadier	<i>Coelorinchus scaphopsis</i>	-	S?	Jan-Dec	Feb-Oct	B
bearded eelpout	<i>Lycinema barbatus</i>	-	S?	Jan-Dec	Feb-Oct	?
black eelpout	<i>Lycodes diapterus</i>	-	S?	Jan-Dec	Feb-Oct	B
flatcheck eelpout	<i>Embryx crotalina</i>	-	S?	Jan-Dec	Feb-Oct	?
bigfin eelpout	<i>Aprodon cortezianus</i>	-	S?	Jan-Dec	Feb-Oct	B
blackbelly eelpout	<i>Lycodopsis pacifica</i>	-	S?	Jan-Dec	Feb-Oct	B
twoline eelpout	<i>Bothrocara brunneum</i>	-	S?	Jan-Dec	Feb-Oct	B
soft eelpout	<i>Bothrocara molle</i>	-	S?	Jan-Dec	Feb-Oct	?
blackmouth eelpout	<i>Lycodapus fierasfer</i>	-	S?	Jan-Dec	Feb-Oct	?
snakehead eelpout	<i>Embryx crotalinus</i>	-	S?	Jan-Dec	Feb-Oct	C
longfin eelpout	<i>Bothrocara remigerum</i>	-	S?	Jan-Dec	Feb-Oct	C
Pacific saury	<i>Cololabis saira</i>	-	S?	Jan-Dec	Feb-Oct	B
flapjack devilfish	<i>Opisthotentis californiana</i>	-	S?	Jan-Dec	Feb-Oct	B
fangtooth	<i>Anoplogaster cornuta</i>	-	S?	Jan-Dec	Feb-Oct	B
veilfin	<i>Caristius macropus</i>	-	S?	Jan-Dec	Feb-Oct	?
crested bigscale	<i>Poromitra crassiceps</i>	-	S?	Jan-Dec	Feb-Oct	?
twospine bigscale	<i>Scopelogadus mizolepis</i>	-	S?	Jan-Dec	Feb-Oct	B
king-of-the-salmon	<i>Trachipterus altivelis</i>	-	S?	Jan-Dec	Feb-Oct	?
bay pipefish	<i>Syngnathus leptorhynchus</i>	-	S?	Jan-Dec	Feb-Oct	B
shortspine thornyhead	<i>Sebastolobus alascanus</i>	-	S?	Jan-Dec	Feb-Oct	B
longspine thornyhead	<i>Sebastolobus altivelis</i>	-	S?	Jan-Dec	Feb-Oct	B
copper rockfish	<i>Sebastes caurinus</i>	-	D?	Jan-Dec	Feb-Oct	B
whitebelly rockfish	<i>Sebastes vexillaris</i>	-	D?	Jan-Dec	Feb-Oct	?
calico rockfish	<i>Sebastes dallii</i>	-	D?	Jan-Dec	Feb-Oct	B
silvergray rockfish	<i>Sebastes brevispinis</i>	-	S?	Jan-Dec	Feb-Oct	B
china rockfish	<i>Sebastes nebulosus</i>	-	D?	Jan-Dec	Feb-Oct	B
gopher rockfish	<i>Sebastes carnatus</i>	-	D?	Jan-Dec	Feb-Oct	B
brown rockfish	<i>Sebastes auriculatus</i>	-	D?	Jan-Dec	Feb-Oct	B
quillback rockfish	<i>Sebastes maliger</i>	-	D?	Jan-Dec	Feb-Oct	B

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal		
				Use of ROI	Breeding Season	Sanctuary
black rockfish	<i>Sebastes melanops</i>	-	D?	Jan-Dec	Feb-Oct	B
squarespot rockfish	<i>Sebastes hopkinsi</i>	-	S?	Jan-Dec	Feb-Oct	B
speckled rockfish	<i>Sebastes ovalis</i>	-	D?	Jan-Dec	Feb-Oct	B
widow rockfish	<i>Sebastes entomelas</i>	-	D?	Jan-Dec	Feb-Oct	B
yellowtail rockfish	<i>Sebastes flavidus</i>	-	D?	Jan-Dec	Feb-Oct	C
olive rockfish	<i>Sebastes serranoides</i>	-	D?	Jan-Dec	Feb-Oct	B
starry rockfish	<i>Sebastes constellatus</i>	-	D?	Jan-Dec	Feb-Oct	B
greenspotted rockfish	<i>Sebastes chlorostictus</i>	-	D?	Jan-Dec	Feb-Oct	C
	<i>Sebastes</i>					
rosethorn rockfish	<i>belvomaculatus</i>	-	S?	Jan-Dec	Feb-Oct	B
swordspine rockfish	<i>Sebastes ensifer</i>	-	S?	Jan-Dec	Feb-Oct	B
pink rockfish	<i>Sebastes eos</i>	-	D?	Jan-Dec	Feb-Oct	B
greenblotched rockfish	<i>Sebastes rosenblatti</i>	-	D?	Jan-Dec	Feb-Oct	B
shortbelly rockfish	<i>Sebastes jordani</i>	-	D?	Jan-Dec	Feb-Oct	B
tiger rockfish	<i>Sebastes nigrocinctus</i>	-	S?	Jan-Dec	Feb-Oct	C
flag rockfish	<i>Sebastes rubrivinctus</i>	-	D?	Jan-Dec	Feb-Oct	B
redbanded rockfish	<i>Sebastes babcocki</i>	-	D?	Jan-Dec	Feb-Oct	B
greenstriped rockfish	<i>Sebastes elongatus</i>	-	D?	Jan-Dec	Feb-Oct	B
bocaccio	<i>Sebastes paucispinis</i>	-	D	Jan-Dec	Feb-Oct	B
chilipepper	<i>Sebastes goodei</i>	-	D	Jan-Dec	Feb-Oct	B
cowcod	<i>Sebastes laevis</i>	-	D	Jan-Dec	Feb-Oct	B
yelloweye rockfish	<i>Sebastes ruberrimus</i>	-	D	Jan-Dec	Feb-Oct	B
splitnose rockfish	<i>Sebastes diploproa</i>	-	D?	Jan-Dec	Feb-Oct	B
aurora rockfish	<i>Sebastes aurora</i>	-	D?	Jan-Dec	Feb-Oct	B
blackgill rockfish	<i>Sebastes melanostomus</i>	-	D?	Jan-Dec	Feb-Oct	B
rougeye rockfish	<i>Sebastes aleutianus</i>	-	S?	Jan-Dec	Feb-Oct	C
redstripe rockfish	<i>Sebastes proriger</i>	-	S?	Jan-Dec	Feb-Oct	B
bank rockfish	<i>Sebastes rufus</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific ocean perch	<i>Sebastes alutus</i>	-	D?	Jan-Dec	Feb-Oct	B
canary rockfish	<i>Sebastes pinniger</i>	-	D?	Jan-Dec	Feb-Oct	B
vermilion rockfish	<i>Sebastes miniatus</i>	-	D?	Jan-Dec	Feb-Oct	B
darkblotched rockfish	<i>Sebastes crameri</i>	-	S?	Jan-Dec	Feb-Oct	B
stripetail rockfish	<i>Sebastes saxicola</i>	-	D?	Jan-Dec	Feb-Oct	B
halfbanded rockfish	<i>Sebastes semicinctus</i>	-	D?	Jan-Dec	Feb-Oct	B
sharpchin rockfish	<i>Sebastes zacentrus</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Prionotus</i>					
lumptail searobin	<i>stephanophrys</i>	-	S?	Jan-Dec	Feb-Oct	?
sablefish	<i>Anoplopoma fimbria</i>	-	S?	Jan-Dec	Feb-Oct	B
skilfish	<i>Erilepis zonifer</i>	-	S?	Jan-Dec	Feb-Oct	?
shortspine combfish	<i>Zaniolepis frenata</i>	-	S?	Jan-Dec	Feb-Oct	B
longspine combfish	<i>Zaniolepis latipinnis</i>	-	S?	Jan-Dec	Feb-Oct	B
lingcod	<i>Ophiodon elongaus</i>	-	D	Jan-Dec	Feb-Oct	B
	<i>Pleurogrammus</i>					
atka mackerel	<i>monopterygius</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Rhamphocottus</i>					
grunt sculpin	<i>richardsonii</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Scorpaenichthys</i>					
cabezon sculpin	<i>marmoratus</i>	-	D?	Jan-Dec	Feb-Oct	B
thornback sculpin	<i>Paricelinus hopliticus</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Nautichthys</i>					
sailfin sculpin	<i>oculofasciatus</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Hemilepidotus</i>					
red irishlord	<i>hemilepidotus</i>	-	S?	Jan-Dec	Feb-Oct	B
staghorn sculpin	<i>Leptocottus armatus</i>	-	S?	Jan-Dec	Feb-Oct	B

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal		
				Use of ROI	Breeding Season	Sanctuary
yellowchin sculpin	<i>Icelinus quadriseriatus</i>	-	S?	Jan-Dec	Feb-Oct	B
frogmouth sculpin	<i>Icelinus oculatus</i>	-	S?	Jan-Dec	Feb-Oct	B
dusky sculpin	<i>Icelinus burchami</i>	-	S?	Jan-Dec	Feb-Oct	B
threadfin sculpin	<i>Icelinus filamentosus</i>	-	S?	Jan-Dec	Feb-Oct	B
spotfin sculpin	<i>Icelinus tenuis</i>	-	S?	Jan-Dec	Feb-Oct	B
darther sculpin	<i>Radulinus boleoides</i>	-	S?	Jan-Dec	Feb-Oct	B
slim sculpin	<i>Radulinus asprellus</i>	-	S?	Jan-Dec	Feb-Oct	C
flabby sculpin	<i>Zesticelus profundurum</i>	-	S?	Jan-Dec	Feb-Oct	?
tubenose poacher	<i>Pallesina barbarta</i>	-	S?	Jan-Dec	Feb-Oct	?
warty poacher	<i>Ocella verrucosa</i>	-	S?	Jan-Dec	Feb-Oct	B
pricklebreast poacher	<i>Stellerina xyosterna</i> <i>Podotbecus</i>	-	S?	Jan-Dec	Feb-Oct	B
sturgeon poacher	<i>acipenserinus</i>	-	S?	Jan-Dec	Feb-Oct	C
beardless spearnose poacher	<i>Ganoides vulsus</i>	-	S?	Jan-Dec	Feb-Oct	?
northern spearnose poacher	<i>Agonopsis emmelane</i>	-	S?	Jan-Dec	Feb-Oct	B
smooth alligatorfish	<i>Anoplogonus inermis</i> <i>Bathyagonus</i>	-	S?	Jan-Dec	Feb-Oct	B
blackfin poacher	<i>nigripinnis</i> <i>Asterotheca</i>	-	S?	Jan-Dec	Feb-Oct	B
bigeye starnose poacher	<i>pentacantha</i> <i>Xeneretmus</i>	-	S?	Jan-Dec	Feb-Oct	B
bluespotted poacher	<i>triacanthus</i>	-	S?	Jan-Dec	Feb-Oct	B
blackedge poacher	<i>Xeneretmus latifrons</i>	-	S?	Jan-Dec	Feb-Oct	B
smootheye poacher	<i>Xeneretmus leiops</i>	-	S?	Jan-Dec	Feb-Oct	C
blacktail snailfish	<i>Careproctus melanurus</i>	-	S?	Jan-Dec	Feb-Oct	B
showy snailfish	<i>Lipris pulchellus</i>	-	S?	Jan-Dec	Feb-Oct	B
slipskin snailfish	<i>Liparis fuscensis</i>	-	S?	Jan-Dec	Feb-Oct	B
ringtail snailfish	<i>Liparis rutteri</i>	-	S?	Jan-Dec	Feb-Oct	B
humpback snailfish	<i>Elassodiscus caudatus</i>	-	S?	Jan-Dec	Feb-Oct	C
blackfin snailfish	<i>Careproctus cypselurus</i>	-	S?	Jan-Dec	Feb-Oct	B
red snailfish	<i>Paraliparis dactylosus</i>	-	S?	Jan-Dec	Feb-Oct	C
ocean whitefish	<i>Caulotilus princeps</i>	-	D?	Jan-Dec	Feb-Oct	B
whalesucker	<i>Remiligia australis</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific pomfret	<i>Brama japonica</i>	-	S?	Jan-Dec	Feb-Oct	B
white seabass	<i>Atractoscion nobilis</i>	-	D?	Jan-Dec	Feb-Oct	B
white croaker	<i>Genyonemus lineatus</i>	-	S?	Jan-Dec	Feb-Oct	B
pelagic armorhead	<i>Pentaceros richardsoni</i>	-	S?	Jan-Dec	Feb-Oct	B
spotfin surfperch	<i>Hyperprosopon anale</i> <i>Hyperprosopon</i>	-	S?	Jan-Dec	Feb-Oct	B
silver surfperch	<i>ellipticum</i>	-	S?	Jan-Dec	Feb-Oct	B
shiner surfperch	<i>Cymatogaster aggregata</i>	-	S?	Jan-Dec	Feb-Oct	B
pink surfperch	<i>Zalembius rosaceus</i>	-	S?	Jan-Dec	Feb-Oct	B
sharpnose surfperch	<i>Phanerodon atripes</i>	-	S?	Jan-Dec	Feb-Oct	B
California sheephead	<i>Semicossyphus pulcher</i>	-	S?	Jan-Dec	Feb-Oct	?
stripfin ronquil	<i>Rathbunella hypoplecta</i>	-	S?	Jan-Dec	Feb-Oct	B
northern ronquil	<i>Ronquilus jordani</i> <i>Anarrhichthys</i>	-	S?	Jan-Dec	Feb-Oct	B
wolf eel	<i>ocellatus</i>	-	D?	Jan-Dec	Feb-Oct	B
dwarf wrymouth	<i>Lycconectes alentensis</i>	-	S?	Jan-Dec	Feb-Oct	B
mosshead warbonnet	<i>Chirolophis nugator</i>	-	S?	Jan-Dec	Feb-Oct	B
whitebarred prickleback	<i>Poroclinus rothrocki</i>	-	S?	Jan-Dec	Feb-Oct	B
bluebarred prickleback	<i>Plectrobranchus evides</i>	-	S?	Jan-Dec	Feb-Oct	B

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal Use of ROI	Breeding Season	Sanctuary
Pacific fat sleeper	<i>Dormitator latofrons</i>	-	S?	Jan-Dec	Feb-Oct	?
ragfish	<i>Icosteus aenigmaticus</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific scabbardfish	<i>Lepidopus xantusi</i>	-	S?	Jan-Dec	Feb-Oct	B
escolar	<i>Lepidocybrium flavobrunneum</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific mackerel	<i>Scomber japonicus</i>	-	S?	Jan-Dec	Feb-Oct	B
skipjack	<i>Euthynnus pelamis</i>	-	D?	Jan-Dec	Feb-Oct	B
albacore	<i>Thunnus alalunga</i>	-	D?	Aug-Nov	Feb-Oct	B
bluefin tuna	<i>Thunnus thynnus</i>	-	D?	Aug-Nov	Feb-Oct	B
shortbill spearfish	<i>Tetrapturus angustirostris</i>	-	D?	Aug-Oct	Feb-Oct	?
striped marlin	<i>Tetrapturus audax</i>	-	D?	Jan-Dec	Feb-Oct	?
louvar	<i>Louvarus imperialis</i>	-	S?	Jan-Dec	Feb-Oct	B
medusafish	<i>Icichthys lockingtoni</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific pompano	<i>Peprilus simillimus</i>	-	D?	Jan-Dec	Feb-Oct	B
California tonguefish	<i>Symphurus atricauda</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific halibut	<i>Hippoglossus stenolepis</i>	-	D?	Jan-Dec	Feb-Oct	B
southern rock sole	<i>Lepidopsetta bilineata</i>	-	D?	Jan-Dec	Feb-Oct	B
curlfin turbot	<i>Pleuronichthys decurrens</i>	-	D?	Jan-Dec	Feb-Oct	B
hornyhead turbot	<i>Pleuronichthys verticalis</i>	-	D?	Jan-Dec	Feb-Oct	B
sand sole	<i>Psettichthys melanostictus</i>	-	D?	Jan-Dec	Feb-Oct	B
English sole	<i>Parophrys vetulus</i>	-	D?	Jan-Dec	Feb-Oct	B
butter sole	<i>Isopsetta isolepis</i>	-	D?	Jan-Dec	Feb-Oct	B
starry flounder	<i>Platichthys stellatus</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific sanddab	<i>Citharichthys sordidus</i>	-	D?	Jan-Dec	Feb-Oct	B
speckled sanddab	<i>Citharichthys stigmaeus</i>	-	D?	Jan-Dec	Feb-Oct	B
rex sole	<i>Glyptocephalus zachirus</i>	-	D?	Jan-Dec	Feb-Oct	B
deepsea sole	<i>Embassichthys bathybius</i>	-	D?	Jan-Dec	Feb-Oct	B
greenland halibut	<i>Reinhardtius hippoglossoides</i>	-	D?	Jan-Dec	Feb-Oct	B
arrowtooth flounder	<i>Atheresthes stomias</i>	-	D?	Jan-Dec	Feb-Oct	B
Dover sole	<i>Mocrostomus pacificus</i>	-	D?	Jan-Dec	Feb-Oct	B
slender sole	<i>Lyopsetta exilis</i>	-	D?	Jan-Dec	Feb-Oct	B
flathead sole	<i>Hippoglossoides elassodon</i>	-	D?	Jan-Dec	Feb-Oct	C
petrale sole	<i>Eopsetta jordani</i>	-	D?	Jan-Dec	Feb-Oct	B
finescale triggerfish	<i>Balistes polylepis</i>	-	S?	Jan-Dec	Feb-Oct	?
black durgon	<i>Melichthys niger</i>	-	S?	Jan-Dec	Feb-Oct	?
oceanic pufferfish	<i>Lagocephalus lagocephalus</i>	-	S?	Aug-Oct	Feb-Oct	B
common mola	<i>Mola mola</i>	-	S?	Jun-Nov	Feb-Oct	B
Reptiles						
Green Sea Turtle	<i>Chelonia mydas</i>	E	I?	Sep-Oct	May-Sep	?
Pacific Ridley	<i>Lepidochelys olivacea</i>	T	D	Sep-Oct	May-Sep	?
Loggerhead Turtle	<i>Caretta caretta</i>	T	D	Sep-Oct	May-Sep	?
Hawksbill Turtle	<i>Eretmochelys imbricata</i>	E	D	Sep-Oct	May-Sep	?
Leatherback Turtle	<i>Dermochelys coriacea</i>	E	D	Jun-Dec	May-Sep	B

Common Name	Scientific Name	Federal Status	Range
Invertebrates			
Sponge	<i>Sphaciospongia confederata</i>	-	BC - Baja
Sponge	<i>Geodia mesotriaena</i>	-	Alaska to Gulf of CA
Bread crumb sponge	<i>Halichondria panacea</i>	-	c. CA - north
Sponge	<i>Stelletta clarella</i>	-	?
Sponge	<i>Polymastia pachymastia</i>	-	?
Sponge	<i>Acarnus erithacus</i>	-	?
White-plumed anemone	<i>Metridium senile</i>	-	AK - s. CA
Strawberry sea anemone	<i>Corynactis californica</i>	-	n. CA - s. CA
Yellow anemone	<i>Epizoanthus scotinus</i>	-	AK - s. CA
Hydrocoral	<i>Stylaster californicus</i> (<i>Allopora californica</i>)	-	BC - c. CA
Orange cup coral	<i>Balanophyllia elegans</i>	-	OR - s. CA
Cup coral	<i>Caryophyllia arnoldi</i>	-	
Azooxanthellate coral	<i>Desmophyllum dianthus</i>	-	
Stony coral	<i>Javania californica</i>	-	
Azooxanthellate coral	<i>Labyrinthocyathus quaylei</i>	-	
Azooxanthellate coral	<i>Oculina profunda</i>	-	
Brown cup coral	<i>Paracyathus stearnsi</i>	-	
Hydroid	<i>Garveia annulata</i>	-	AK - c. CA
Leather star	<i>Dermasterias imbricata</i>	-	AK - c. CA
Giant sea urchin	<i>Strongylocentrotus franciscanus</i>	-	AK - Baja
Brittle star	<i>Ophionereis annulata</i>	-	s. CA - c. SA
Star	<i>Mediaster aequalis</i>	-	c. CA
California sea cucumber	<i>Parastichopus californicus</i>	-	AK - Baja
Pink snail	<i>Pedicularia californica</i>	-	?
Blue ringed top snail	<i>Callistoma ligatum</i>	-	AK - c. CA
Purple ringed top snail	<i>Callistoma annulatum</i>	-	AK - Baja
Lined chiton	<i>Tonicella lineata</i>	-	AK - c. CA
Dwarf turbin snail	<i>Homalopoma luridum</i>	-	AK - Baja
Sea lemon	<i>Anisodoris nobilis</i>	-	BC - Baja
Spider crab/decorator crab	<i>Loxorhynchus crispatus</i>	-	n. CA - Baja
Sharp nose crab	<i>Scyra acutifrons</i>	-	AK - Baja
Giant barnacle	<i>Balanus nubilus</i>	-	AK - Baja
Giant thatched barnacle	<i>Mega-balanus californicus</i>	-	n. CA - s. CA
Barnacle	<i>Armatobalanus nefrens</i>	-	C. CA - s. CA
Isopod	<i>Munna spinifrons</i>	-	?
Polycheate	<i>Nereis eakini</i>	-	?
Polycheate	<i>Polydora alloporis</i>	-	?
Tunicate	<i>Cystodytes lobata</i>	-	BC - Baja
Algae			
Diatom	<i>Entophylla incurvata</i>	-	?
Acid algae	<i>Desmarestia tabacoides</i>	-	BC - s. CA
Pipe skin	<i>Syringoderma phinneyi</i>	-	?
Bull Kelp	<i>Nereocystis luetkeana</i>	-	AK - c. CA
not available	<i>Maripelta rotata</i>	-	Carmel to Baja
Many viened algae	<i>Polyneura latissima</i>	-	BC - Baja
Beautiful leaf	<i>Callophyllis</i> sp.	-	WA - Baja
Fauch's algae	<i>Fauchea</i> sp.	-	BC to c. CA
crustose algae	<i>Crucoria profunda</i>	-	WA - MX
not available	<i>Fosliella</i> sp. (new species)	-	?
Flat bush	<i>Platythamnion heteromorphum</i>	-	OR - Baja

Common Name	Scientific Name	Federal Status	Range
Flat tubes	<i>Platysiphonia decumbens</i>	-	WA - s. CA

Abbreviations:

Federal Status:

- E - Endangered
- T - Threatened
- C - Candidate
- P - Proposed
- D - Delisted

Population Trend:

- I - Increasing
- S - Stable
- D - Decreasing
- ? - following above (e.g., "I?") indicates no data are available but we guess this designation based on anecdotal information.

Sanctuary:

- C – Cordell Bank NMS only
- B - Both Cordell Bank and Gulf of the Farallones NMS
- ? - Suspected of occurring based on range but documented records lacking.

Table C-2
All Species Lists for GFNMS

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal Use of ROI	Breeding Season	Sanctuary
VERTEBRATES						
Birds						
Red-throated Loon	<i>Gavia stellata</i>	-	S?	Oct-Apr	May-Aug	B
Pacific Loon	<i>Gavia pacifica</i>	-	I	Oct-Apr	May-Aug	B
Common Loon	<i>Gavia immer</i>	SC	I	Oct-Apr	Apr-Aug	B
Yellow-billed Loon	<i>Gavia adamsii</i>	-	?	Nov-Mar	May-Aug	F
Pied-billed Grebe	<i>Podilymbus podiceps</i>	-	S?	Jan-Dec*	Mar-Aug	F
Horned Grebe	<i>Podiceps auritus</i>	-	D?	Oct-Apr	Apr-Aug	F
Red-necked Grebe	<i>Podiceps grisegena</i>	-	D	Nov-Mar	May-Aug	B
Eared Grebe	<i>Podiceps nigricollis</i>	-	D	Oct-Apr	Apr-Aug	F
Western Grebe	<i>Aechmophorus occidentalis</i>	-	S	Jan-Dec	Mar-Aug	F
Clark's Grebe	<i>Aechmophorus clarkii</i>	-	S	Jan-Dec	Mar-Aug	F
Laysan Albatross	<i>Phoebastria immutabilis</i>	-	D	Nov-Jul*	Nov-Jul	B
Black-footed Albatross	<i>Phoebastria nigripes</i>	-	D	Nov-Jul*	Nov-Jun	B
Short-tailed Albatross	<i>Phoebastria albatrus</i>	E	I	Nov-Jul*	Nov-Jun	B
Northern Fulmar	<i>Fulmarus glacialis</i>	-	S	Nov-Mar	May-Sep	B
Murphy's Petrel	<i>Pterodroma ultima</i>	-	?	Apr-Jul	Jan-Dec	B
Mottled Petrel	<i>Pterodroma inexpectata</i>	-	?	Oct-Dec	Sep-Mar	B
Dark-rumped Petrel	<i>Pterodroma phaeopygia</i>	E	I	May-Sep	Mar-Sep	B
Pink-footed Shearwater	<i>Puffinus creatopus</i>	-	S	Mar-Nov	Sep-Mar	B
Flesh-footed Shearwater	<i>Puffinus carneipes</i>	-	?	Sep-Dec	Sep-Mar	B
Buller's Shearwater	<i>Puffinus bulleri</i>	-	S	Jul-Nov	Sep-Mar	B
Sooty Shearwater	<i>Puffinus griseus</i>	-	D	Feb-Nov	Sep-Mar	B
Short-tailed Shearwater	<i>Puffinus tenuirostris</i>	-	D?	Sep-Dec	Oct-May	B
Manx Shearwater	<i>Puffinus puffinus</i>	-	?	Jan-Dec	Mar-Oct	B
Black-vented Shearwater	<i>Puffinus opisthomelas</i>	-	D?	Aug-Jan	Feb-Sep	B
Wilson's Storm-Petrel	<i>Oceanites oceanicus</i>	-	?	Jun-Nov	Oct-Feb	B
Fork-tailed Storm-Petrel	<i>Oceanodroma furcata</i>	-	S	Jan-Dec*	Apr-Sep	B
Leach's Storm-Petrel	<i>Oceanodroma leucorhoa</i>	-	D	Feb-Dec*	Mar-Sep	B
Ashy Storm-Petrel	<i>Oceanodroma homochroa</i>	SC	D	Feb-Nov	Apr-Oct	B
Black Storm-Petrel	<i>Oceanodroma melania</i>	-	?	Aug-Oct	Feb-Aug	B
Red-billed Tropicbird	<i>Phaethon aethereus</i>	-	?	Jun-Oct	Mar-Sep	F
Red-tailed Tropicbird	<i>Phaethon rubricauda</i>	-	?	Jun-Oct	Mar-Oct	F
Masked Booby	<i>Sula dactylatra</i>	-	?	Aug	Mar-Nov	F
Brown Booby	<i>Sula leucogaster</i>	-	I	May-Nov	Mar-Oct	F
Red-footed Booby	<i>Sula sula</i>	-	?	Aug-Oct	Mar-Oct	F
Brown Pelican	<i>Pelecanus occidentalis</i>	E	D	Jul-Dec	Feb-Jun	B
American White Pelican	<i>Pelecanus erythrorhynchos</i>	-	D?	Jul-Jan	Mar-Oct	F

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal Use of ROI	Breeding Season	Sanctuary
Brandt's						
Cormorant	<i>Phalacrocorax penicillatus</i>	-	S	Jan-Dec*	Mar-Sep	B
Double-crested						
Cormorant	<i>Phalacrocorax auritus</i>	-	I	Jan-Dec*	Feb-Jul	B
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>	-	S	Jan-Dec*	Feb-Aug	B
Magnificent						
Frigatebird	<i>Fregata magnificens</i>	-	?	Jun-Oct	Feb-Sep	B
Great Frigatebird	<i>Fregata minor</i>	-	?	Mar	Feb-Sep	F
American Bittern	<i>Botaurus lentiginosus</i>	SC	D?	Oct-Mar	Apr-Sep	F
Great Blue Heron	<i>Ardea herodias</i>	-	S	Jan-Dec*	Mar-Sep	F
Great Egret	<i>Ardea alba</i>	-	S?	Jan-Dec*	Apr-Sep	F
Snowy Egret	<i>Egretta thula</i>	-	S?	Jan-Dec*	Apr-Sep	F
Green Heron	<i>Butorides virescens</i>	-	S?	Mar-Nov*	Apr-Sep	F
Black-crowned						
Night-Heron	<i>Nycticorax nycticorax</i>	-	S?	Jan-Dec*	Apr-Sep	F
Turkey Vulture	<i>Cathartes aura</i>	-	S?	Jan-Dec*	Mar-Oct	F
		D (B.c. <i>leucoparei</i>				
Canada Goose	<i>Branta canadensis</i>	a)	S	Jan-Dec*	Mar-Oct	F
Brant	<i>Branta bernicla</i>	-	S?	Nov-Mar	May-Sep	B
Gadwall	<i>Anas strepera</i>	-	S?	Aug-Apr*	Mar-Oct	F
Eurasian Wigeon	<i>Anas penelope</i>	-	I?	Oct-Mar	May-Sep	F
American Wigeon	<i>Anas americana</i>	-	S?	Aug-Mar	May-Sep	F
Mallard	<i>Anas platyrhynchos</i>	-	S?	Jan-Dec*	Mar-Oct	F
Blue-winged Teal	<i>Anas discors</i>	-	S?	May-Sep	Apr-Sep	F
Cinnamon Teal	<i>Anas cyanoptera</i>	-	S?	Feb-Nov*	Mar-Sep	F
Northern Shoveler	<i>Anas chyeata</i>	-	S?	Aug-Mar	May-Sep	F
Northern Pintail	<i>Anas acuta</i>	-	S	Aug-Mar	May-Sep	F
Green-winged Teal	<i>Anas crecca</i>	-	I	Sep-Mar	Apr-Sep	F
Greater Scaup	<i>Aythya marila</i>	-	S?	Oct-Apr	May-Sep	F
Lesser Scaup	<i>Aythya affinis</i>	-	S?	Oct-Apr	May-Sep	F
Harlequin Duck	<i>Histrionicus histrionicus</i>	SC	D	Aug-Apr	May-Sep	F
Surf Scoter	<i>Melanitta perspicillata</i>	-	D	Oct-Apr	May-Sep	B
White-winged						
Scoter	<i>Melanitta fusca</i>	-	D	Oct-Apr	May-Sep	F
Black Scoter	<i>Melanitta nigra</i>	-	S?	Oct-Apr	May-Sep	F
Oldsquaw	<i>Clangula hyemalis</i>	-	S?	Nov-Mar	May-Sep	F
Bufflehead	<i>Bucephala albeola</i>	-	D	Oct-Apr	May-Sep	F
Common						
Goldeneye	<i>Bucephala clangula</i>	-	D	Oct-Apr	May-Sep	F
Red-breasted						
Merganser	<i>Mergus serrator</i>	-	D	Oct-Apr	May-Sep	F
Ruddy Duck	<i>Oxyura jamaicensis</i>	-	D?	Jan-Dec*	Feb-Sep	F
Osprey	<i>Pandion haliaetus</i>	-	S?	Mar-Nov*	Mar-Sep	F
Bald Eagle	<i>Haliaeetus leucocephalus</i>	D	I?	Dec-Feb	Feb-Oct	F
Northern Harrier	<i>Circus cyaneus</i>	-	I?	Sep-Apr	Apr-Oct	F
Merlin	<i>Falco columbarius</i>	-	I	Sep-Apr	May-Sep	F
Peregrine Falcon	<i>Falco peregrinus</i>	D	I	Jan-Dec*	Mar-Oct	F
Black Rail	<i>Laterallus jamaicensis</i>	C	D?	Jan-Dec*	Mar-Sep	F
Virginia Rail	<i>Rallus limicola</i>	-	S?	Mar-Nov*	Mar-Sep	F
Yellow Rail	<i>Coturnicops noveboracensis</i>	-	S?	Oct-Mar	May-Sep	F
Sora	<i>Porzana carolina</i>	-	S?	Apr-Oct*	Apr-Sep	F
American Coot	<i>Fulica americana</i>	-	S?	Jan-Dec*	Apr-Oct	F
Black-bellied						
Plover	<i>Pluvialis squatarola</i>	-	D	Aug-May	May-Aug	F

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Snowy Plover Semipalmated	<i>Charadrius alexandrinus</i>	T	D	Jan-Dec*	Mar-Sep	F
Plover	<i>Charadrius semipalmatus</i>	-	I	May-Sep	May-Aug	F
Killdeer	<i>Charadrius vociferus</i>	-	D	Jan-Dec*	Mar-Sep	F
Black						
Oystercatcher	<i>Haematopus bachmani</i>	SC	S	Jan-Dec*	Apr-Sep	F
American Avocet	<i>Recurvirostra americana</i>	-	S?	Aug-Apr	Apr-Sep	F
Greater Yellowlegs	<i>Tringa melanoleuca</i>	-	S?	Aug-Apr	May-Aug	F
	<i>Catoptrophorus</i>					
Willet	<i>semipalmatus</i>	-	D	Aug-Apr	Apr-Sep	F
Wandering Tattler	<i>Heteroscelus incanus</i>	-	D	Sep-Mar	May-Aug	F
Spotted Sandpiper	<i>Actitis macularia</i>	-	S	Aug-Apr	Apr-Sep	F
Whimbrel	<i>Numenius phaeopus</i>	SC	S?	Aug-May	May-Aug	F
Long-billed Curlew	<i>Numenius americanus</i>	SC	S?	Jul-Apr	Apr-Sep	F
Marbled Godwit	<i>Limosa fedoa</i>	SC	S	Aug-Apr	May-Aug	F
Ruddy Turnstone	<i>Arenaria interpres</i>	-	D	Aug-May	May-Aug	F
Black Turnstone	<i>Arenaria melanocephala</i>	SC	S?	Jul-May	May-Aug	F
Surfbird	<i>Aphriza virgata</i>	-	D	Sep-Apr	May-Aug	F
Red Knot	<i>Calidris canutus</i>	SC	S?	May-Sep	May-Aug	F
Sanderling	<i>Calidris alba</i>	-	S	Aug-Apr	May-Aug	F
Western Sandpiper	<i>Calidris mauri</i>	-	I	Jul-Apr	May-Aug	F
Least Sandpiper	<i>Calidris minutilla</i>	-	I	Jul-Apr	May-Sep	F
Rock Sandpiper	<i>Calidris ptilocnemis</i>	-	D?	Oct-Mar	May-Aug	F
Dunlin	<i>Calidris alpina</i>	-	S	Sep-Apr	May-Sep	F
Short-billed						
Dowitcher	<i>Limnodromus griseus</i>	-	I	Jul-Apr	May-Aug	F
Long-billed						
Dowitcher	<i>Limnodromus scolopaceus</i>	-	I	Sep-Apr	May-Aug	F
Common Snipe	<i>Gallinago gallinago</i>	-	S	Aug-Mar	Apr-Sep	F
Red-necked						
Phalarope	<i>Phalaropus lobatus</i>	-	S	May-Oct	May-Aug	B
Red Phalarope	<i>Phalaropus fulicaria</i>	-	S	Aug-Apr	May-Aug	B
South Polar Skua	<i>Catharacta maccormicki</i>	-	I?	May-Nov	Sep-Apr	B
Pomarine Jaeger	<i>Stercorarius pomarinus</i>	-	I	Feb-Nov	Apr-Sep	B
Parasitic Jaeger	<i>Stercorarius parasiticus</i>	-	S?	Mar-Oct	May-Aug	B
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>	-	I?	May-Oct	May-Sep	B
Bonaparte's Gull	<i>Larus philadelphia</i>	-	S	Oct-Apr	Apr-Aug	B
Heermann's Gull	<i>Larus heermanni</i>	-	S	May-Dec	Feb-Jun	B
Mew Gull	<i>Larus canus</i>	-	D	Oct-Mar	May-Aug	B
Ring-billed Gull	<i>Larus delawarensis</i>	-	S?	Jan-Dec*	Apr-Aug	F
California Gull	<i>Larus californicus</i>	-	S	Jan-Dec*	Apr-Aug	B
Herring Gull	<i>Larus argentatus</i>	-	I	Oct-Mar	Apr-Aug	B
Thayer's Gull	<i>Larus thayeri</i>	-	I?	Oct-Apr	May-Aug	B
Western Gull	<i>Larus occidentalis</i>	-	D	Jan-Dec*	Apr-Aug	B
Glaucous-winged						
Gull	<i>Larus glaucescens</i>	-	I	Oct-Apr	May-Aug	B
Glaucous Gull	<i>Larus hyperboreus</i>	-	S?	Nov-Feb	May-Aug	B
Sabine's Gull	<i>Xema sabini</i>	-	I	May-Nov	May-Aug	B
Swallow-tailed Gull	<i>Creagrurus furcatus</i>	-	?	Jun	Oct-Mar	F
Black-legged						
Kittiwake	<i>Rissa tridactyla</i>	-	S	Oct-Mar	May-Aug	B
Caspian Tern	<i>Sterna caspia</i>	-	I?	Mar-Oct*	Apr-Sep	B
Elegant Tern	<i>Sterna elegans</i>	-	I?	Jul-Nov*	Feb-Jun	B
Common Tern	<i>Sterna hirundo</i>	-	D?	May-Sep	May-Sep	B
Arctic Tern	<i>Sterna paradisaea</i>	-	S?	May-Sep	May-Aug	B

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Forster's Tern	<i>Sterna forsteri</i>	-	S?	Jan-Dec*	Apr-Sep	B
Common Murre	<i>Uria aalge</i>	-	I	Jan-Dec*	Mar-Jul	B
Thick-billed Murre	<i>Uria lomvia</i>	-	?	Nov-Mar	Apr-Aug	F
Pigeon Guillemot	<i>Cepphus columba</i>	-	S	Mar-Sep*	May-Sep	B
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	T	S	Jan-Dec*	Apr-Sep	B
Long-billed Murrelet	<i>Brachyramphus perdix</i>	-	S?	Dec	Apr-Sep	F
Xantus's Murrelet	<i>Synthliboramphus hypoleucus</i>	SC	D?	Jun-Nov	Feb-Jul	B
Craver's Murrelet	<i>Synthliboramphus craveri</i>	-	D?	Jul-Oct	Feb-Jul	B
Ancient Murrelet	<i>Synthliboramphus antiquus</i>	-	S	Oct-Apr	Mar-Aug	B
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>	SC	D	Jan-Dec*	Mar-Sep	B
Parakeet Auklet	<i>Aethia psittacula</i>	-	D	Nov-Feb	May-Aug	B
Least Auklet	<i>Aethia pusilla</i>	-	D?	Jul	May-Aug	F
Crested Auklet	<i>Aethia cristatella</i>	-	D?	Jun	May-Aug	F
Rhinoceros Auklet	<i>Cerorhinca monocerata</i>	-	I	Jan-Dec*	Mar-Sep	B
Horned Puffin	<i>Fratercula corniculata</i>	-	I?	Nov-May	May-Aug	B
Tufted Puffin	<i>Fratercula cirrhata</i>	-	S	Mar-Sep*	Apr-Aug	B
Short-eared Owl	<i>Asio flammeus</i>	-	D?	Oct-Apr	May-Sep	F
Belted Kingfisher	<i>Ceryle alcyon</i>	-	D?	Jan-Dec*	Apr-Aug	F
Black Phoebe	<i>Sayornis nigricans</i>	-	I	Jan-Dec*	Apr-Sep	F
Say's Phoebe	<i>Sayornis saya</i>	-	S	Sep-May	May-Aug	F
Common Raven	<i>Corvus corax</i>	-	I	Jan-Dec*	Apr-Aug	F
Horned Lark	<i>Eremophila alpestris</i>	-	S?	Jan-Dec*	Apr-Aug	F
Tree Swallow	<i>Tachycineta bicolor</i>	-	S?	Feb-Nov*	Apr-Aug	F
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	-	S?	Mar-Oct*	Apr-Aug	F
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	-	S?	Mar-Sep*	Apr-Sep	F
Barn Swallow	<i>Hirundo rustica</i>	-	S?	Mar-Oct*	Apr-Sep	F
Rock Wren	<i>Salpinctes obsoletus</i>	-	D	Jan-Dec*	Apr-Sep	F
Marsh Wren	<i>Cistothorus palustris</i>	-	S?	Jan-Dec*	Apr-Aug	F
American Pipit	<i>Anthus rubescens</i>	-	I	Oct-Apr	May-Sep	F
Yellow-rumped Warbler	<i>Dendroica coronata</i>	-	S	Sep-May	Apr-Aug	F
Savannah Sparrow	<i>Passerculus sandwichensis</i>	-	D	Jan-Dec*	Apr-Sep	F
Song Sparrow	<i>Melospiza melodia</i>	-	S?	Jan-Dec*	Mar-Aug	F
Swamp Sparrow	<i>Melospiza georgiana</i>	-	S?	Oct-Apr	May-Sep	F
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	-	S	Jan-Dec*	Apr-Aug	F
Western Meadowlark	<i>Sturnella neglecta</i>	-	D	Jan-Dec*	Apr-Aug	F
Mammals						
Blue Whale	<i>Balaenoptera musculus</i>	E	I	Apr-Nov	Nov-Feb	B
Fin Whale	<i>Balaenoptera physalus</i>	E	I	Apr-Oct	Nov-Feb	B
Sei Whale	<i>Balaenoptera borealis</i>	E	S?	Jun-Oct	Nov-Feb	B
Minke Whale	<i>Balaenoptera acutorostrata</i>	-	S?	Aug-Nov	Nov-Feb	B
Humpback Whale	<i>Megaptera novaeangliae</i>	E	I	Jul-Nov	Nov-Mar	B
Gray Whale	<i>Eschrichtius robustus</i>	D	S	Nov-May	Dec-Mar	B
Northern Right Whale	<i>Eubalaena glacialis</i>	E	I	Aug-Oct	Nov-Feb	B
Harbor Porpoise	<i>Phocoena phocoena</i>	-	D?	Jan-Dec*	May-Jul	B
Dall's Porpoise	<i>Phocoenoides dalli</i>	-	S?	Mar-Nov*	Jul-Sep	B

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Pacific White-sided Dolphin	<i>Lagenorhynchus obliquidens</i>	-	S?	Feb-Nov*	Jul-Oct	B
Northern Right Whale Dolphin	<i>Lissodelphis borealis</i>	-	S?	May-Nov*	Feb-Jul	B
Short-beaked Common Dolphin	<i>Delphinus delphis</i>	-	D?	Aug-Nov	Apr-Oct	F
Long-beaked Common Dolphin	<i>Delphinus capensis</i>	-	D?	Aug-Nov	Apr-Oct	B
Bottlenose Dolphin	<i>Tursiops truncatus</i>	-	S?	Aug-Oct	Apr-Oct	F
Striped Dolphin	<i>Stenella coeruleoalba</i>	-	S?	Aug-Oct	Jan-Dec	B
Spotted Dolphin	<i>Stenella attenuata</i>	-	D	Aug-Oct	Jan-Dec	F
Rough-toothed Dolphin	<i>Steno bredanensis</i>	-	S?	Sep	no data	F
Risso's Dolphin	<i>Grampus griseus</i>	-	S?	Mar-Nov*	no data	B
Killer Whale	<i>Orcinus orca</i>	-	S?	Feb-Nov*	Jan-Dec	B
Short-finned Pilot Whale	<i>Globicephala macrorhynchus</i>	-	S?	Mar-Jul	Jan-Dec	B
Sperm Whale	<i>Physeter macrocephalus</i>	E	I?	Aug-Oct	Nov-Mar	B
Pigmy Sperm Whale	<i>Kogia breviceps</i>	-	S?	Aug-Oct	Nov-Apr	B
Dwarf Sperm Whale	<i>Kogia simus</i>	-	S?	Feb	Nov-Mar	B
Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>	-	S?	Aug-Oct	no data	B
Baird's Beaked Whale	<i>Berardius bairdii</i>	-	S?	May-Nov*	Dec-Jun	B
Hubb's Beaked Whale	<i>Mesoplodon calrhubbbsi</i>	-	S?	Mar	Apr-Aug	B
Blainsville's Beaked Whale	<i>Mesoplodon densirostris</i>	-	S?	Oct	no data	B
Steineger's Beaked Whale	<i>Mesoplodon stejnegeri</i>	-	S?	Jul-Nov	no data	F
Steller Sea Lion	<i>Eumetopius jubatus</i>	T	D	Jan-Dec*	Apr-Jul	B
California Sea Lion	<i>Zalophus californianus</i>	-	I	Jan-Dec*	Apr-Aug	B
Northern Fur Seal	<i>Callorhinus ursinus</i>	-	I	May-Oct*	Apr-Jul	B
Guadalupe Fur Seal	<i>Arctocephalus townsendi</i>	T	I	Aug-Nov	Feb-Jul	F
Northern Elephant Seal	<i>Mirounga angustirostris</i>	-	I	Jan-Dec*	Dec-Mar	B
Harbor Seal	<i>Phoca vitulina</i>	-	I	Jan-Dec*	Mar-Jun	B
Sea Otter	<i>Enhydra lutris</i>	T	D	Aug-Oct	May-Aug	F
River Otter	<i>Lontra canadensis</i>	-	I?	Jan-Dec*	May-Aug	F
		-				
Fish						
Pacific Hagfish	<i>Eptatretus stoutii</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific Lamprey	<i>Lampreta tridentata</i>	SC	S?	Jan-Dec	Feb-Oct	B
Western River Lamprey	<i>Lampetra ayersii</i>	-	S?	Jan-Dec	Feb-Oct	?
Sevengill Shark	<i>Notorynchus cepedianus</i>	-	S?	Jan-Dec	Feb-Oct	B
Sixgill Shark	<i>Hexanchus griseus</i>	-	S?	Jan-Dec	Feb-Oct	B
Spiny Dogfish	<i>Squalus acanthias</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific Sleeper Shark	<i>Somniosus pacificus</i>	-	S?	Jan-Dec	Feb-Oct	B
Prickly Shark	<i>Echinorhinus cookei</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific Angel Shark	<i>Squatina californica</i>	-	S?	Jan-Dec	Feb-Oct	F
Common Thresher	<i>Alopias vulpinus</i>	-	D?	Jan-Dec	Feb-Oct	F

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Basking Shark	<i>Cetorhinus maximus</i>	-	D?	Aug-Nov	Feb-Oct	F
Brown Catshark	<i>Apristurus brunneus</i>	-	S?	Jan-Dec	Feb-Oct	B
Longnose Catshark	<i>Apristurus kampa</i>	-	S?	Jan-Dec	Feb-Oct	B
Filetail Catshark	<i>Parmaturus xaniurus</i>	-	S?	Jan-Dec	Feb-Oct	B
White Shark	<i>Carcharodon carcharias</i>	-	I?	Jan-Dec	Mar-Jul	B
Shortfin Mako						
Shark	<i>Isurus oxyrinchus</i>	-	S?	Aug-Nov	Feb-Oct	B
Salmon Shark	<i>Lamna ditropis</i>	-	S?	Jan-Dec	Feb-Oct	B
Leopard Shark	<i>Triakis semifasciata</i>	-	D?	Jan-Dec	Feb-Oct	F
Gray Smoothhound						
Shark	<i>Mustelus californicus</i>	-	S?	Jan-Dec	Feb-Oct	F
Brown Smoothhound						
Shark	<i>Mustelus henlei</i>	-	S?	Jan-Dec	Feb-Oct	B
Soupfin Shark	<i>Galeorhinus galeus</i>	-	D?	Jan-Dec	Feb-Oct	F
Blue Shark	<i>Prionace glauca</i>	-	D	Aug-Nov	Feb-Oct	F
Pacific Electric Ray	<i>Torpedo californica</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific Thornback	<i>Platyrrhinoidis triseriata</i>	-	S?	Jan-Dec	Feb-Oct	F
Shovelnose						
Guitarfish	<i>Rhinobatos productus</i>	-	S?	Jan-Dec	Feb-Oct	F
Sandpaper Skate	<i>Bathyraja kincaidii</i>	-	S?	Jan-Dec	Feb-Oct	B
Black Skate	<i>Bathyraja trachura</i>	-	S?	Jan-Dec	Feb-Oct	B
Big Skate	<i>Raja binoculata</i>	-	S?	Jan-Dec	Feb-Oct	B
California Skate	<i>Raja inornata</i>	-	S?	Jan-Dec	Feb-Oct	B
Longnose Skate	<i>Raja rhina</i>	-	S?	Jan-Dec	Feb-Oct	B
Starry Skate	<i>Raja stellulata</i>	-	S?	Jan-Dec	Feb-Oct	B
White Skate	<i>Bathyraja spinosissima</i>	-	S?	Jan-Dec	Feb-Oct	B
Deepsea Skate	<i>Bathyraja abyssicola</i>	-	S?	Jan-Dec	Feb-Oct	B
Bering Skate	<i>Bathyraja interrupta</i>	-	S?	Jan-Dec	Feb-Oct	B
Alaska Skate	<i>Bathyraja parmifera</i>	-	S?	Jan-Dec	Feb-Oct	F
Manta	<i>Manta birostris</i>	-	S?	Jan-Dec	Feb-Oct	?
Bat Ray	<i>Myliobatis californica</i>	-	S?	Jan-Dec	Feb-Oct	F
Round Stingray	<i>Urolophus halleri</i>	-	S?	Jan-Dec	Feb-Oct	?
Diamond Stingray	<i>Dasyatis dipterura</i>	-	S?	Jan-Dec	Feb-Oct	?
Pelagic Stingray	<i>Dasyatis violacea</i>	-	S?	Jan-Dec	Feb-Oct	F
Pacific Ratfish	<i>Hydrolagus collieri</i>	-	S?	Jan-Dec	Feb-Oct	B
Green Sturgeon	<i>Acipenser medirostris</i>	C	S?	Jan-Dec	Feb-Oct	B
White Sturgeon	<i>Acipenser transmontanus</i>	E	S?	Jan-Dec	Feb-Oct	B
Bonefish	<i>Albula vulpes</i>	-	S?	Jan-Dec	Feb-Oct	?
Yellow Snake Eel	<i>Ophichthus zaphochir</i>	-	S?	Jan-Dec	Feb-Oct	?
Spotted Snake Eel	<i>Ophichthus triserialis</i>	-	S?	Jan-Dec	Feb-Oct	?
Threadfin Shad	<i>Dorosoma petense</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific Herring	<i>Clupea pallasii</i>	-	S?	Nov-Mar	Feb-Oct	B
Pacific Sardine	<i>Sardinops sagax</i>	-	I	Jan-Dec	Feb-Oct	B
American Shad	<i>Alosa sapidissima</i>	-	S?	Jan-Dec	Feb-Oct	B
Northern Anchovy	<i>Engraulis mordax</i>	-	S	Jun-Nov	Feb-Oct	B
Rainbow		E & T				
(Steelhead) Trout	<i>Oncorhynchus mykiss</i>	regional	D	Jan-Dec	Feb-Oct	B
Chum Salmon	<i>Oncorhynchus keta</i>	T	D	Jan-Dec	Feb-Oct	?
Sockeye Salmon	<i>Oncorhynchus nerka</i>	-	D	Jan-Dec	Feb-Oct	?
Pink Salmon	<i>Oncorhynchus gorbuscha</i>	-	D	Jan-Dec	Feb-Oct	?
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	E & T regional	D	Jan-Dec	Feb-Oct	B

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Coho (Silver) Salmon	<i>Oncorhynchus kisutch</i>	T	D	Jan-Dec	Feb-Oct	B
Longnose Lancetfish	<i>Alepisaurus feroc</i>	-	S?	Jan-Dec	Feb-Oct	B
California Slickhead	<i>Alepocephalus tenebrosus</i>	-	S?	Jan-Dec	Feb-Oct	B
Slender Snipe Eel	<i>Nemichthys scolopaceus</i>	-	S?	Jan-Dec	Feb-Oct	B
Threadfin Slickhead	<i>Talismania bifurcata</i>	-	S?	Jan-Dec	Feb-Oct	B
Sawtooth Snipe Eel	<i>Serrivomer sector</i>	-	S?	Jan-Dec	Feb-Oct	F
Bobtail Snipe Eel	<i>Cyema atrum</i>	-	S?	Jan-Dec	Feb-Oct	?
Surf Smelt	<i>Hypomesus pretiosus</i>	-	S?	Jan-Dec	Feb-Oct	B
Whitebait Smelt	<i>Allosmerus elongatus</i>	-	S?	Jan-Dec	Feb-Oct	B
Night Smelt	<i>Spirinchus starksi</i>	-	S?	Jan-Dec	Feb-Oct	B
Longfin Smelt	<i>Spirinchus thaleichthys</i>	SC	S?	Jan-Dec	Feb-Oct	F
Benttooth Bristlemouth	<i>Cyclothone acclinidens</i>	-	S?	Jan-Dec	Feb-Oct	B
Bigeye Lightfish	<i>Daphnos oculus</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific Argentine California	<i>Argentina sialis</i>	-	S?	Jan-Dec	Feb-Oct	B
Smoothtongue	<i>Leoroglossus stilbins</i>	-	S?	Jan-Dec	Feb-Oct	F
Snubnose Blacksmelt	<i>Bathylagus wesethi</i>	-	S?	Jan-Dec	Feb-Oct	?
Popeye Blacksmelt	<i>Bathylagus ochotensis</i>	-	S?	Jan-Dec	Feb-Oct	?
Robust Blacksmelt	<i>Bathylagus milleri</i>	-	S?	Jan-Dec	Feb-Oct	F
Pacific Blacksmelt	<i>Bathylagus pacificus</i>	-	S?	Jan-Dec	Feb-Oct	B
Dollar Hatchetfish	<i>Sternoptyx sp.</i>	-	S?	Jan-Dec	Feb-Oct	?
Spurred Hatchetfish	<i>Argyropelecus hemigymnus</i>	-	S?	Jan-Dec	Feb-Oct	?
Silvery Hatchetfish	<i>Argyropelecus sladeni</i>	-	S?	Jan-Dec	Feb-Oct	B
Silver Hatchetfish	<i>Argyropelecus lychnus</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific Barreleye	<i>Macropinna microstoma</i>	-	S?	Jan-Dec	Feb-Oct	?
Highfin Dragonfish	<i>Batbobphilus flemingi</i>	-	S?	Jan-Dec	Feb-Oct	?
Longfin Dragonfish	<i>Tactostoma macropus</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific Viperfish	<i>Chauliodus macouni</i>	-	S?	Jan-Dec	Feb-Oct	B
Daggertooth	<i>Anotopterus pharao</i>	-	S?	Jan-Dec	Feb-Oct	?
Slender Barricudina	<i>Lestidium ringens</i>	-	S?	Jan-Dec	Feb-Oct	F
Northern Pearleye	<i>Benthalbella dentata</i>	-	S?	Jan-Dec	Feb-Oct	?
California Lizardfish	<i>Synodus lucioceps</i>	-	S?	Jan-Dec	Feb-Oct	F
Shiny Loosejaw	<i>Aristostomias scintillans</i>	-	S?	Jan-Dec	Feb-Oct	?
Scaly Paperbone	<i>Scopelosaurus barryi</i>	-	S?	Jan-Dec	Feb-Oct	?
California Flashlightfish	<i>Protomyctophum crockeri</i>	-	S?	Jan-Dec	Feb-Oct	B
Northern Lampfish	<i>Stenobrachius leucopsaurus</i>	-	S?	Jan-Dec	Feb-Oct	B
Blue Lanternfish	<i>Tarletonbaenia crenularis</i>	-	S?	Jan-Dec	Feb-Oct	B
Mexican Lampfish	<i>Triphturus mexicanus</i>	-	S?	Jan-Dec	Feb-Oct	F
Broadfin Lampfish	<i>Lamppanyctus ritteri</i>	-	S?	Jan-Dec	Feb-Oct	B
Plainfin Midshipman	<i>Porichthys notatus</i>	-	S?	Jan-Dec	Feb-Oct	B
Spotted Cusk Eel	<i>Chilara taylori</i>	-	S?	Jan-Dec	Feb-Oct	B
Basketweave Cusk Eel	<i>Ophidion scrippsae</i>	-	S?	Jan-Dec	Feb-Oct	B
Red Brotula	<i>Brosomphycis marginata</i>	-	S?	Jan-Dec	Feb-Oct	F

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Northern Clingfish	<i>Gobiosox meandricus</i>	-	S?	Jan-Dec	Feb-Oct	F
Kelp Clingfish	<i>Rimicola muscarum</i>	-	S?	Jan-Dec	Feb-Oct	?
California Grenadier	<i>Nezumia stelgidolepis</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific Grenadier	<i>Coryphaenoides acrolepis</i>	-	S?	Jan-Dec	Feb-Oct	B
Hundred Fathom Codling	<i>Physiculus rastrelliger</i>	-	S?	Jan-Dec	Feb-Oct	?
Finescale Codling	<i>Antimora microlepis</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific Hake	<i>Merluccius productus</i>	-	S?	Jan-Dec	Feb-Oct	B
Pacific Cod	<i>Gadus microcephalus</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific Tomcod	<i>Microgadus proximus</i>	-	S?	Jan-Dec	Feb-Oct	B
Walleye Pollock	<i>Theragra chalcogramma</i>	-	D?	Jan-Dec	Feb-Oct	B
Giant Grenadier	<i>Albatrossia pectoralis</i>	-	S?	Jan-Dec	Feb-Oct	B
Shoulderspot Grenadier	<i>Coelorinchus scaphopsis</i>	-	S?	Jan-Dec	Feb-Oct	B
Bearded Eelpout	<i>Lycinema barbatus</i>	-	S?	Jan-Dec	Feb-Oct	?
Black Eelpout	<i>Lycodes diapterus</i>	-	S?	Jan-Dec	Feb-Oct	B
Flatcheek Eelpout	<i>Embryx crotalina</i>	-	S?	Jan-Dec	Feb-Oct	?
Bigfin Eelpout	<i>Aprodon cortezianus</i>	-	S?	Jan-Dec	Feb-Oct	B
Blackbelly Eelpout	<i>Lycodopsis pacifica</i>	-	S?	Jan-Dec	Feb-Oct	B
Midwater Eelpout	<i>Melanostigma pammelas</i>	-	S?	Jan-Dec	Feb-Oct	F
Twoline Eelpout	<i>Bothrocara brunneum</i>	-	S?	Jan-Dec	Feb-Oct	B
Soft Eelpout	<i>Bothrocara molle</i>	-	S?	Jan-Dec	Feb-Oct	?
Blackmouth Eelpout	<i>Lycodapus fierasfer</i>	-	S?	Jan-Dec	Feb-Oct	?
Pallid Eelpout	<i>Lycodapus mandibularis</i>	-	S?	Jan-Dec	Feb-Oct	F
California Flyingfish	<i>Cypselurus californicus</i>	-	S?	Aug-Oct	Feb-Oct	F
Needlefish	<i>Strongylura exilis</i>	-	S?	Jan-Dec	Feb-Oct	F
Pacific Saury	<i>Cololabis saira</i>	-	S?	Jan-Dec	Feb-Oct	B
California Grunion	<i>Leuresthes tenuis</i>	-	S?	Jan-Dec	Feb-Oct	F
Jacksmelt	<i>Atherinopsis californiensis</i>	-	S?	Jan-Dec	Feb-Oct	F
Topsmelt	<i>Atherinops affinis</i>	-	S?	Jan-Dec	Feb-Oct	F
Opah	<i>Lampris regius</i>	-	S?	Aug-Oct	Feb-Oct	F
Flapjack Devilfish	<i>Opisthotenthis californiana</i>	-	S?	Jan-Dec	Feb-Oct	B
Fangtooth	<i>Anoplogaster cornuta</i>	-	S?	Jan-Dec	Feb-Oct	B
Veilfin	<i>Caristius macropus</i>	-	S?	Jan-Dec	Feb-Oct	?
Crested Bigscale	<i>Poromitra crassiceps</i>	-	S?	Jan-Dec	Feb-Oct	?
Twospine Bigscale	<i>Scopelogadus mizolepis</i>	-	S?	Jan-Dec	Feb-Oct	B
Highsnout Bigscale	<i>Melamphaes lugubris</i>	-	S?	Jan-Dec	Feb-Oct	F
King-of-the-salmon	<i>Trachipterus altivelis</i>	-	S?	Jan-Dec	Feb-Oct	?
Tubesnout	<i>Aulorhynchus flavidus</i>	-	S?	Jan-Dec	Feb-Oct	?
Threespine Stickleback	<i>Gasterosteus aculeatus</i>	-	S?	Jan-Dec	Feb-Oct	F
Kelp Pipefish	<i>Syngnathus californiensis</i>	-	S?	Jan-Dec	Feb-Oct	?
Bay Pipefish	<i>Syngnathus leptorhynchus</i>	-	S?	Jan-Dec	Feb-Oct	B
Snubnose Pipefish	<i>Syngnathus arctus</i>	-	S?	Jan-Dec	Feb-Oct	F
Shortspine Thornyhead	<i>Sebastolobus alascanus</i>	-	S?	Jan-Dec	Feb-Oct	B
Longspine Thornyhead	<i>Sebastolobus altivelis</i>	-	S?	Jan-Dec	Feb-Oct	B
Copper Rockfish	<i>Sebastes caurinus</i>	-	D?	Jan-Dec	Feb-Oct	B

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Whitebelly Rockfish	<i>Sebastes vexilaris</i>	-	D?	Jan-Dec	Feb-Oct	?
Calico Rockfish	<i>Sebastes dallii</i>	-	D?	Jan-Dec	Feb-Oct	B
Silvergray Rockfish	<i>Sebastes brevispinis</i>	-	S?	Jan-Dec	Feb-Oct	B
Treefish	<i>Sebastes serriceps</i>	-	S?	Jan-Dec	Feb-Oct	F
China Rockfish	<i>Sebastes nebulosus</i>	-	D?	Jan-Dec	Feb-Oct	B
Black and Yellow Rockfish	<i>Sebastes chrysomelas</i>	-	D?	Jan-Dec	Feb-Oct	F
Gopher Rockfish	<i>Sebastes carnatus</i>	-	D?	Jan-Dec	Feb-Oct	B
Brown Rockfish	<i>Sebastes auriculatus</i>	-	D?	Jan-Dec	Feb-Oct	B
Quillback Rockfish	<i>Sebastes maliger</i>	-	D?	Jan-Dec	Feb-Oct	B
Grass Rockfish	<i>Sebastes rastrelliger</i>	-	S?	Jan-Dec	Feb-Oct	F
Kelp Rockfish	<i>Sebastes atrovirens</i>	-	S?	Jan-Dec	Feb-Oct	F
Black Rockfish	<i>Sebastes melanops</i>	-	D?	Jan-Dec	Feb-Oct	B
Blue Rockfish	<i>Sebastes mystinus</i>	-	D?	Jan-Dec	Feb-Oct	F
Squarespot Rockfish	<i>Sebastes hopkinsi</i>	-	S?	Jan-Dec	Feb-Oct	B
Speckled Rockfish	<i>Sebastes ovalis</i>	-	D?	Jan-Dec	Feb-Oct	B
Widow Rockfish	<i>Sebastes entomelas</i>	-	D?	Jan-Dec	Feb-Oct	B
Olive Rockfish	<i>Sebastes serranoides</i>	-	D?	Jan-Dec	Feb-Oct	B
Starry Rockfish	<i>Sebastes constellatus</i>	-	D?	Jan-Dec	Feb-Oct	B
Rosy Rockfish	<i>Sebastes rosaceus</i>	-	D?	Jan-Dec	Feb-Oct	F
Rosethorn Rockfish	<i>Sebastes behvamaculatus</i>	-	S?	Jan-Dec	Feb-Oct	B
Swordspine Rockfish	<i>Sebastes ensifer</i>	-	S?	Jan-Dec	Feb-Oct	B
Pink Rockfish	<i>Sebastes eos</i>	-	D?	Jan-Dec	Feb-Oct	B
Greenblotched Rockfish	<i>Sebastes rosenblatti</i>	-	D?	Jan-Dec	Feb-Oct	B
Shortbelly Rockfish	<i>Sebastes jordani</i>	-	D?	Jan-Dec	Feb-Oct	B
Flag Rockfish	<i>Sebastes rubrivinctus</i>	-	D?	Jan-Dec	Feb-Oct	B
Redbanded Rockfish	<i>Sebastes babcocki</i>	-	D?	Jan-Dec	Feb-Oct	B
Greenstriped Rockfish	<i>Sebastes elongatus</i>	-	D?	Jan-Dec	Feb-Oct	B
Bocaccio	<i>Sebastes paucispinis</i>	-	D	Jan-Dec	Feb-Oct	B
Chilipepper	<i>Sebastes goodei</i>	-	D	Jan-Dec	Feb-Oct	B
Cowcod	<i>Sebastes laevis</i>	-	D	Jan-Dec	Feb-Oct	B
Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	-	D	Jan-Dec	Feb-Oct	B
Splitnose Rockfish	<i>Sebastes diploproa</i>	-	D?	Jan-Dec	Feb-Oct	B
Aurora Rockfish	<i>Sebastes aurora</i>	-	D?	Jan-Dec	Feb-Oct	B
Blackgill Rockfish	<i>Sebastes melanostomus</i>	-	D?	Jan-Dec	Feb-Oct	B
Redstripe Rockfish	<i>Sebastes proriger</i>	-	S?	Jan-Dec	Feb-Oct	B
Bank Rockfish	<i>Sebastes rufus</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific Ocean Perch	<i>Sebastes alutus</i>	-	D?	Jan-Dec	Feb-Oct	B
Canary Rockfish	<i>Sebastes pinniger</i>	-	D?	Jan-Dec	Feb-Oct	B
Vermilion Rockfish	<i>Sebastes miniatus</i>	-	D?	Jan-Dec	Feb-Oct	B
Darkblotched Rockfish	<i>Sebastes crameri</i>	-	S?	Jan-Dec	Feb-Oct	B
Stripetail Rockfish	<i>Sebastes saxicola</i>	-	D?	Jan-Dec	Feb-Oct	B
Halfbanded Rockfish	<i>Sebastes semicinctus</i>	-	D?	Jan-Dec	Feb-Oct	B
Sharpchin Rockfish	<i>Sebastes zacentrus</i>	-	S?	Jan-Dec	Feb-Oct	B
Pygmy Rockfish	<i>Sebastes wilsoni</i>	-	S?	Jan-Dec	Feb-Oct	F

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Lumptail Searobin	<i>Prionotus stephanophrys</i>	-	S?	Jan-Dec	Feb-Oct	?
Sablefish	<i>Anoplopoma fimbria</i>	-	S?	Jan-Dec	Feb-Oct	B
Skilfish	<i>Erilepis zonifer</i>	-	S?	Jan-Dec	Feb-Oct	?
Shortspine						
Combfish	<i>Zaniolepis frenata</i>	-	S?	Jan-Dec	Feb-Oct	B
Longspine						
Combfish	<i>Zaniolepis latipinnis</i>	-	S?	Jan-Dec	Feb-Oct	B
Painted Greenling	<i>Oxylebius pictus</i>	-	S?	Jan-Dec	Feb-Oct	F
Lingcod	<i>Ophiodon elongaus</i>	-	D	Jan-Dec	Feb-Oct	B
	<i>Pleurogrammus</i>					
Atka Mackerel	<i>monopterygius</i>	-	S?	Jan-Dec	Feb-Oct	B
	<i>Hexagrammos</i>					
Kelp Greenling	<i>decagrammus</i>	-	D?	Jan-Dec	Feb-Oct	F
Rock Greenling	<i>Hexagrammos superciliosus</i>	-	D?	Jan-Dec	Feb-Oct	F
	<i>Rhamphocottus</i>					
Grunt Sculpin	<i>richardsonii</i>	-	S?	Jan-Dec	Feb-Oct	B
Rosylip Sculpin	<i>Ascelichthys rhodorus</i>	-	S?	Jan-Dec	Feb-Oct	F
Manacled Sculpin	<i>Synchirus gilli</i>	-	S?	Jan-Dec	Feb-Oct	F
	<i>Scorpaenichthys</i>					
Cabezon Sculpin	<i>marmoratus</i>	-	D?	Jan-Dec	Feb-Oct	B
Longfin Sculpin	<i>Jordania zonope</i>	-	S?	Jan-Dec	Feb-Oct	F
Thornback Sculpin	<i>Paricelinus hopliticus</i>	-	S?	Jan-Dec	Feb-Oct	B
Sailfin Sculpin	<i>Nautichthys oculofasciatus</i>	-	S?	Jan-Dec	Feb-Oct	B
Silverspotted						
Sculpin	<i>Belpsius cirrhosus</i>	-	S?	Jan-Dec	Feb-Oct	F
Brown Irishlord	<i>Hemilepidotus spinosus</i>	-	S?	Jan-Dec	Feb-Oct	F
	<i>Hemilepidotus</i>					
Red Irishlord	<i>hemilepidotus</i>	-	S?	Jan-Dec	Feb-Oct	B
Staghorn Sculpin	<i>Leptocottus armatus</i>	-	S?	Jan-Dec	Feb-Oct	B
Buffalo Sculpin	<i>Enophrys bison</i>	-	S?	Jan-Dec	Feb-Oct	F
Bull Sculpin	<i>Enophrys taurina</i>	-	S?	Jan-Dec	Feb-Oct	F
Yellowchin Sculpin	<i>Icelinus quadriseriatus</i>	-	S?	Jan-Dec	Feb-Oct	B
Frogmouth Sculpin	<i>Icelinus oculatus</i>	-	S?	Jan-Dec	Feb-Oct	B
Dusky Sculpin	<i>Icelinus burchami</i>	-	S?	Jan-Dec	Feb-Oct	B
Threadfin Sculpin	<i>Icelinus filamentosus</i>	-	S?	Jan-Dec	Feb-Oct	B
Spotfin Sculpin	<i>Icelinus tenuis</i>	-	S?	Jan-Dec	Feb-Oct	B
Roughback Sculpin	<i>Chitonotus pugetensis</i>	-	S?	Jan-Dec	Feb-Oct	F
Snubnose Sculpin	<i>Orthonopias triacis</i>	-	S?	Jan-Dec	Feb-Oct	F
Corraline Sculpin	<i>Artedius corallinus</i>	-	S?	Jan-Dec	Feb-Oct	F
Smoothhead						
Sculpin	<i>Artedius lateralis</i>	-	S?	Jan-Dec	Feb-Oct	F
Padded Sculpin	<i>Artedius fenestralis</i>	-	S?	Jan-Dec	Feb-Oct	F
Bonyhead Sculpin	<i>Artedius notospilotus</i>	-	S?	Jan-Dec	Feb-Oct	F
Puget Sound						
Sculpin	<i>Artedius meanyi</i>	-	S?	Jan-Dec	Feb-Oct	F
Scalyhead Sculpin	<i>Artedius harringtoni</i>	-	S?	Jan-Dec	Feb-Oct	F
Darter Sculpin	<i>Radulinus boleoides</i>	-	S?	Jan-Dec	Feb-Oct	B
Flabby Sculpin	<i>Zesticelus profundurum</i>	-	S?	Jan-Dec	Feb-Oct	?
Saddleback Sculpin	<i>Oligocottus rimensis</i>	-	S?	Jan-Dec	Feb-Oct	F
Tidepool Sculpin	<i>Oligocottus maculosus</i>	-	S?	Jan-Dec	Feb-Oct	F
Fluffy Sculpin	<i>Oligocottus snyderi</i>	-	S?	Jan-Dec	Feb-Oct	F
Rosy Sculpin	<i>Oligocottus rubellio</i>	-	S?	Jan-Dec	Feb-Oct	F
Wooly Sculpin	<i>Clinocottus analis</i>	-	S?	Jan-Dec	Feb-Oct	F
Sharpnose Sculpin	<i>Clinocottus acuticeps</i>	-	S?	Jan-Dec	Feb-Oct	F
Calico Sculpin	<i>Clinocottus embryum</i>	-	S?	Jan-Dec	Feb-Oct	F

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Mosshead Sculpin	<i>Clinocottus globiceps</i>	-	S?	Jan-Dec	Feb-Oct	F
Bald Sculpin	<i>Clinocottus recalvus</i>	-	S?	Jan-Dec	Feb-Oct	F
Blob Sculpin	<i>Psychrolutes phrictus</i>	-	S?	Jan-Dec	Feb-Oct	F
Rockhead Poacher	<i>Bothragonus swanii</i>	-	S?	Jan-Dec	Feb-Oct	F
Kelp Poacher	<i>Agonomalus sp.</i>	-	S?	Jan-Dec	Feb-Oct	?
Warty Poacher	<i>Ocella verrucosa</i>	-	S?	Jan-Dec	Feb-Oct	B
Pricklebreast Poacher	<i>Stellerina xyosterna</i>	-	S?	Jan-Dec	Feb-Oct	B
Beardless Spearnose Poacher Northern	<i>Ganoides vulsus</i>	-	S?	Jan-Dec	Feb-Oct	?
Spearnose Poacher Smooth	<i>Agonopsis emmelane</i>	-	S?	Jan-Dec	Feb-Oct	B
Alligatorfish	<i>Anoplagonus inermis</i>	-	S?	Jan-Dec	Feb-Oct	B
Pygmy Poacher	<i>Odontopyxis trispinosa</i>	-	S?	Jan-Dec	Feb-Oct	F
Blackfin Poacher	<i>Bathyagonus nigripinnis</i>	-	S?	Jan-Dec	Feb-Oct	B
Bigeye Starnose Poacher	<i>Asterotheca pentacantha</i>	-	S?	Jan-Dec	Feb-Oct	B
Bluespotted Poacher	<i>Xeneretmus triacanthus</i>	-	S?	Jan-Dec	Feb-Oct	B
Blackedge Poacher	<i>Xeneretmus latifrons</i>	-	S?	Jan-Dec	Feb-Oct	B
Blacktail Snailfish	<i>Careproctus melanurus</i>	-	S?	Jan-Dec	Feb-Oct	B
Showy Snailfish	<i>Liparis pulchellus</i>	-	S?	Jan-Dec	Feb-Oct	B
Slipskin Snailfish	<i>Liparis fuscensis</i>	-	S?	Jan-Dec	Feb-Oct	B
Ringtail Snailfish	<i>Liparis rutteri</i>	-	S?	Jan-Dec	Feb-Oct	B
Tidepool Snailfish	<i>Liparis florum</i>	-	S?	Jan-Dec	Feb-Oct	F
Slimy Snailfish	<i>Liparis mucosus</i>	-	S?	Jan-Dec	Feb-Oct	F
Blackfin Snailfish	<i>Careproctus cypselurus</i>	-	S?	Jan-Dec	Feb-Oct	B
Salmon Snailfish	<i>Careproctus rastrinus</i>	-	S?	Jan-Dec	Feb-Oct	F
Striped Bass	<i>Morone saxatilis</i>	-	S?	Jan-Dec	Feb-Oct	F
Giant Sea Bass	<i>Stereolepis gigas</i>	-	S?	Jan-Dec	Feb-Oct	F
Broomtail Grouper	<i>Mycteroperca xenarcha</i>	-	S?	Jan-Dec	Feb-Oct	F
Kelp Bass	<i>Paralabrax clathratus</i>	-	S?	Jan-Dec	Feb-Oct	F
Ocean Whitefish	<i>Caulotilus princeps</i>	-	D?	Jan-Dec	Feb-Oct	B
Whalesucker	<i>Remiligia australis</i>	-	S?	Jan-Dec	Feb-Oct	?
White Suckerfish	<i>Remorina albescens</i>	-	S?	Jan-Dec	Feb-Oct	?
Remora	<i>Remora remora</i>	-	S?	Jan-Dec	Feb-Oct	F
Jack Mackerel	<i>Trachurus symmetricus</i>	-	D?	Aug-Nov	Feb-Oct	F
Yellowtail	<i>Seriola lalandi</i>	-	D?	Jan-Dec	Feb-Oct	F
Dolphinfish	<i>Coryphaena hippurus</i>	-	D?	Aug-Oct	Feb-Oct	F
Pacific Pomfret	<i>Brama japonica</i>	-	S?	Jan-Dec	Feb-Oct	B
Queenfish	<i>Seriophus politus</i>	-	S?	Jan-Dec	Feb-Oct	F
White Seabass	<i>Atractoscion nobilis</i>	-	D?	Jan-Dec	Feb-Oct	B
White Croaker	<i>Genyonemus lineatus</i>	-	S?	Jan-Dec	Feb-Oct	B
Opaleye	<i>Girella nigricans</i>	-	S?	Jan-Dec	Feb-Oct	F
Halfmoon	<i>Medialuna californiensis</i>	-	S?	Jan-Dec	Feb-Oct	F
Pelagic Armorhead	<i>Pentaceros richardsoni</i>	-	S?	Jan-Dec	Feb-Oct	B
Rubberlip Surfperch	<i>Rhacochilus toxotes</i>	-	S?	Jan-Dec	Feb-Oct	F
Black Surfperch	<i>Embiotoca jacksoni</i>	-	S?	Jan-Dec	Feb-Oct	F
Barred Surfperch	<i>Amphistichus argenteus</i>	-	S?	Jan-Dec	Feb-Oct	F
Calico Surfperch	<i>Amphistichus koelzi</i>	-	S?	Jan-Dec	Feb-Oct	F
Redtail Surfperch	<i>Amphistichus rhodoterus</i>	-	S?	Jan-Dec	Feb-Oct	F
Spotfin Surfperch	<i>Hyperprosopon anale</i>	-	S?	Jan-Dec	Feb-Oct	B
Walleye Surfperch	<i>Hyperprosopon argenteum</i>	-	S?	Jan-Dec	Feb-Oct	F

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Silver Surfperch	<i>Hyperprosopon ellipticum</i>	-	S?	Jan-Dec	Feb-Oct	B
Shiner Surfperch	<i>Cymatogaster aggregata</i>	-	S?	Jan-Dec	Feb-Oct	B
Pink Surfperch	<i>Zalemnius rosaceus</i>	-	S?	Jan-Dec	Feb-Oct	B
Rainbow Surfperch	<i>Hypsurus caryi</i>	-	S?	Jan-Dec	Feb-Oct	F
Striped Surfperch	<i>Embiotoca lateralis</i>	-	S?	Jan-Dec	Feb-Oct	F
Kelp Surfperch	<i>Brachyistius frenatus</i>	-	S?	Jan-Dec	Feb-Oct	F
Dwarf Surfperch	<i>Micrometrus minimus</i>	-	S?	Jan-Dec	Feb-Oct	F
Reef Surfperch	<i>Micrometrus aurora</i>	-	S?	Jan-Dec	Feb-Oct	F
Pile Surfperch	<i>Damalichthys vacca</i>	-	S?	Jan-Dec	Feb-Oct	F
White Surfperch	<i>Phanerodon furcatus</i>	-	S?	Jan-Dec	Feb-Oct	F
Sharpnose Surfperch	<i>Phanerodon atripes</i>	-	S?	Jan-Dec	Feb-Oct	B
California Barracuda	<i>Sphyraena argentea</i>	-	S?	Jan-Dec	Feb-Oct	F
Sheephead	<i>Semicossyphus pulcher</i>	-	S?	Jan-Dec	Feb-Oct	?
Senorita	<i>Oxyjulis californica</i>	-	S?	Jan-Dec	Feb-Oct	F
Pacific Sandfish	<i>Trichodon trichodon</i>	-	S?	Jan-Dec	Feb-Oct	F
Stripefin Ronquil	<i>Rathbunella hypoplecta</i>	-	S?	Jan-Dec	Feb-Oct	B
Northern Ronquil	<i>Ronquilus jordani</i>	-	S?	Jan-Dec	Feb-Oct	B
Wolf Eel	<i>Anarrhichthys ocellatus</i>	-	D?	Jan-Dec	Feb-Oct	B
Onespot Fringehead	<i>Neoclinus uniornatus</i>	-	S?	Jan-Dec	Feb-Oct	F
Sarcastic Fringehead	<i>Neoclinus blanchardi</i>	-	S?	Jan-Dec	Feb-Oct	F
Giant Kelpfish	<i>Heterostichus rostratus</i>	-	S?	Jan-Dec	Feb-Oct	F
Striped Kelpfish	<i>Gibbonsia metzi</i>	-	S?	Jan-Dec	Feb-Oct	F
Crevice Kelpfish	<i>Gibbonsia montereyensis</i>	-	S?	Jan-Dec	Feb-Oct	F
Dwarf Wrymouth	<i>Lyconectes aleutensis</i>	-	S?	Jan-Dec	Feb-Oct	B
Monkeyface Eel	<i>Cebidichthys violaceus</i>	-	D?	Jan-Dec	Feb-Oct	F
High Cockscomb	<i>Anoplarchus purpureus</i>	-	S?	Jan-Dec	Feb-Oct	F
Black Prickleback	<i>Xiphister atropurpureus</i>	-	S?	Jan-Dec	Feb-Oct	F
Rock Prickleback	<i>Xiphister mucosus</i>	-	S?	Jan-Dec	Feb-Oct	F
Ribbon Prickleback	<i>Phytichthys chirus</i>	-	S?	Jan-Dec	Feb-Oct	F
Mosshead Warbonnet	<i>Chirolophis nugator</i>	-	S?	Jan-Dec	Feb-Oct	B
Whitebarred Prickleback	<i>Poroclinus rothrocki</i>	-	S?	Jan-Dec	Feb-Oct	B
Bluebarred Prickleback	<i>Plectrobranchius evides</i>	-	S?	Jan-Dec	Feb-Oct	B
Penpoint Gunnel	<i>Apodichthys flavidus</i>	-	S?	Jan-Dec	Feb-Oct	F
Rockweed Gunnel	<i>Xerorpes fucorum</i>	-	S?	Jan-Dec	Feb-Oct	F
Red Gunnel	<i>Pholis schultzi</i>	-	S?	Jan-Dec	Feb-Oct	F
Saddleback Gunnel	<i>Pholis ornata</i>	-	S?	Jan-Dec	Feb-Oct	F
Graveldiver	<i>Scytalina cerdale</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific Sand Lance	<i>Ammodytes hexapterus</i>	-	S?	Jan-Dec	Feb-Oct	F
Prowfish	<i>Zaprora silenus</i>	-	S?	Jan-Dec	Feb-Oct	F
Pacific Fat Sleeper	<i>Dormitator latofrons</i>	-	S?	Jan-Dec	Feb-Oct	?
Ragfish	<i>Icosteus enigmaticus</i>	-	S?	Jan-Dec	Feb-Oct	B
Blackeye Goby	<i>Coryphopterus nicholsii</i>	-	S?	Jan-Dec	Feb-Oct	F
Tidewater Goby	<i>Eucyclogobius newberryi</i>	E	S?	Jan-Dec	Feb-Oct	F
Longjaw Mudsucker	<i>Gillichthys mirabilis</i>	-	S?	Jan-Dec	Feb-Oct	F
Bay Goby	<i>Lepidogobius lepidus</i>	-	S?	Jan-Dec	Feb-Oct	F
Yellowfin Goby	<i>Acanthogobius flavimanus</i>	-	S?	Jan-Dec	Feb-Oct	F

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal Use of ROI	Breeding Season	Sanctuary
Cheekspot Goby	<i>Hypnus gilberti</i>	-	S?	Jan-Dec	Feb-Oct	F
Arrow Goby	<i>Clevelandia ios</i>	-	S?	Jan-Dec	Feb-Oct	F
Pacific Scabbardfish	<i>Lepidopus xantusi</i> <i>Lepidocybrium</i>	-	S?	Jan-Dec	Feb-Oct	B
Escolar	<i>flavobrunneum</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific Mackerel	<i>Scomber japonicus</i>	-	S?	Jan-Dec	Feb-Oct	B
Skipjack	<i>Euthynnus pelamis</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific Bonito	<i>Sarda chiliensis</i>	-	D?	Aug-Nov	Feb-Oct	F
Albacore	<i>Thunnus alalunga</i>	-	D?	Aug-Nov	Feb-Oct	B
Bigeye Tuna	<i>Thunnus obesus</i>	-	D?	Aug-Oct	Feb-Oct	F
Bluefin Tuna	<i>Thunnus thynnus</i>	-	D?	Aug-Nov	Feb-Oct	B
Swordfish	<i>Xiphias gladius</i>	-	D?	Aug-Oct	Feb-Oct	F
Shortbill Spearfish	<i>Tetrapturus angustirostris</i>	-	D?	Aug-Oct	Feb-Oct	?
Sailfish	<i>Istiophorus platypterus</i>	-	D?	Jan-Dec	Feb-Oct	F
Striped Marlin	<i>Tetrapturus audax</i>	-	D?	Jan-Dec	Feb-Oct	?
Louvar	<i>Louvarus imperialis</i>	-	S?	Jan-Dec	Feb-Oct	B
Medusafish	<i>Icichthys lockingtoni</i>	-	S?	Jan-Dec	Feb-Oct	B
Smalleye Squaretail	<i>Tetragonurus cuvieri</i>	-	S?	Jan-Dec	Feb-Oct	?
Pacific Pompano	<i>Peprilus simillimus</i>	-	D?	Jan-Dec	Feb-Oct	B
California Tonguefish	<i>Symphurus atricauda</i>	-	S?	Jan-Dec	Feb-Oct	B
California Halibut	<i>Paralichthys californicus</i>	-	D?	Jan-Dec	Feb-Oct	F
Pacific Halibut	<i>Hippoglossus stenolepis</i>	-	D?	Jan-Dec	Feb-Oct	B
Southern Rock Sole	<i>Lepidopsetta bilineata</i>	-	D?	Jan-Dec	Feb-Oct	B
Curlfin Turbot	<i>Pleuronichthys decurrens</i>	-	D?	Jan-Dec	Feb-Oct	B
Hornyhead Turbot	<i>Pleuronichthys verticalis</i>	-	D?	Jan-Dec	Feb-Oct	B
C-O Turbot	<i>Pleuronichthys coenosus</i>	-	D?	Jan-Dec	Feb-Oct	F
Sand Sole	<i>Psettichthys melanostictus</i>	-	D?	Jan-Dec	Feb-Oct	B
Diamond Turbot	<i>Hypopsetta guttulata</i>	-	D?	Jan-Dec	Feb-Oct	F
English Sole	<i>Parophrys vetulus</i>	-	D?	Jan-Dec	Feb-Oct	B
Butter Sole	<i>Isopsetta isolepis</i>	-	D?	Jan-Dec	Feb-Oct	B
Starry Flounder	<i>Platichthys stellatus</i>	-	D?	Jan-Dec	Feb-Oct	B
Pacific Sanddab	<i>Citharichthys sordidus</i>	-	D?	Jan-Dec	Feb-Oct	B
Speckled Sanddab	<i>Citharichthys stigmaeus</i>	-	D?	Jan-Dec	Feb-Oct	B
Rex Sole	<i>Glyptocephalus zachirus</i>	-	D?	Jan-Dec	Feb-Oct	B
Deepsea Sole	<i>Embassichthys bathybius</i> <i>Reinhardtius</i>	-	D?	Jan-Dec	Feb-Oct	B
Greenland Halibut	<i>hippoglossoides</i>	-	D?	Jan-Dec	Feb-Oct	B
Arrowtooth Flounder	<i>Atheresthes stomias</i>	-	D?	Jan-Dec	Feb-Oct	B
Dover Sole	<i>Microstomus pacificus</i>	-	D?	Jan-Dec	Feb-Oct	B
Slender Sole	<i>Lyopsetta exilis</i>	-	D?	Jan-Dec	Feb-Oct	B
Petrale Sole	<i>Eopsetta jordani</i>	-	D?	Jan-Dec	Feb-Oct	B
Finescale Triggerfish	<i>Balistes polylepis</i>	-	S?	Jan-Dec	Feb-Oct	?
Black Durgon	<i>Melichthys niger</i>	-	S?	Jan-Dec	Feb-Oct	?
Oceanic Pufferfish	<i>Lagocephalus lagocephalus</i>	-	S?	Aug-Oct	Feb-Oct	B
Spotted Porcupinefish	<i>Diodon hystrix</i>	-	S?	Aug-Oct	Feb-Oct	F
Balloonfish	<i>Diodon holocanthus</i>	-	S?	Jan-Dec	Feb-Oct	F
Common Mola	<i>Mola mola</i>	-	S?	Jun-Nov	Feb-Oct	B

Common Name	Scientific Name	Federal Status	Population Trend	Seasonal Use of ROI	Breeding Season	Sanctuary
Reptiles						
Green Sea Turtle Pacific (Olive) Ridley	<i>Chelonia mydas</i>	T	I?	Sep-Oct	May-Sep	F
Loggerhead Turtle	<i>Lepidochelys olivacea</i>	T	D	Sep-Oct	May-Sep	F
Hawksbill Turtle	<i>Caretta caretta</i>	T	D	Sep-Oct	May-Sep	?
Leatherback Turtle	<i>Eretmochelys imbricata</i>	E	D	Sep-Oct	May-Sep	?
	<i>Dermochelys coriacea</i>	E	D	Jun-Dec	May-Sep	B

Classification & Common Name	Scientific Name
Invertebrates	
Annelida	
	<i>Arabella iricolor</i>
	<i>Cheilonereis cyclurus</i>
	<i>Errantia spp.</i>
Polycheate	<i>Nereis guberi</i>
	<i>Phragmatopoma californica</i>
	<i>Phyllochaetopterus prolifica</i>
	<i>Platynereis bicanaliculata</i>
Tube worm	<i>Serpula vermicularis</i>
	<i>Spirorbis borealis</i>
	<i>Stylantbeca prophyra</i>
	<i>Terribellidae</i>
	<i>Thelepus crispus</i>
	<i>Typosyllis aciculata</i>
Arthropoda	
	<i>Acanthomysis sp.</i>
	<i>Achelia chelata</i>
	<i>Achelia nudiscula</i>
	<i>Achelia spinoseta</i>
	<i>Allorchestes anceps</i>
	<i>Alpheus dentipes</i>
	<i>Ammothea bigendorfi</i>
	<i>Amphiodia occidentalis</i>
	<i>Amphissa columbiana</i>
	<i>Amphissa versicolor</i>
	<i>Anatanais normani</i>
	<i>Balanus amphitrite</i>
Barnacle	<i>Balanus cariosus</i>
Barnacle	<i>Balanus glandula</i>
Barnacle	<i>Balanus nubilus</i>
	<i>Balanus sp.</i>
	<i>Cancer antennarius</i>
	<i>Cancer magister</i>
	<i>Cancer productus</i>
	<i>Caprella californica</i>
	<i>Chthamalus dalli</i>
	<i>Cirolana harfordi</i>
	<i>Elasmopus serricatus</i>
Krill	<i>Euphausia pacifica</i>
	<i>Exosphaeroma inornata</i>
	<i>Exosphaeroma rhomburum</i>
	<i>Fabia subquadrata</i>
	<i>Hemigrapsus nudus</i>
	<i>Hyale frequens</i>

Classification & Common Name	Scientific Name
	<i>Hyale grandicornis</i>
	<i>Ianiropsis kincaidi</i>
	<i>Idotea fewkesi</i>
	<i>Idotea resecata</i>
	<i>Idotea schmitti</i>
	<i>Idotea sp.</i>
	<i>Idotea stenops</i>
	<i>Idotea urotoma</i>
	<i>Idotea wosnesenskii</i>
	<i>Lecythorhynchus hilgendorfi</i>
	<i>Ligia occidentalis</i>
	<i>Ligia pallasii</i>
	<i>Limnoria algarum</i>
	<i>Littorophiloscia richardsonae</i>
Crab	<i>Lophopanopeus leucomanus</i>
	<i>Loxorhynchus crispatus</i>
	<i>Melita californica</i>
	<i>Metacaprella anomala</i>
	<i>Metacaprella kennerlyi</i>
	<i>Nymphopsis spinosissima</i>
	<i>Oedignathus inermis</i>
	<i>Oligobinus lighti</i>
Crab	<i>Pachycheles rudis</i>
	<i>Pachygrapsus crassipes</i>
	<i>Pachygrapsus nudus</i>
Hermit crab	<i>Pagurus granosimanus</i>
	<i>Pagurus hirsutiunculus</i>
	<i>Pagurus samuelensis</i>
	<i>Pagurus sp.</i>
	<i>Paracerceis cordata</i>
	<i>Paradynoides benedicti</i>
	<i>Parallorchestes ochotensis</i>
	<i>Paranthura elegans</i>
	<i>Paraxanthia taylorii</i>
	<i>Petrolisthes cinctipes</i>
	<i>Pinnixa franciscana</i>
	<i>Pollicipes polymerus</i>
	<i>Polycheria osborni</i>
Crab	<i>Porcellio americanus</i>
Crab	<i>Pugetia fragilissima</i>
Crab	<i>Pugettia gracilis</i>
Crab	<i>Pugettia producta</i>
Sea spider	<i>Pycnogonum rickettsi</i>
Sea spider	<i>Pycnogonum stearnsi</i>
Crab	<i>Scyra acutifrons</i>
Barnacle	<i>Semibalanus cariosus</i>
	<i>Semibalanus sp.</i>
Barnacle	<i>Tetraclita rubescens</i>
Krill	<i>Thysanoessa spinifera</i>

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
Chordata					
Tunicate	<i>Aplidium arenatum</i>				
Tunicate	<i>Aplidium californicum</i>	Co	Co	85m	Feb - Apr
Tunicate	<i>Cystodytes lobatus</i>	Co	Co	200m	

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
Tunicate	<i>Didemnum carnulentum</i> <i>Polyclinum planum</i>	Co	Co	30m	Mar-Jul?
Tunicate	<i>Pycnoclayella stanleyi</i>	Co	Co	10m	all yr
Tunicate	<i>Ritterella aequalisphonis</i>	Ab	Co		Jun-Aug
Cnidaria					
Fern hydroid	<i>Abietinaria</i> sp. <i>Aglaophenia inconspicua</i>	Co	Co		
Ostrich-plume hydroid	<i>Aglaophenia latirostris</i> <i>Aglaophenia</i> sp	Ab	Co	35m	
Aggregating anemone	<i>Anthopleura elegantissima</i>	Ab	Ab		Sep
Giant green anemone	<i>Anthopleura xanthogrammica</i> <i>Aurelia aurita</i>	Co	Co		Apr-Aug
Orange cup coral	<i>Balanophyllia elegans</i> <i>Corynactis californica</i>	Co	Co	10m	Dec?
Poliferating anemone	<i>Epiactis prolifera</i> <i>Eudendrium californicum</i> <i>Garveia annulata</i>	Co	Co		
White-plumed anemone	<i>Metridium senile</i>	Ab	Co	120m	
	<i>Obelia</i> sp. <i>Sertularella turgida</i> <i>Sertularia</i> sp.	Co	Co	50m	Jul, Oct
	<i>Stylatula elongata</i> <i>Tealia crassicornis</i> <i>Tealia lofotensis</i> <i>Tubularia crocea</i> <i>Urticina crassicornia</i> <i>Urticina lofotensis</i>	Co	Co	70m	Apr-Jun
Echinodermata					
	<i>Amphipholis squamata</i> <i>Asterina miniata</i>				
Sea cucumber	<i>Cucumaria curata</i>	rare	rare		
Sea cucumber	<i>Cucumaria pseudocurata</i>	Co	Co		
Leather star	<i>Dermasterias imbricata</i>	Co	Co	91m	Dec?
Blood star	<i>Henricia leviuscula</i> <i>Leptasterias aequalis</i>	Co	Co	400m	
6-rayed star	<i>Leptasterias hexactis</i> <i>Leptasterias pascilla</i> <i>Ophiopholis aculeata</i> <i>Ophioplocus papillosa</i>	Co	Co		Nov -Apr
	<i>Ophiobrix spiculata</i>	Co	Co	2059 m	July?
	<i>Parastichopus parvimensis</i>	UCo	Co	27m	
Bat star	<i>Patiria miniata</i> <i>Pisaster giganteus</i>	Co	Co	290m	May-Jul
Ochre star	<i>Pisaster ochraceus</i>	Ab	Co	88m	Apr-Jun
Sunflower star	<i>Pycnopodia helianthoides</i> <i>Strongylocentrotus droebachiensis</i>	Co	Co	435m	Dec-Jun
	<i>Strongylocentrotus franciscanus</i>	Co	Uco	90m	Apr - May
Purple sea urchin	<i>Strongylocentrotus purpuratus</i>	Ab	Co	160m	Jan - Sept
Ectoprocta					
	<i>Barentsia benedeni</i> <i>Bugula californica</i> <i>Crisia maxima</i>				
Bryozoan	<i>Bugula californica</i>	Ab	Co	60m	
Bryozoan	<i>Dendrobeatia laxa</i> <i>Dendrobeatia lichenoides</i> <i>Eurystomella bilabiata</i>	Ab	Ab	90m	

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
Bryozoan	<i>Flustrellidra corniculata</i> <i>Tricellaria occidentalis</i> <i>Tricellaria sp</i> <i>Tricellaria ternata</i>	Co	Co	75m	
Mollusca					
Angular unicorn	<i>Acanthina spirata</i> <i>Acanthina spp.</i> <i>Acanthodoris nanaimoensis</i> <i>Aclis shepardiana</i>	Co	Co		N/A
White capped limpet	<i>Acmaea mitra</i>	Co	Co		Dec-Jan
Shag-rug nudibranch	<i>Aeolidia papillosa</i>	Co	Co	760m	N/A
Nudibranch	<i>Alia carinata</i>				
Variegated amphissa	<i>Amphissa versicolor</i>	Co	Co	Inter	Jul
Sea lemon	<i>Anisodoris noblis</i> <i>Antiopella barbarensis</i>	Co	Co	35m	Nov - Mar?
Monterey dorid	<i>Archidoris montereyensis</i> <i>Balcis thersites</i> <i>Baptodoris mimetica</i>	Co	Co	50m	All yr
Snail	<i>Barleeia haliotiphila</i>				
Snail	<i>Barleeia subtenuis</i>				
Horn snail	<i>Batillaria attramentaria</i>	Co	Co		Mar - Jun
Threaded bittium	<i>Bittium eschrichtii</i> <i>Bittium purpureum</i> <i>Bittium schrichtii</i> <i>Cadlina luteomarginata</i>	Uco	Co		
Yellow-edged cadlina	<i>Cadlina modesta</i>	Co	Co		N/A
Channeled top snail	<i>Calliostoma canaliculatum</i>	Co	Co		
Blue top snail	<i>Calliostoma ligatum</i> <i>Ceratosstoma foliatum</i> <i>Cerithiopsis carpenteri</i> <i>Chama arcana</i> <i>Collisella scabra</i> <i>Corolla spectabilis (Pteropod)</i>	Co	Co		
Pacific oyster	<i>Crassostrea gigas</i>	Co	Co		Jul-Aug
Hooked slipper snail	<i>Crepidula adunca</i> <i>Crepidula nummaria</i> <i>Crepidula perforans</i> <i>Crepidatella lingulata</i>	Co	Co		All yr
Gumboot chiton	<i>Cryptochiton stelleri</i> <i>Cryptomya californica</i> <i>Cymakra aspera</i> <i>Daphana californica</i> <i>Diaphana californica</i>	Rare	Co-Rare	Inter	Mar-May
Ring spotted dorid	<i>Diaulula sandiegensis</i> <i>Diplodonta orbella</i> <i>Discurria scutum</i> <i>Doto columbiana</i> <i>Entodesma saxicola</i>	Co	Co	35m	all yr
Snail	<i>Epitonium tinctum</i> <i>Fissurella volcano</i> <i>Fusinus luteopictus</i> <i>Granula margaritula</i>	Unco	Unco		N/A
Black Abalone	<i>Haliotis cracherodii</i>	UCo	Co	Inter	Jul - Sept
Red Abalone	<i>Haliotis rufescens</i>	Co	Uco	17m	All yr

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
Hermissenda	<i>Hermissenda crassicornis</i>	Co	Co	35m	All yr
	<i>Hiatella arctica</i>				
	<i>Hinnites giganteus</i>				
Hoof snail	<i>Hipponix craniodes</i>	Co	Co	inter	N/A
Hopkin's Rose	<i>Hopkinsia rosacea</i>	Co	Co	6m	N/A
	<i>Irus lamellifer</i>				
Chiton	<i>Ischnochiton regularis</i>				
Chiton	<i>Katbarina tunicata</i>				
	<i>Kellia laperousii</i>				
	<i>Lacuna cistula</i>				
Chink snail	<i>Lacuna marmorata</i>	Co	Co	Inter	N/A
	<i>Lacuna porrecta</i>				
	<i>Lacuna unifasciata</i>				
	<i>Lasaea cistula</i>				
Clam	<i>Lasaea subviridis</i>	Ab	Co	Inter	N/A
Chiton	<i>Lepidochitona dentiens</i>				
	<i>Lepidozona sinudentata</i>				
	<i>Littorina keanae</i>				
Eroded periwinkle	<i>Littorina planaxis</i>	Ab	Ab		Apr - Aug
Checkered periwinkle	<i>Littorina scutulata</i>	Ab	Ab		All yr
	<i>Littorina sitkana</i>				
	<i>Littorina sp.</i>				
	<i>Lottia asmi</i>				
Ribbed limpet	<i>Lottia digitalis</i>	Ab	Co		Apr, Jul
Owl limpet	<i>Lottia gigantea</i>	Ab	Co		Sept - Jan
Unstable seaweed limpet	<i>Lottia instabilis</i>				
File limpet	<i>Lottia limantula</i>	Co	Ab	Inter	N/A
Shield limpet	<i>Lottia pelta</i>	Co	Co		Sept
	<i>Lottia strigatella</i>				All yr
Triangular limpet	<i>Lottia triangularis</i>	Co	Co		N/A
Rough limpet	<i>Macclintockia scabra</i>	Ab	Co		Jan - Mar
	<i>Milneria minima</i>				
	<i>Mitrella carinata</i>				
	<i>Mitrella tuberosa</i>				
Fat horse mussel	<i>Modiolus capax</i>	Co	Co	50m	N/A
	<i>Modiolus carpenti</i>				
Hairy chiton	<i>Mopalia ciliata</i>				May, Sept - Nov
		Co	Co	Inter	
Mossy chiton	<i>Mopalia muscosa</i>				Apr, Sept - Nov
		Co	Co	Inter	
Pygmy mussel	<i>Musculus pygmaeus</i>	Ab	Co	Inter	All yr
	<i>Mytilimeria nuttallii</i>				
California mussel	<i>Mytilus californianus</i>	Ab	Ab	24m	July, Dec
Bay mussel	<i>Mytilus edulis</i>	Co	Co	40m	Nov - Jan
	<i>Nassarius mendicus</i>				
Limpet	<i>Notoacmea insessa</i>				
Limpet	<i>Notoacmea persona</i>				
Channeled dogwinkle	<i>Nucella canaliculata</i>	Ab	Co		Apr - Aug
Emarginate dogwinkle	<i>Nucella emarginata</i>	Ab	Co		Nov - Mar
Chiton	<i>Nuttallina californica</i>	Co	Co	Inter	N/A
	<i>Ocenebra atropurpurea</i>				
	<i>Ocenebra interfossa</i>				
	<i>Ocenebra lurida</i>				
	<i>Octopus dofleini</i>				

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
Olympic oyster	<i>Octopus rubescens</i>				
	<i>Octopus sp.</i>				
	<i>Odostomia sp.</i>				
	<i>Onchidella borealis</i>				
	<i>Opalia wroblevskyi</i>				
	<i>Ostrea lurida</i>	Rare	Rare-Co		Apr-Nov?
	<i>Palciophorella velatta</i>				
	<i>Penitella conradi</i>				
	<i>Penitella turnerae</i>				
Abalone jingle	<i>Petalococonchus montereyensis</i>				
	<i>Petricola carditoides</i>				
	<i>Philobrya setosa</i>				
Red sponge nudibranch	<i>Pododesmus cepio</i>	Co	Co		Jul-Aug
	<i>Protothaca staminea</i>				
Dire welk	<i>Rostanga pulchra</i>	Ab	Ab		all yr
	<i>Searlesia dira</i>	Co	Co		Feb -Mar?
Streaked stiliger	<i>Stenoplax beathiana</i>				
	<i>Stiliger fuscovittatus</i>	Ab	Ab		May - Jul
	<i>Tectura insessa</i>				
	<i>Tectura persona</i>				
Brown turban snail	<i>Tectura scutum</i>				
	<i>Tegula brunnea</i>	Ab	Ab		Aug?
Black turban snail	<i>Tegula funebris</i>	Ab	Co-Ab		Apr?
Lined chiton	<i>Tonicella lineata</i>	Ab	Co		Apr?
	<i>Transennella tantilla</i>				
Reticulate button snail	<i>Trimusculus reticulatus</i>	Co	Co	Inter	Apr
Sea-clown nudibranch	<i>Triopha catalinae</i>	Co	Co	35m	Apr - Jun?
	<i>Triopha maculata</i>				
	<i>Trivia californica</i>				
	<i>Velutina velutina</i>				
Nemertea					
	<i>Emplectonema gracile</i>				
	<i>Tubulanus sexlineatus</i>				
Porifera					
Sponge	<i>Acarnus erithacus</i>				
	<i>Allopora porphyra</i>				
Sponge	<i>Anaata spongigartina</i>				
	<i>Antho lithophoenix</i>				
Keratose sponge	<i>Aphysilla glacialis</i>	Ab	Ab		
	<i>Aphysilla polyraphis</i>				
Sponge	<i>Axocielita originalis</i>				
	<i>Clathria sp.</i>				
	<i>Cliona celata</i>				
Sponge	<i>Geodia mesotriaence</i>	Co	Co	370m	
Crumb-of-bread sponge	<i>Haliclondria panicea</i>	Ab	Ab	100m	
	<i>Haliclondria sp.</i>				
	<i>Haliclona permollis</i>				
Sponge	<i>Haliclona sp.</i>	Ab	Ab	50m	
	<i>Higginsia sp.</i>				
	<i>Hinksia sandriana</i>				
	<i>Hymedesmia sp.</i>				
	<i>Hymenambiasiastra cyanocrypta</i>				
	<i>Leucandra beathi</i>				
Sponge	<i>Leucilla nuttingi</i>				
Sponge	<i>Leucosolenia eleanor</i>				

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
Sponge	<i>Lissodendoryx firma</i>				
Sponge	<i>Lissodendoryx topsenti</i>				
Sponge	<i>Mycale psila</i>				
	<i>Myxilla incrustans</i>				
Sponge	<i>Ophlitaspongia pennata</i>	Ab	Co	2m	
	<i>Scypha sp.</i>				
	<i>Spongia idia</i>				
Sponge	<i>Stelletta clarella</i>				
Sponge	<i>Suberites sp.</i>				
Sponge	<i>Tedania gurjanovae</i>				
Sponge	<i>Tethya aurantia</i>	Co	Co	440m	
Sponge	<i>Toxidocia sp.</i>				
Sponge	<i>Xestospongia vanilla</i>				
Sponge	<i>Zyggerpe hyaloderma</i>				
Sipuncula					
	<i>Phascolosoma agassizii</i>				
Urochordata					
	<i>Archidistoma ritteri</i>				
	<i>Styela montereyensis</i>	Co	Co	30m	Jun-Aug
	<i>Styela truncata</i>	Co	Co	20m	Jul - Aug?
Algae					
COMMON NAME & CLASSIFICATION	SCIENTIFIC NAME	POPEST (Sanctuary)	POPEST (N.E. Pacific)	HI	
CLOROPHYTA					
Moss-like algae	<i>Acrosiphonia coalita</i>				
	<i>Bryopsis corticulans</i>	Co	Co	S	
Pin cushion algae	<i>Cladophora columbiana</i>	Co	Ab	S	
	<i>Cladophora graminea</i>				
	<i>Cladophora sp.</i>				
Dead man's fingers	<i>Codium fragile</i>	UnCo	Co	S	
Sponge weed	<i>Codium setchellii</i>	UnCo	Co	S	
	<i>Derbesia marina</i>				
	<i>Endocladia viridis</i>				
	<i>Endophyton ramosum</i>				
	<i>Enteromorpha flexuosa</i>				
	<i>Enteromorpha clathrata</i>				
	<i>Enteromorpha compressa</i>				
Intestine algae	<i>Enteromorpha intestinalis</i>	Co	Co	S	
	<i>Halicystis ovalis</i>				
	<i>Prasiola meridionalis</i>				
	<i>Ulothrix flacca</i>				
	<i>Ulothrix laetevirens</i>				
	<i>Ulothrix pseudoflacca</i>				
	<i>Ulva californica</i>				
	<i>Ulva conglobata</i>				
	<i>Ulva expansa</i>				
	<i>Ulva lactuca</i>				
	<i>Ulva lobata</i>				
Sea lettuce	<i>Ulva spp.</i>	Co	Co	V	
	<i>Ulva taeniata</i>				
	<i>Urophora sp.</i>				

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
HETEROKONTOPHYTA					
Winged kelp	<i>Alaria marginata</i>	Ab	Ab	E	
Barefoot, Matsumo	<i>Analipus japonicus</i>	Co	Co	S	
	<i>Coilodesme californica</i>				
	<i>Colpomenia peregrina</i>				
	<i>Compsonema serpens</i>				
	<i>Costaria costata</i>				
Bladder chain	<i>Cystoseira osmundacea</i>	Ab	Co	V	
	<i>Desmarestia herbacea</i>				
Acid seaweed	<i>Desmarestia ligulata</i>	Ab	Ab	S	
	<i>Desmarestia munda</i>				
Nerve net	<i>Dictyonium californicum</i>	Co	Co	S	
Feather Boa	<i>Egregia menziesii</i>	Ab	Co	V	
Rock weed	<i>Fucus gardneri</i>	Co	Ab	E	
	<i>Hincksia sandriana</i>				
	<i>Laminaria ephemera</i>				
	<i>Laminaria farlowii</i>				
Split blade oarweed/Kombu	<i>Laminaria setchellii</i>	Co	Co	E	
Oar weed/Kombu	<i>Laminaria sinclarii</i>	Ab	Ab	E	
	<i>Laminaria sp.</i>				
	<i>Leathesia difformis</i>				
	<i>Macrocystis integrifolia</i>				
Giant Kelp	<i>Macrocystis pyrifera</i>	UnCo	Co	E	
	<i>Melanosiphon intestinalis</i>				
Bull whip kelp	<i>Nereocystis luetkeana</i>	Co	Co	E	
Bull Kelp	<i>Nereocystis luetkeana</i>	Unco	Co	V	
Little rock weed	<i>Pelvetia fastigiata</i>	Co	Ab	V	
Tiny rock weed	<i>Pelvetiopsis limitata</i>	Co	Co	V	
	<i>Petalonia fascia</i>				
	<i>Phaeostrophion irregulare</i>				
	<i>Pilayella sp.</i>				
Sea palm	<i>Postelsia palmaeformis</i>	Co	Ab	E	
	<i>Pterygophora californica</i>				
Tar spot	<i>Ralfsia pacifica</i>	Co	Co	S	
	<i>Ralfsia sp.</i>				
	<i>Sargassum muticum</i>				
Leather tube	<i>Scytosiphon simplicissimus</i>	Co	Ab	S	
	<i>Scytosiphon dotyii</i>				
	<i>Scytosiphon lomentaria</i>				
	<i>Soranthra ulvoidea</i>				
	<i>Spongonema tomentosum</i>				
	<i>Streblonema sp.</i>				
RHODOPHYTA					
Dreadlock algae	<i>Acrochaetium prophyrae</i>	Ab	Ab	S	
Epiphytic algae	<i>Acrochaetium sp.</i>	Ab	Ab	S	
Garlic algae	<i>Abnfeltia cornucopiae</i>	Co	Co	S	
Mastocarpus crust	<i>Abnfeltia fastigiata</i>	Ab	Co	S	
	<i>Abnfeltiopsis leptophylla</i>				
	<i>Abnfeltiopsis linearis</i>				
Red membrane	<i>Anotrichium furcellatum</i>	Ab	Co	S	
	<i>Antithamnion dendroidum</i>				
	<i>Antithamnion densum</i>				
Tooth branch	<i>Audouinella subimmersa</i>	Co	Ab	S	

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
Braided hair algae	<i>Bangia sp.</i>	Co	Co	S	
	<i>Bornetia californica</i>				
	<i>Bossiella corymbifera</i>				
	<i>Bossiella dichotoma</i>				
	<i>Bossiella plumosa</i>				
	<i>Bossiella schmittii</i>				
	<i>Branchioglossum bipinnatifidum</i>				
	<i>Branchioglossum undulatum</i>				
	<i>Callithamnion biseriatum</i>				
	<i>Callophyllis cheilosporioides</i>				
	<i>Callophyllis crenulata</i>				
	<i>Callophyllis flabellulata</i>				
	<i>Callophyllis beanophylla</i>				
	<i>Callophyllis linearis</i>				
	<i>Callophyllis obtusifolia</i>				
	<i>Callophyllis pinnata</i>				
	<i>Callophyllis sp.</i>				
	<i>Callophyllis violacea</i>				
	<i>Centroceras clavulatum</i>				
	<i>Ceramium gardneri</i>				
	<i>Ceramium pacificum</i>				
	<i>Chiharaea bodegensis</i>				
	<i>Cirriliarpus sp.</i>				
	<i>Clathromorphum parcum</i>				
	<i>Constantinea simplex</i>				
	<i>Corallina officinalis</i>				
	<i>Corallina pinnatifolia</i>				
	<i>Crustose corallines</i>				
	<i>Cryptopleura farlowiana</i>				
	<i>Cryptopleura corallinara</i>				
	<i>Cryptopleura crista</i>				
	<i>Cryptopleura lobulifera</i>				
	<i>Cryptopleura rosacea</i>				
<i>Cryptopleura ruprechtiana</i>					
<i>Cumagloia andersonii</i>					
<i>Delesseria decipiens</i>					
<i>Dilsea californica</i>					
Beautifully jointed	<i>Endocladia muricata</i>	Ab	Co	S	
	<i>Erythrogllossum californicum</i>				
Wool weed	<i>Erythrophyllum delesseriodes</i>	Ab	Co	S	
	<i>Erythrotrichia carnea</i>				
	<i>Erythrotrichia pulvinata</i>				
	<i>Farlowia compressa</i>				
	<i>Farlowia conferta</i>				
	<i>Farlowia mollis</i>				
	<i>Fauchea fryeana</i>				
	<i>Fauchea laciniata</i>				
	<i>Faucheocolax attenuata</i>				
	Beautiful leaf	<i>Gastroclonium subarticulatum</i>	Co	Ab	S
<i>Gastroclonium subarticulatum</i>					
Candy cane seaweed	<i>Gelidium coulteri</i>	Co	Co	S	
Arrow weed	<i>Gelidium purpurascens</i>	Co	Co	S	
	<i>Gelidium pusillum</i>				
	<i>Gelidium robustum</i>				
	<i>Gelidium sp.</i>				

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
Turkish towel	<i>Gloiosiphonia verticillaris</i>				
	<i>Goniotrichopsis sublittoralis</i>				
	<i>Gracilariophila oryzoides</i>				
	<i>Gracilariopsis sjoestedtii</i>	Co	Co	S	
	<i>Grateloupia doryphora</i>				
Turkish towel	<i>Grateloupia filicina</i>				
	<i>Griffithsia pacifica</i>				
	<i>Gymnogongrus chiton</i>				
	<i>Halosaccion glandiforme</i>	Ab	Co	S	
	<i>Halymenia schizymenioides</i>				
	<i>Halymenia templetonii</i>				
	<i>Herposiphonia parva</i>				
Narrow turkish towel	<i>Herposiphonia plumula</i>				
	<i>Hildenbrandia occidentalis</i>				
	<i>Hildenbrandia rubra</i>				
	<i>Hildenbrandia spp.</i>	Co	Ab	S	
	<i>Hommersandia palmatifolia</i>				
	<i>Hymenena coccinea</i>				
	<i>Hymenena flabelligera</i>				
	<i>Hymenena multiloba</i>				
	<i>Janczewskaia gardneri</i>				
	<i>Leachiella pacifica</i>				
	<i>Lithophyllum dispar</i>				
	<i>Lithophyllum grumosum</i>				
	<i>Lithophyllum proboscideum</i>				
Narrow turkish towel	<i>Lithothamnium sp.</i>	Unco	Co	S	
Cup and saucer algae	<i>Lithothrix aspergillum</i>	Co	Ab	V	
	<i>Maripelta rotata</i>				
Small coral	<i>Mastocarpus jardinii</i>	Ab	Ab	S	
Hidden ribs	<i>Mastocarpus papillatus</i>	Co	Ab	S	
Nail brush	<i>Mazzaella affinis</i>				
	<i>Mazzaella californica</i>				
	<i>Mazzaella cordata</i>				
	<i>Mazzaella cornucopiae</i>	Ab	Ab	V	
	<i>Mazzaella flaccida</i>	Ab	Co	S	
Red leaf	<i>Mazzaella heterocarpa</i>	Ab	Co	S	
Belly branch	<i>Mazzaella leptorhynchos</i>				
	<i>Mazzaella linearis</i>				
	<i>Mazzaella rosea</i>				
Agarweed	<i>Mazzaella splendens</i>	Ab	Ab	V	
	<i>Mazzaella volans</i>				
Agarweed	<i>Melobesia marginata</i>				
	<i>Melobesia mediocris</i>	Ab	Co	V	
	<i>Membranoptera dimorpha</i>				
	<i>Mesophyllum conchatum</i>				
	<i>Mesophyllum lamellatum</i>				
Spaghetti weed	<i>Microcladia borealis</i>	Co	Co	V	
Sea sac	<i>Microcladia coulteri</i>	Co	Ab	S	
	<i>Myriogramme sp.</i>				
	<i>Myriogramme spectabilis</i>				
	<i>Myriogramme variegata</i>				
	<i>Neoptilota densa</i>				
	<i>Neoptilota hypnoides</i>				
	<i>Neoptilota sp.</i>				
Wine crust	<i>Neorbodomela larix</i>	Co	Co	S	

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
	<i>Nienburgia andersoniana</i>				
	<i>Nitophyllum sp.</i>				
	<i>Nitophyllum sp.</i>				
crustose coralline	<i>Odonthalia floccosa</i>	Co	Co	S	
Stone hair	<i>Opuntiella californica</i>	Co	Ab	S	
Little turkish towel	<i>Osmundea spectabilis</i>	Co	Co	S	
Little turkish towel	<i>Petrocelis franciscana</i>	Ab	Co	V	
	<i>Petrospongium rugosum</i>				
	<i>Peyssonelliopsis epiphytica</i>				
	<i>Peyssonnelia meridionalis</i>				
	<i>Peyssonnelia pacifica</i>				
	<i>Phycodrys setchellii</i>				
	<i>Pikea californica</i>				
	<i>Pikea pinnata</i>				
	<i>Pleonosporium vancouverianum</i>				
Bunny ears algae	<i>Plocamium cartilagineum</i>	Co	UnCo	V	
	<i>Plocamium cartilagineum var. pacificum</i>				
	<i>Plocamium oregonum</i>				
	<i>Plocamium pacificum</i>				
	<i>Plocamium sp.</i>				
	<i>Plocamium violaceum</i>				
Iridescent seaweed	<i>Polyneura latissima</i>	Ab	Ab	V	
Warty algae	<i>Polysiphonia hendryi</i>	Co	Co	V	
	<i>Polysiphonia hendryi</i>				
	<i>Polysiphonia pacifica</i>				
	<i>Polysiphonia saraticeri</i>				
	<i>Polysiphonia sp.</i>				
Many veined algae	<i>Porphyra gardneri</i>	Ab	Ab	S	
Many siphon algae	<i>Porphyra lanceolata</i>	Ab	Ab	S	
Nori/laver	<i>Porphyra nereocystis</i>	Co	Co	V	
Iridescent seaweed	<i>Porphyra perforata</i>	Co	Ab	V	
Serrated red weed	<i>Porphyra sp.</i>	Ab	Co	S	
	<i>Prionitis australis</i>				
	<i>Prionitis cornea</i>				
Phyllospadix crust	<i>Prionitis lanceolata</i>	Co	Co	S	
	<i>Prionitis linearis</i>				
	<i>Prionitis lyallii</i>				
	<i>Prionitis filiformis</i>				
	<i>Prionitis sp.</i>				
	<i>Pseudolithobophyllum neofarlowii</i>				
	<i>Pterochondria woodii</i>				
	<i>Pterocладиella caloglossoides</i>				
	<i>Pterocладиella capillacea</i>				
	<i>Pterosiphonia baileyi</i>				
	<i>Pterosiphonia bipinnata</i>				
	<i>Pterosiphonia dendroidea</i>				
	<i>Pterothamnion villosum</i>				
	<i>Ptilota filicina</i>				
	<i>Ptilothamnionopsis lejolisea</i>				
	<i>Pugetia fragilissima</i>				
Cactus weed	<i>Rhodochorton purpureum</i>	UnCo	Co	S	
Small branch	<i>Rhodymenia californica</i>	Co	Co	S	
	<i>Rhodymenia callophyllidoides</i>				
	<i>Rhodymenia pacifica</i>				

Common Name	Scientific Name	Federal Status	Population Estimate	Population Trend	Season in NMS
	<i>Sablingia subintegra</i>				
	<i>Sarcodiotheca gaudichaudii</i>				
	<i>Schimmelemania plumosa</i>				
	<i>Schizymeria pacifica</i>				
	<i>Scinaia confusa</i>				
	<i>Smithora naiadum</i>				
	<i>Stenogramma interrupta</i>				
	<i>Stylonema alsidii</i>				
	<i>Tiffaniella snyderae</i>				
	<i>Titanoderma dispar</i>				
	<i>Weeksia reticulata</i>				
VASCULAR					
Surf grass	<i>Phyllospadix scouleri</i>	Ab	Ab	E	
	<i>Phyllospadix torreyi</i>				
Eel grass	<i>Zostera marina</i>	Ab	Ab	E	

Abbreviations:

Federal Status:

E - Endangered

T - Threatened

SC - Species of Concern; May be endangered or threatened; not enough information has been gathered to support listing at this time.

C - Candidate; to become a proposed species for listing as endangered or threatened.

D - Delisted; to be monitored for 5 years.

Population Trend:

I - Increasing

S - Stable

D - Decreasing

? - following above (e.g., "I?") indicates no data are available but we guess this designation based on anecdotal information.

Sanctuary:

F - Gulf of The Farallones NMS only

B - Both Gulf of the Farallones and Cordell Bank NMS

? - Suspected of occurring based on range but documented records lacking.

Table C-3
Special Status and Sensitive Species Lists for MBNMS

Common Name	Scientific Name	Federal Status	State Status	CNPS	DFG
Plants					
Sea palm	<i>Postelsia sp.</i>				no take
Eel grass*	<i>Zostera marina</i>				no take
Surf grass	<i>Phylospadix sp.</i>				no take
Marin bent grass	<i>Agrostis blasdalei var marinensis</i>	SC (FWS)	R		
Little sur manzanita	<i>Arctostaphylos edmundsii</i>	SC (FWS)	R	1B	
Hearst's manzanita	<i>Arctostaphylos hookeri ssp bearstiorum</i>	SC (FWS)	E	1B	
Marsh sandwort	<i>Arenaria paludicola</i>	Endangered	E	1B	
Coastal dunes milk-vetch	<i>Astragalus tener var titi</i>	Candidate (FWS)	E	1B	
Monterey Indian paintbrush	<i>Castilleja latifolia</i>			4	
Hearst's ceanothus	<i>Ceanothus bearstiorum</i>	SC (FWS)	R	1B	
Maritime ceanothus	<i>Ceanothus maritimus</i>	SC (FWS)	R	1B	
Monterey spineflower	<i>Chorizanthe pungens var pungens</i>	Threatened		1B	
Robust spineflower	<i>Chorizanthe robusta var robusta</i>	Endangered		1B	
Compact cobwebby thistle	<i>Cirsium occidentale var compactum</i>	SC (FWS)		1B	
Surf thistle	<i>Cirsium rhotobophilum</i>	Candidate (FWS)	T	1B	
Salt marsh bird's-beak	<i>Cordylanthus maritimus ssp maritimus</i>	Endangered	E	1B	
Soft bird's-beak	<i>Cordylanthus mollis ssp mollis?</i>	Candidate (FWS)	R	1B	
Seaside bird's-beak	<i>Cordylanthus rigidus ssp littoralis</i>	Candidate (FWS)	E	1B	
Gowen cypress	<i>Cupressus govenia ssp govenia</i>	SC (FWS)		1B	
Monterey cypress	<i>Cupressus macrocarpa</i>	SC (FWS)		1B	
Beach spectacle pod	<i>Dithyrea maritima</i>	Candidate (FWS)	T	1B	
Eastwood's golden fleece	<i>Ericameria fasciculata</i>	SC (FWS)		1B	
Menzies' wallflower	<i>Erysimum menziesii ssp menziesii</i>	Endangered	E	1B	
Yadon's wallflower	<i>Erysimum menziesii ssp yadonii</i>	Endangered	E	1B	
Sand Gilia	<i>Gilia tenuiflora ssp arenaria</i>	Endangered	T	1B	
Kellogg's horkelia	<i>Horkelia cuneata ssp. sericea</i>	SC (FWS)		1B	
Beach Layia	<i>Layia carnosa</i>	Endangered	E	1B	
Mason's lilaeopsis	<i>Lilaeopsis masonii</i>	SC (FWS)	R	1B	
Nipomo mesa lupine	<i>Lupinus nipomensis</i>	Candidate (FWS)	E	1B	

Common Name	Scientific Name	Federal Status	State Status	CNPS	DFG
Plants					
Tidestrom's lupine	<i>Lupinus tidestromii</i>	Endangered	E	1B	
Monterey pine	<i>Pinus radiata</i>	SC (FWS)		1B	
Yadon's piperia	<i>Piperia yadoni</i>	Candidate (FWS)		1B	
Adobe sanicle	<i>Sanicula maritima</i>	SC (FWS)	R	1B	
California sea blite	<i>Suaeda californica</i>	Endangered		1B	
Pacific Grove clover	<i>Trifolium variegatum (=T. polyodon)</i>	Candidate (FWS)	R	1B	

* a really important sp of concern at Elkhorn: used to be abundant, now rare; hosts unique animal community, etc.

Common Name	Scientific Name	Federal		State		Inter-national
		ESA	CESA	CNDDB	DFG	IUCN
Invertebrates						
White Abalone	<i>Haliotis sorenseni</i>	E (05/29/01)		G1S1	no take	
Black abalone	<i>Haliotis cracherodii</i>	SC (NMFS)		G3G4S3	no take	CR
Pinto abalone	<i>Haliotis kamtschatkana</i>	SC (NMFS)			no take	
California brackishwater snail*	<i>Tryonia imitator</i>			G2G3S2S3		DD
Olympic oyster*	<i>Ostrea lurida/conchaphila</i>			G1G2S1S2		VU
MacKenzies' cave amphipod	<i>Stygobromus mackenziei</i>	SC (FWS)		G5T1T2S1S2		VU
Smith's blue butterfly	<i>Euphilotes enoptes smithi</i>	E (06-01-76)		G1S1		VU
Globose dune beetle	<i>Coelus globosus</i>	SC (FWS)				

* recommended by Kerstin: brackish snail - it was considered for listing; occurs in muted flow areas of Slough and appears to be quite rare; oyster - not listed, but very important invert; once abundant in slough, now rare

Common Name	Scientific Name	Federal		CESA	State		NGO		Inter-national	
		ESA	FS		CNDDB	DFG	IUCN	AFS	CITES	PFMC?
Fishes										
Chinook salmon (spring run) Sac Rv and tributaries	<i>Oncorhynchus tshawytscha</i>	PT (06-14-04); T (11-15-99)	sensitive	T (02-05-99)						
Chinook salmon (fall/late fall run) Sacramento river	<i>Oncorhynchus tshawytscha</i>	Candidate; SC (NMFS)	sensitive	SSC	G5S2?					
Chinook salmon (winter run)	<i>Oncorhynchus tshawytscha</i>	PT (06-14-04);		E (09-22-	G5S1					

Common Name	Scientific Name	Federal ESA	FS	CESA	State CNDDB	DFG	NGO IUCN	AFS	Inter- national CITES	PFMC?
Fishes										
Sacramento River Coho salmon (central CA coast ESU)	<i>Oncorhynchus kisutch</i>	E (02-03-94) PE (06-14-04); T (12-02-96)			89) E (12-31- 95)					
Steelhead (central CA coast ESU) Russian Rv to Soquel Creek	<i>Oncorhynchus mykiss irideus</i>	PT (06-14-04): T (10-17-97)	sensitive?		G5S2					
Steelhead (south/cen CA coast ESU) Pajaro Rv to Santa Maria Rv	<i>Oncorhynchus mykiss irideus</i>	PT (06-14-04): T (10-17-97)		SSC	G5S3					
Tidewater goby	<i>Encyclogobius newberryi</i>	E (02-04-94)		SSC (QE)	G3S2S3		VU	EN		
River lamprey	<i>Lampetra ayresii</i>	SC (FWS)		SSC (WL)	G4S4					
Pacific lamprey	<i>Lampetra tridentata</i>	SC (FWS)			G5S?					
White sturgeon	<i>Acipenser transmontanus</i>	E (09-06-94)			G3S2	LT (1)	LR/nt	CD*	App II	
Green sturgeon	<i>Acipenser medirostris</i>	Candidate; SC (NMFS)		SSC (QT)	G3S1S2	LT (1)	VU	EN	App II	
Giant sea bass	<i>Stereolepis gigas</i>				G3?S1S2	no take	CR	VU		
Broomtail grouper	<i>Mycteroperca xenarcha</i>					no take		VU		
Cowcod	<i>Sebastes levis</i>	SC (NMFS)				no take		VU		
Bocaccio	<i>Sebastes paucispinis</i>	SC (NMFS)				LT (2)	CR	VU		
Darkblotched rockfish	<i>Sebastes crameri</i>							VU		
Widow rockfish	<i>Sebastes entomelas</i>							VU		
Canary rockfish	<i>Sebastes pinniger</i>					no take		VU		
Yelloweye rockfish	<i>Sebastes ruberrimus</i>					no take		VU		
Pacific ocean perch	<i>Sebastes alutus</i>							VU*		SC
Black rockfish	<i>Sebastes melanops</i>							VU*		SC
Bronzespotted rockfish	<i>Sebastes gilli</i>									
Shortspine thornyhead	<i>Sebastolobus alascanus</i>						EN	VU		
Lingcod	<i>Ophiodon elongatus</i>					LT (2)		VU		
Basking shark (N. Pacific subpopulation)	<i>Cetorhinus maximus</i>						EN	VU	App II	
White shark	<i>Carcharodon carcharias</i>					no take	VU	CD	App III	

Common Name	Scientific Name	Federal		CESA	State		NGO		Inter-national CITES	PFMC?
		ESA	FS		CNDDDB	DFG	IUCN	AFS		
Fishes										
Big skate	<i>Raja binoculata</i>						(1994)	LR/nt	VU	
Broadnose sevengill shark (E. Pacific subpopulation)	<i>Notorynchus cepedianus</i>						LT (1)	LR/nt		
Bluntnose sixgill shark	<i>Hexanchus griseus</i>						LT (1)	LR/nt		
Shortfin mako	<i>Isurus oxyrinchus</i>						LT (2)	LR/nt^		
Blue shark	<i>Prionace glauca</i>						LT (2)	LR/nt		
Spiny dogfish	<i>Squalus acanthias</i>							LR/nt^		
Leopard shark	<i>Triakis semifasciata</i>						LT (3)	LR/cd^		
Pacific angel shark	<i>Squatina californica</i>							LR/nt		
Bigeye tuna (Pacific stock)	<i>Thunnus obesus</i>							EN		
Sacramento perch	<i>Archoplites interruptus</i>	SC (FWS)		SSC (WL)	G3S1					
Longfin Smelt	<i>Spirinchus thaleichthys</i>	SC (FWS)		SSC (QE)	G5S1				TH	
Eulachon	<i>Thaleichthys pacificus</i>			SSC (WL)	G5S3				TH	

Notes:

CESA - SSC status based on 1995 list by Moyle et al

^ Bob Lea says IUCN status based on global populations; these species have healthy populations in NE Pacific

*status level based on nearby locations because population in MBNMS not assessed

broomtail grouper - Added based on recommendations from Paul Reilly

species added to the list by Bob Lea - River lamprey, white sturgeon, Pacific ocean perch, black rockfish, bronzespotted rockfish, broomtail grouper, sevengill shark, Sacramento perch, tule perch, longfin smelt and eulachon

Pacific lamprey - restricted to larger streams of the region (Pescadero, Soquel, Llagas, Uvas and Coyote creeks, San Lorenzo and Guadalupe rivers), and are relatively uncommon except in the San Lorenzo River.

Coho are found in cool coastal streams with flat reaches containing good woody pools (Pescadero, Gazos, Waddell, Scott and San Vicente creeks).

Steelhead: runs of several hundred fall-run fish now annually enter Coyote Creek and the Guadalupe River in Santa Clara County.

Mark Carr - Recommends removing giant sea bass and broomtail grouper because very rare in MBNMS;also recommends covering rockfish as a management group

Common Name	Scientific Name	Federal			CESA	State		NGO IUCN	Inter-national CITES
		ESA	BLM	FS		CNDDDB	DFG		
Reptiles									
Green sea turtle	<i>Chelonia mydas</i>	T (07-28-78)						EN	App I
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E						CR	App I
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E (06-02-70)				G2SNA		CR	App I
Loggerhead sea turtle	<i>Caretta caretta</i>	T (07-28-78)						EN	App I
Olive (Pacific) ridley sea turtle	<i>Lepidochelys olivacea</i>	T (07-28-78)						EN	App I

Common Name	Scientific Name	Federal				State			NGO IUCN	Inter- national CITES
		ESA	BLM	FS	CESA	CNDDDB	DFG			
Reptiles										
Black legless lizard	<i>Anniella pulchra nigra</i>			sensitive	SSC	G3G4T2T3QS 2		No take?		
Silvery legless lizard	<i>Anniella pulchra pulchra</i>	SC (FWS)		sensitive	SSC	G3G4T3T4QS 3		LT (1)		
California horned lizard	<i>Phrynosoma coronatum frontale</i>	SC (FWS)	sensitive		SSC	G4T3T4S3S4				
San Francisco garter snake	<i>Thamnophis sirtalis tetrataenia</i>	E (03-11-67)			E (06-27-71)	G5T2Se		Fully Protected		

Notes:

Green sea turtle - Scott Benson (NOAA) doesn't think it should be included; Jim Harvey (MLML) thinks it should be included

Hawksbill sea turtle - Scott Benson doesn't think it should be included

Leatherback sea turtle - species profile in progress

Loggerhead sea turtle - Scott Benson doesn't think it should be included

Olive (Pacific) ridley sea turtle - Scott Benson doesn't think it should be included

Black legless lizard - added on advice from Scott Benson; black subspecies is restricted to sparsely vegetated beach dunes around Monterey Bay

Silvery legless lizard - added on advice from Scott Benson; widespread in coastal and inland sandy habitats, south of San Francisco

California horned lizard - from MBNMS site characterization; largely restricted to southern Santa Clara County; drier, more open chaparral and grassland habitats

San Francisco garter snake - from MBNMS site characterization; associated with slower streams, natural and artificial ponds and marshes in San Mateo County, primarily on or west of the crest of the Santa Cruz Mountains

Common Name	Scientific Name	Federal				State				NGO			Inter- national CITES
		ESA	BLM	FWS	MBTA	CESA	CNDDDB	DFG	CDF	IUCN	USBC	Audubon	
Birds													
Common Loon	<i>Gavia immer</i>			MNBMC	X	SSC	G5S1						
Short-tailed Albatross	<i>Phoebastria albatrus</i>	E (08-30-00)			X	SSC				VU	x	Red	App I
Black-footed Albatross	<i>Phoebastria nigripes</i>	SC (FWS)		BCC	X					EN	x	Red	EN
Laysan Albatross	<i>Phoebastria immutabilis</i>				X					VU	x	Yellow	VU
Buller's Shearwater	<i>Puffinus bulleri</i>				X					VU		Yellow	VU
Pink-footed Shearwater	<i>Puffinus creatopus</i>				X					VU	x	Red	VU
Black-vented Shearwater	<i>Puffinus opisthomelas</i>				X					VU	x	Red	VU
Ashy Storm-Petrel	<i>Oceanodroma homochroa</i>	SC (FWS)		BCC; MNBMC	X	SSC (SP)	G2S2			LR/nt	x	Red	LR/nt

Common Name	Scientific Name	Federal			State				NGO				Inter- national	
		ESA	BLM	FWS	MBTA	CESA	CNDDDB	DFG	CDF	IUCN	USBC	Audubon	BLI	CITES
Birds														
Fork-tailed Storm-Petrel	<i>Oceanodroma furcata</i>				X	SSC (FP)	G5S1							
Black storm-Petrel	<i>Oceanodroma melania</i>				X	SSC (TP)	G2S1			x	Yellow			
California Brown Pelican	<i>Pelecanus occidentalis californicus</i>	E (10-13-70)		MNBMC	X	E (06-27-71)	G4T3S1S2	FP						
American White Pelican	<i>Pelecanus erythrorhynchos</i>				X	SSC (FP)	G3S1							
Double-crested Cormorant	<i>Phalacrocorax auritus</i>				X	SSC (SP)	G5S3							
American Bittern	<i>Botaurus lentiginosus</i>	SC (FWS)		MNBMC	X		G4S3							
Least Bittern	<i>Ixobrychius exilis</i>			MNBMC	X	SSC (TP)	G5S1							
Great Blue Heron	<i>Ardea herodias</i>				X		G5S4		sensitive					
Great Egret	<i>Ardea alba</i>				X		G5S4		sensitive					
Snowy Egret	<i>Egretta thula</i>				X		G5S4			x	x			
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>		sensitive		X		G5S3							
White-faced Ibis	<i>Plegadis chibi</i>	SC (FWS)		MNBMC	X		G5S1							
Harlequin Duck	<i>Histrionicus histrionicus</i>	SC (FWS)	sensitive		X	SSC (FP)	G4S2							
Osprey	<i>Pandion haliaetus</i>				X		G5S3		sensitive					App II
Bald Eagle	<i>Haliaeetus leucocephalus</i>	D (Delist 08-08-07)			X	E (06-27-71)	G4S2	FP	sensitive					App I
Merlin	<i>Falco columbarius</i>				X		G5S3							App II
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	SC(FWS) (Delist 08-25-99)		BCC; MNBMC	X	E (06-27-71)	G4T3S2	FP	sensitive					App I
California Clapper Rail	<i>Rallus longirostris obsoletus</i>	E (10-13-70)			X	E (06-27-71)	G5T1S1	FP		x				
California Black Rail	<i>Laterallus jamaicensis coturniculus</i>	SC (FWS)		BCC; MNBMC	X	T (06-27-71)	G4T1S1	FP		LR/nt	x	Red	LR/nt	
Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>	T (04-05-93)		BCC; MNBMC	X	SSC	G4T3S2			x	Red			
Black Oystercatcher	<i>Haematopus bachmani</i>	SC (FWS)		BCC	X		G5S2			x	Yellow			
Whimbrel	<i>Numenius phaeopus</i>	SC (FWS)		BCC	X					x	Yellow			

Common Name	Scientific Name	Federal			State				NGO				Inter- national	
		ESA	BLM	FWS	MBTA	CESA	CNDDDB	DFG	CDF	IUCN	USBC	Audubon	BLI	CITES
Birds														
Long-billed Curlew	<i>Numenius americanus</i>	SC (FWS)		BCC; MNBMC	X		G5S2			LR/nt	x	Red	LR/nt	
Marbled Godwit	<i>Limosa fedoa</i>	SC (FWS)		BCC	X						x	Yellow		
Black Turnstone	<i>Arenaria melanocephala</i>	SC (FWS)		BCC	X						x	Yellow		
Red Knot	<i>Calidris canutus</i>	SC (FWS)		BCC	X						x	Yellow		
Short-billed Dowitcher	<i>Limnodromus griseus</i>			BCC	X							Yellow		
California Gull	<i>Larus californicus</i>				X		G5S2							
Heermann's Gull	<i>Larus heermanni</i>				X					LR/nt		Red	LR/nt	
Caspian Tern	<i>Sterna caspia</i>				X		G5S4							
Elegant Tern	<i>Sterna elegans</i>	SC (FWS)		BCC; MNBMC	X	SSC (TP)	G2S1			LR/nt		Red	LR/nt	
Forster's Tern	<i>Sterna forsteri</i>				X		G5S4							
California Least Tern	<i>Sterna antillarum browni</i>	E (10-13- 70)		MNBMC	X	E (06-27-71)	G4T2T3S2 S3	FP			x			
Black Skimmer	<i>Rynchops niger</i>	SC (FWS)		BCC	X	SSC (TP)	G5S1S3					x		
Marbled Murrelet	<i>Brachyramphus marmoratus marmoratus</i>	T (09-30- 92)		MNBMC	X	E (03-12-92)	G3G4S1		sensiti ve	VU	x	Red	VU	
Xantus's Murrelet	<i>Synthliboramphus hypoleucus</i>	SC / Candidate (FWS)		BCC; MNBMC	X	T	G3G4S3			VU	x	Red	VU	
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>	SC (FWS)		BCC	X	SSC (SP)	G4S?							
Rhinoceros Auklet	<i>Cerorhinca monocerata</i>				X	SSC (TP)	G5S3							
Tufted Puffin	<i>Fratercula cirrhata</i>				X	SSC (FP)	G5S2							
Black Swift	<i>Cypseloides niger</i>	SC (FWS)		BCC; MNBMC	X	SSC (TP)	G4S2				x	Yellow		
Loggerhead Shrike	<i>Lanius ludovicianus</i>	SC (FWS)		BCC; MNBMC	X	SSC (SP)	G4S4							
Tricolored Blackbird	<i>Agelaius tricolor</i>	SC (FWS)	sensiti ve	BCC; MNBMC	X	SSC (FP)	G2G3S2				x	Yellow		
Saltmarsh/San Francisco Common Yellowthroat	<i>Geothlypis trichas sinuosa</i>	SC (FWS)		BCC	X	SSC (FP)	G5T2S2							
Belding's Savannah Sparrow	<i>Passerculus sandwichensis beldingi</i>				X	E (01-10-74)	G5T3S3							
Short-eared Owl	<i>Asio flammeus</i>			MNBMC	X	SSC (SP)	G5S3				x	Yellow		App II

Notes: CESA - SSC status based on "List of Bird Species of Special Concern - DRAFT 10-17-2003"

Common Name	Scientific Name	Federal			State		NGO	Inter- national
		ESA	MMPA	CESA	CNDDDB	DFG	IUCN	CITES
Mammals								
Blue whale (Eastern N. Pacific stock)	<i>Balaenoptera musculus</i>	E (06-02-70)	Depleted; Strategic				LR/cd	App I
Fin whale (CA-OR-WA stock)	<i>Balaenoptera physalus</i>	E (06-02-70)	Depleted; Strategic				EN (world- wide)	App I
Humpback whale (Eastern N. Pacific stock)	<i>Megaptera novaeangliae</i>	E (06-02-70)	Depleted; Strategic SSC;				VU (world- wide)	App I
North Pacific right whale	<i>Eubalaena japonica</i>	E (06-02-70)	Depleted; Strategic			Fully Protected	EN	App I
Gray whale (Eastern N. Pacific stock)	<i>Eschrichtius robustus</i>	SC(FWS); Delist (06-16- 94)	SSC				LR/cd	App I
Sei whale (E. North Pacific stock)	<i>Balaenoptera borealis</i>	E (06-02-70)	Depleted; Strategic				EN (world- wide)	App I
Sperm whale (CA-OR-WA stock)	<i>Physeter macrocephalus</i>	E (06-02-70)	Depleted; Strategic SSC;				VU (world- wide)	App I
Killer Whale (Eastern N. Pacific Southern Resident stock)	<i>Orcinus orca</i>	Candidate; SC (NMFS)	Depleted; Strategic				LR/cd (world-wide)	App II
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>		Strategic				LR/cd (world-wide)	App II
Baird's beaked whale (CA-OR-WA stock)	<i>Berardius bairdii</i>		Non- strategic				LR/cd (world-wide)	App I
Hubb's beaked whale (Mesoplodont spp CA-OR-WA stocks)	<i>Mesoplodon carlhubbsi</i>		Non- strategic				DD (world- wide)	App II
Cuvier's beaked whale (CA-OR-WA stock)	<i>Ziphius cavirostris</i>		Non- strategic				DD (world- wide)	App II
Harbor Porpoise (San Francisco-Russian River stock)	<i>Phocoena phocoena</i>		Non- strategic				VU (world- wide)	App II
Harbor Porpoise (Monterey Bay stock)	<i>Phocoena phocoena</i>		Non- strategic				VU (world- wide)	App II
Harbor Porpoise (Morro Bay stock)	<i>Phocoena phocoena</i>		Non- strategic SSC;				VU (world- wide)	App II
Steller sea lion (Eastern stock)	<i>Eumetopias jubatus</i>	T (04-05-90)	Depleted; Strategic		G3S2		EN (world- wide)	

Common Name	Scientific Name	Federal			State		NGO	Inter- national
		ESA	MMPA	CESA	CNDDB	DFG	IUCN	CITES
Mammals								
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	T (12-16-85)	Depleted; Strategic	T (06-27-71)	G1S1	Fully Protected	VU (world- wide)	App I
Northern fur seal (San Miguel Island stock)	<i>Callorhinus ursinus</i>		Non- strategic		G3S1		VU (world- wide)	
Northern elephant seal	<i>Mirounga angustirostris</i>		Non- strategic SSC;			Fully Protected		
Southern sea otter	<i>Enhydra lutris nereis</i>	T (01-14-77)	Depleted; Strategic		G4T2S2	Fully Protected	EN (world- wide)	App I
Monterey / Salinas ornate shrew	<i>Sorex ornatus salarius</i>			SSC	G5T1T2S1S2			
Salinas Harvest Mouse	<i>Reithrodontomys megalotis distichlis</i>				G5THSH			
Monterey vole	<i>Microtus californicus halophilus</i>				G5T1S1			
Salt-marsh harvest mouse	<i>Reithrodontomys raviventris</i>	E (10-13-70)		E (06-27-71)	G1G2S1S2	Fully Protected	VU (world- wide)	

Notes: (many based on 2003 Status Assessment Report and speaking with Karin Forney, NOAA)

Blue Whale: eastern N Pac stock is doing well compared to Atlantic and Antarctic stocks

Fin Whale:

Humpback whale (Eastern N. Pacific stock)

North Pacific right whale

Gray whale Eastern N. Pacific stock)

Sei whale (E. North Pacific stock): very few sightings in the MBNMS

Sperm whale (CA-OR-WA stock)

Killer Whale: Southern Resident stock has been found in the MBNMS during the winter over the last few years - this populations is under review for status under ESA and "depleted" under MMPA. The offshore and transient stocks in the MBNMS are not considered threatened or strategic

Short-finned pilot whale: very rare in the MBNMS - Karin would not include for spp summaries

Baird's beaked whale: east Pac stock is healthy; take occurs in the west pacific stock; Karin would not included in species summaries

Hubb's beaked whale: added to list by Jim Harvey

Curvier's beaked whale: added to list by Jim Harvey

Harbor Porpoise: this is one of the most vulnerable cetaceans in the MBNMS due to high take in gill net fishery; she recommends for in-depth inclusion in the report; check status in next report because new strandings may cause one or more stocks to become "strategic" again

Index of the listing codes used in the tables**FEDERAL LISTING CODES****ESA: Endangered Species Act of 1973 Listing Codes**

E: Federally listed as Endangered
T: Federally listed as Threatened
PE: Federally proposed for listing as Endangered
PT: Federally proposed for listing as Threatened
PD: Federally proposed for de-listing
D: Federally delisted
Candidate: candidate for listing as endangered or threatened
SC: Species of Concern

BLM: Bureau of Land Management

Sensitive

FS: USDA Forest Service

Sensitive

FWS: Fish and Wildlife Service

BCC : Birds of Conservation Concern
MNBMC: Migratory Nongame Birds of Management Concern

MBTA: Migratory Bird Treaty Act (MBTA) of 1918

taking, killing or possessing migratory birds (or their parts, nests or eggs) is unlawful

MMPA: Marine Mammal Protection Act

Depleted:
a population that has fallen below its optimum sustainable population

SSC:
Species of Special Concern - Marine Mammal Commission devotes special attention to particular species and populations that are vulnerable to various types of human-related activities, impacts, and contaminants.

Strategic:
stocks that are either federally listed as endangered or threatened, listed as depleted under the MMPA or have human-related mortality exceeding the Potential Biological Removal level

STATE LISTING CODES**CESA: California Endangered Species Act Listing Codes**

E: State-listed as Endangered
 T: State-listed as Threatened
 CE: State candidate for listing as Endangered
 CT: State candidate for listing as Threatened
 SSC: Species of Special Concern
 QE: Qualify as Endangered (fish list)
 QT: Qualify as Threatened (fish list)
 FP: First Priority (bird list)
 SP: Second Priority (bird list)
 TP: Third Priority (bird list)
 WL: Watch List (fish list)

CNDDDB: California Natural Diversity Database**GLOBAL RANKS:** Worldwide status of a *full species*: G1 to G5

G1: Extremely endangered: <6 viable occurrences (EO's) or <1,000 individuals, or < 2,000 acres of occupied habitat
 G2: Endangered: about 6-20 EO's or 1,000 - 3,000 individuals, or 2,000 to 10,000 acres of occupied habitat
 G3: Restricted range, rare: about 21-100 EO's, or 3,000 – 10,000 individuals, or 10,000 – 50,000 acres of occupied habitat
 G4: Apparently secure; some factors exist to cause some concern such as narrow habitat or continuing threats
 G5: Demonstrably secure; commonly found throughout its historic range

STATE RANKS: Statewide status of a *full species or a subspecies*: S1 to S5

Same general definitions as global ranks, but just for the range of the taxa within California.

T-RANKS: Status of a *subspecies* throughout its range: T1 to T5

A subspecies is given a T-rank. This is attached to the G-rank for the full species. The S-rank, in this case, will refer to the status of the subspecies within California. The T-rank has the same general definitions as the global ranks.

DFG: Department of Fish and Game

FP:
 Fully Protected - the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction.

NT:
 No Take - species for which take or possession is prohibited under the Fish and Game Code.

LT (#):
 Limited Take - take limited by Fish and Game Code; number allowed to be taken per day per person is given in parenthesis

CDF: California Department of Forestry

Sensitive

CNPS: California Native Plant Society

List 1A:

Plants Presumed Extinct in California

List 1B:

Rare, threatened or endangered in California and elsewhere

List 2:

Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

List 3:

Plants About Which We Need More Information - A Review List

List 4:

Limited distribution, which may lead to species becoming rare, threatened or endangered.

NON-GOVERNMENT ORGANIZATION (NGO) LISTING CODES

IUCN: The World Conservation Union - Red List of Threatened Species

CR: Critically Endangered

EN: Endangered

VU: Vulnerable

LR: Lower Risk - category can be separated into three subcategories:

cd: conservation dependent

nt: near threatened

lc: least concern

DD: Data Deficient

AFS: American Fisheries Society

EN: Endangered

TH: Threatened

VU: Vulnerable

CD: Conservation Dependent

USBC: United States Bird Conservation

Watch List

Audubon: The Audubon Society Watch List

Red:

species in this category are declining rapidly, have very small populations or limited ranges, and face major conservation threats. These typically are species of global conservation concern

Yellow:

this category includes those species that are also declining, but at a slower rate than those in the red category. These typically are species of national conservation concern.

BLI: BirdLife International

Same categories as the IUCN Red List

INTERNATIONAL LISTING CODES

CITES: The Convention on International Trade in Endangered Species of Wild Fauna and Flora

Appendix I:

includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.

Appendix II:

includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.

Appendix III:

contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.