

Draft Environmental Assessment of Monterey Bay National Marine Sanctuary Draft Management Plan and Regulatory Changes





National Oceanic and
Atmospheric Administration

U.S. Secretary of Commerce
Wilbur Ross

Under Secretary of Commerce for Oceans
and Atmosphere and NOAA Administrator
Neil Jacobs, Ph.D.

Acting Assistant Administrator for
Ocean Services and Coastal Zone
Management, National Ocean Service
Nicole R. LeBoeuf

Office of National Marine Sanctuaries
John Armor, Director
Rebecca Holyoke, Deputy Director
William Douros, West Coast Regional Director
Paul Michel, Superintendent, Monterey Bay National Marine Sanctuary

Cover photos:

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Juvenile copper rockfish (*Sebastes caurinus*). Photo: Steve Lonhart/NOAA

Bixby Bridge and Big Sur coastline. Photo: Robert Schwemmer/NOAA

California hydrocoral (*Stylaster californicus*) and purple sea urchin (*Strongylocentrotus purpuratus*). Photo:
Steve Lonhart/NOAA

Scouler's surf grass (*Phyllospadix scouleri*). Photo: Chad King/NOAA

Small rock with colorful creatures and giant kelp (*Macrocystis pyrifera*). Photo: Chad King/NOAA





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Hélène Scalliet, Program Analyst, Office of National Marine Sanctuaries
Sophie Godfrey-McKee, Program Analyst, Office of National Marine Sanctuaries

Amity Wood, Education and Outreach Coordinator, Monterey Bay National Marine Sanctuary

Andrew Devogelaere, Research Coordinator, Monterey Bay National Marine Sanctuary

Chad King, Research Specialist, Monterey Bay National Marine Sanctuary

Dawn Hayes, Deputy Superintendent, Monterey Bay National Marine Sanctuary

Erica Burton, Research Specialist, Monterey Bay National Marine Sanctuary

Karen Grimmer, Resource Protection Coordinator, Monterey Bay National Marine Sanctuary

Karen Reyna, Resource Protection Coordinator, Greater Farallones National Marine Sanctuary

Lisa Emanuelson, MBNMS Volunteer Monitoring Coordinator, California Marine Sanctuary Foundation

Lisa Wooninck, Regional Policy Coordinator, Office of National Marine Sanctuaries, West Coast Regional Office

Max Delaney, Resource Protection Specialist, Greater Farallones National Marine Sanctuary

Michelle Rome, Environmental Compliance Coordinator, Office of National Marine Sanctuaries

Nichole Rodriguez, MBNMS Sanctuary Advisory Council Coordinator, Lynker Technologies

Paul Michel, Superintendent, Monterey Bay National Marine Sanctuary

Robert Schwemmer, Maritime Heritage Coordinator, Office of National Marine Sanctuaries, West Coast Regional Office

Scott Kathey, Regulatory and Emergency Response Coordinator, Monterey Bay National Marine Sanctuary

Sophie De Beukelaer, MBNMS Permit Coordinator, Lynker Technologies

Steve Lonhart, SIMoN Senior Scientist, Monterey Bay National Marine Sanctuary



List of Agencies and Persons Consulted

NOAA will consult with and send copies of this draft environmental assessment to the following agencies and persons:

Bureau of Ocean Energy Management Pacific Region
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California Governor Gavin Newsom
California Natural Resources Agency
California Office of Historic Preservation
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List of Acronyms

AUV	Autonomous Underwater Vehicle
Beach COMBERS	Beach Coastal Ocean Mammal/Bird Education & Research Surveys
CCLEAN	Central Coast Long-term Environmental Assessment Network
CFR	Code of Federal Regulations
CEQ	Council on Environmental Quality
CZMA	Coastal Zone Management Act
DPS	Distinct Population Segment
DSMZ	Davidson Seamount Management Zone
EA	Environmental Assessment
ECOS	Environmental Conservation Online System
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FAA	Federal Aviation Administration
FR	Federal Register
HAPC	Habitat Areas of Particular Concern
IMO	International Maritime Organization
MARPOL	International Convention for the Prevention of Pollution from Ships
MBNMS	Monterey Bay National Marine Sanctuary
MHHW	Mean Higher High Water
MHW	Mean High Water
MLLW	Mean Lower Low Water
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMSA	National Marine Sanctuaries Act
NOAA	National Oceanic and Atmospheric Administration
ONMS	Office of National Marine Sanctuaries
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
ROV	Remotely Operated Vehicle
SESA	Sanctuary Ecologically Significant Area
SIMoN	Sanctuary Integrated Monitoring Network
Team OCEAN	Ocean Conservation Education Action Network
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VOCs	Volatile Organic Compounds

CHAPTER 1

INTRODUCTION

The National Oceanic and Atmospheric Administration’s (NOAA’s) Office of National Marine Sanctuaries (ONMS) proposes to issue a revised management plan and revised regulations for Monterey Bay National Marine Sanctuary (MBNMS). ONMS prepared this draft environmental assessment (EA) in accordance with the National Environmental Policy Act (NEPA; 42 United States Code (U.S.C.) §§ 4321 *et seq.*), the Council on Environmental Quality’s (CEQ’s) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) §§ 1500-1508), and NOAA Administrative Order (NAO) 216-6A and its Companion Manual, “Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities.” This draft EA presents to the decision makers and the public an analysis of the potential environmental consequences of the proposed action and alternatives.

1.1 National Marine Sanctuaries Act

The National Marine Sanctuaries Act (NMSA) of 1972, as amended (16 U.S.C. §§ 1431 *et seq.*) authorizes the Secretary of Commerce to designate areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or aesthetic qualities as national marine sanctuaries. Among the purposes and policies of the NMSA are mandates to:

- Identify and designate as national marine sanctuaries areas of the marine environment which are of special national significance and to manage these areas as the National Marine Sanctuary System (16 U.S.C. § 1431(b)(1));
- Provide authority for comprehensive and coordinated conservation and management of these marine areas, and activities affecting them, in a manner which complements existing regulatory authorities (16 U.S.C. § 1431(b)(2));
- Maintain the natural biological communities in the national marine sanctuaries, and to protect, and, where appropriate, restore and enhance natural habitats, populations, and ecological processes (16 U.S.C. § 1431(b)(3)); and
- Develop and implement coordinated plans for the protection and management of 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 (16 U.S.C. § 1431(b)(7)).

1.2 Office of National Marine Sanctuaries

NOAA's Office of National Marine Sanctuaries (ONMS) serves as the trustee for a network of underwater parks encompassing more than 600,000 square miles of marine and Great Lakes waters from Washington state to the Florida Keys, and from Lake Huron to American Samoa. The network includes a system of 14 national marine sanctuaries and Papahānaumokuākea and Rose Atoll marine national monuments. ONMS manages the national marine sanctuaries pursuant to the NMSA and implementing regulations (codified at 15 CFR Part 922). ONMS cooperatively manages two marine national monuments with the U.S. Fish and Wildlife Service (USFWS) and other federal and state authorities, as codified in regulations at 50 CFR Part 404.

National marine sanctuaries are special areas set aside for long-term protection, conservation, and management and are part of our nation's legacy to future generations. They contain deep ocean habitats of resplendent marine life, kelp forests, coral reefs, whale migration corridors, deep-sea canyons, historically significant shipwrecks, and other important underwater archaeological sites. Each sanctuary is a unique place worthy of special protection. Because they serve as natural classrooms, cherished recreational spots, and places for valuable commercial activities, national marine sanctuaries represent many things to many people. ONMS works with diverse partners and stakeholders to promote responsible, sustainable ocean uses that ensure the health of our most valued ocean places. A healthy ocean is also the basis for thriving recreation, tourism, and commercial activities that drive coastal economies.

The National Marine Protected Areas (MPA) Center, established under Executive Order 13158 (May 2000), is a division of ONMS, with a mission to facilitate the effective use of science, technology, training, and information in the planning, management, and evaluation of the nation's system of MPAs. The MPA Center works in partnership with federal, state, tribal, and local governments and stakeholders to build a science-based, comprehensive national system of MPAs, and to support and enhance existing MPA programs across all levels of government.

ONMS fosters public awareness of marine resources and maritime heritage through scientific research, monitoring, exploration, education, and outreach, and works closely with its many partners and the public to protect and manage sanctuaries. ONMS is a leader in marine management through the protection of living marine resources, environmental quality, and maritime heritage, while maintaining recreational and commercial activities that are sustainable and compatible with long-term preservation.

1.3 Monterey Bay National Marine Sanctuary

NOAA designated Monterey Bay National Marine Sanctuary (MBNMS) in 1992 to protect and manage the conservation, ecological, recreational, research, educational, historical, and aesthetic resources and qualities of the area (September 18, 1992; 57 FR 43309). Stretching from Marin to Cambria, California, the sanctuary encompasses a shoreline length of 276 miles and 6,094 square miles of ocean, extending an average distance of 30 miles from shore (Figure 1). On November 20, 2008, NOAA expanded MBNMS by 775 square miles to include the Davidson Seamount Management Zone (DSMZ; 73 FR 70488). Davidson Seamount is an undersea mountain habitat and is the first seamount to be protected within a national marine sanctuary. At its deepest point, the sanctuary reaches down 12,743 feet. The sanctuary's natural resources include one of our nation's largest kelp forests, one of North America's largest underwater canyons, an offshore seamount, and the closest-to-shore deep ocean environment in the continental United States. The sanctuary is home to one of the most diverse marine ecosystems in the world, including 36 species of marine mammals, more than 180 species of seabirds and shorebirds, at least 525 species of fish, and an abundance of invertebrates and plants. This remarkably productive marine environment is fringed by spectacular coastal scenery, including sandy beaches, rocky cliffs, rolling hills, and steep mountains. MBNMS has an advisory council that meets bi-monthly to advise sanctuary management on issues of concern relating to management of the sanctuary. The advisory council is an advisory body representing various stakeholder and user groups.

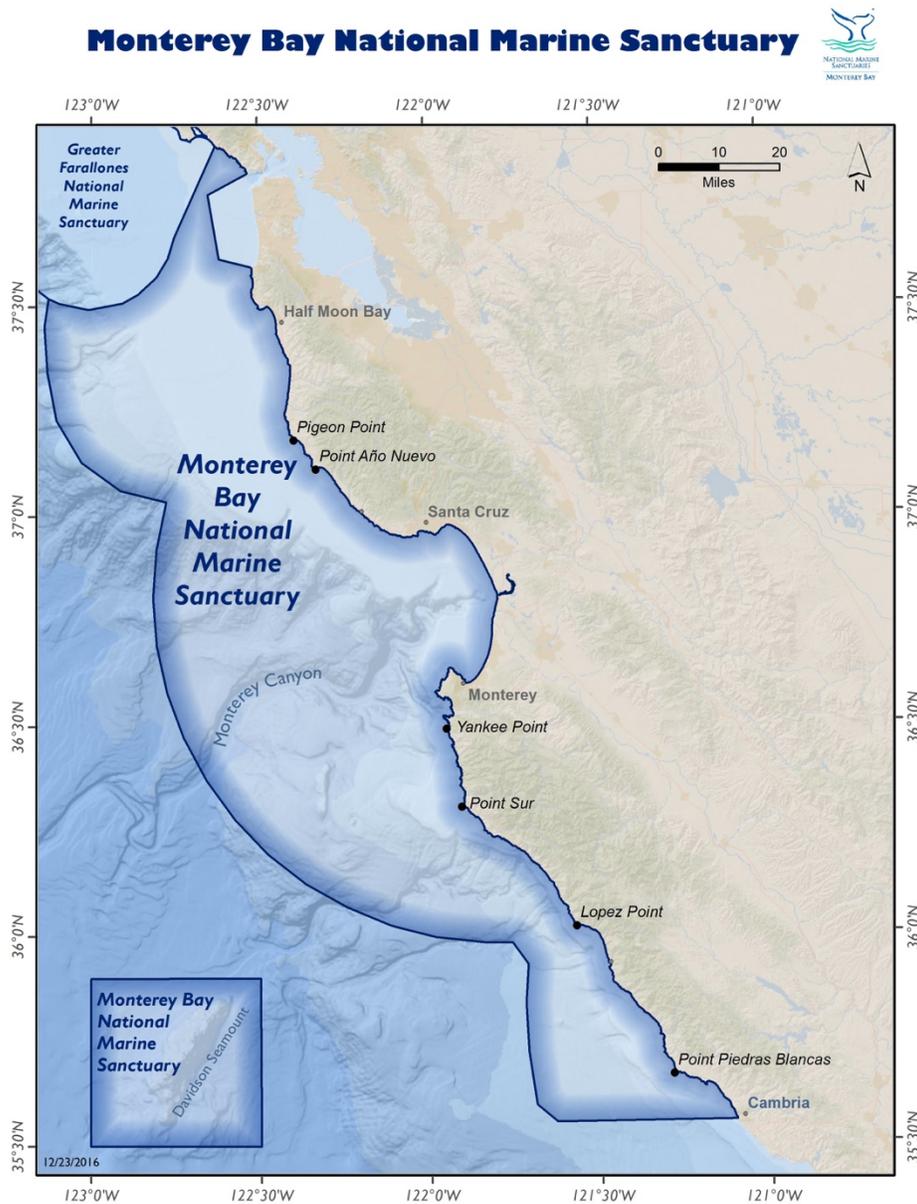


Figure 1. Map of Boundary of Monterey Bay National Marine Sanctuary

1.4 Management of National Marine Sanctuaries

A sanctuary management plan is a site-specific planning and management document. Each national marine sanctuary has an individual management plan that serves as a guide for developing future budgets and implementing management activities. A sanctuary management plan describes the sanctuary's terms of designation, regulations, boundaries, staffing and budget needs, management strategies and actions, performance

measures, and other information as required by Section 304(a)(2)(C) of the NMSA (16 U.S.C. § 1434(a)(2)(C)).

New challenges and opportunities emerge with time. To ensure sanctuary management keeps up with the pace of change, the NMSA requires national marine sanctuary administrators to engage in periodic review and updating of management plans to reevaluate site-specific goals and objectives, management techniques, and strategies, and to revise the management plan as necessary to fulfill the purposes and policies of the NMSA (16 U.S.C. § 1434(e)). The purpose of this management plan review is to ensure the natural living and cultural resources at each site are properly conserved and protected.

Resource protection for national marine sanctuaries is carried out pursuant to the NMSA's implementing regulations, which are codified at 15 CFR Part 922, through the issuance of permits, coordination with other local, state, and federal agencies, and management plan strategies and activities related to outreach, education, research, monitoring, and enforcement.

The NMSA regulations include prohibitions on specific kinds of activities, descriptions of boundaries, a permitting system to allow certain types of activities to be conducted within sanctuaries that would otherwise be prohibited, and definitions (15 CFR Part 922). Each of the 14 national marine sanctuaries has site-specific regulations found at subparts F through R. The regulations for MBNMS are found at subpart M (15 CFR §§ 922.130-34). As an outcome of the NMSA's management plan review process, NOAA may also propose revisions to the regulations for the sanctuary to ensure they meet the sanctuary goals and objectives and the purposes and policies of the NMSA.

Field operations in the sanctuary are necessary to support resource protection, research, and education objectives, as described in the sanctuary management plan. Field operations are activities on, in, or above the water supporting the NMSA's primary goal of resource protection, through direct management, research, education, and enforcement. These field activities can include vessel, aircraft, and scuba diving operations, as well as deployment of instrumentation and presence of personnel in the environment.

1.5 Scope of Environmental Review

This section describes the geographic scope of this environmental review, activities within the scope of this draft EA, activities outside the scope of this draft EA, and how ONMS would evaluate future activities.

1.5.1 Geographic Scope of this Draft Environmental Assessment

The geographic scope of the affected environment in Chapter 4 and analysis of environmental consequences in Chapter 5 encompasses the boundaries of MBNMS and the coastal or marine areas immediately adjacent to the sanctuary. The action area for the purposes of compliance with the Endangered Species Act (ESA) is summarized in **Section 4.3.1.1**.

1.5.2 Activities Within the Scope of this Draft Environmental Assessment

This draft EA describes the anticipated environmental impacts of implementing routine field activities, updating the sanctuary management plan, and updating sanctuary-wide regulations over the time period until the next management plan review process, typically five to 10 years. These activities support the management and protection of the sanctuary's resources. The goal of this draft EA is to capture the broad range of activities that would occur at MBNMS with sufficient detail to provide for a meaningful analysis of potential impacts to the human environment, as required by NEPA. In some cases, limitations in available information and uncertainty regarding the timing, location, or activities to be conducted in the future prevent a full environmental analysis within this draft EA. In such cases, the specific project and site details would not be known until the sanctuary determines a need for such an activity and a subsequent environmental evaluation would be required. ONMS's approach to evaluation of other future activities is described in **Section 1.5.4**.

ONMS used a programmatic approach to identify and prepare a qualitative analysis of the general environmental impacts for the broad scope of actions planned to manage and operate MBNMS. Activities that are within the scope of this environmental assessment are:

Field Operations. Field operations include those activities required to protect and manage the resources of the sanctuary. Such activities may include operating and maintaining vessels, training staff, conducting research and resource documentation, implementing education and outreach activities, and installing and maintaining permanent moorings or other installations to protect fragile ecosystem or cultural resources.

Implementation of Sanctuary Management Plan. The NMSA requires each sanctuary to develop and periodically review its management plan (Sec. 304(a)(2)(C) and Sec. 304(e)). This site-specific planning and management document describes the goals, objectives, and management activities for a national marine sanctuary. Revision of a management plan constitutes a federal action, which requires ONMS to analyze the impacts to the human environment in an EA or environmental impact statement (EIS). Activities NOAA would conduct to implement the sanctuary's current or proposed

revised management plan may include: research and monitoring activities, implementing education and outreach programs, and incident response.

Implementation of Proposed Changes to Sanctuary Regulations. As part of the management plan review process, NOAA is proposing the following revisions to the MBNMS regulations to address resource protection concerns in the sanctuary: (1) adding a definition for the phrase “beneficial use of dredged material” and new regulatory language to clarify MBNMS’s ability to authorize beneficial use of clean and suitable dredged material for beach nourishment restoration purposes within MBNMS (see Section 3.4.1); (2) modifying the prerequisite conditions for motorized personal watercraft access to the riding zone at Mavericks surf break (see Section 3.4.2); (3) reconfiguring four motorized personal watercraft zones (see Section 3.4.3); and (4) making a minor technical correction to document the list of exempted Department of Defense activities at the Davidson Seamount Management Zone (see Section 3.4.4). The anticipated environmental consequences of implementing these proposed regulatory changes are described in this EA.

Activities Conducted by NOAA Staff Under a Superintendent’s Permit. As part of managing each sanctuary, superintendents determine what reasonable and necessary activities are required to fulfill management responsibilities consistent with the purposes of the sanctuary management plan, the NMSA, and regulations thereunder (15 CFR Part 922). For activities that are prohibited by sanctuary regulations, superintendents need to apply for a sanctuary-specific general permit, referred to as the superintendent’s permit. The superintendent’s permit is issued for five years and all activities must be conducted in accordance with the NMSA and associated regulations. When ONMS receives an application for a superintendent’s permit, environmental compliance can be achieved by determining whether the activities specified within the superintendents permit fits within the bounds of the environmental parameters assumed within this EA. If so, ONMS can document its assessment in a brief record of environmental consideration, and support its finding using the analysis in this EA. If the activities are outside the bounds of this EA, ONMS would prepare additional environmental compliance documentation.

1.5.3 Activities Outside the Scope of this Draft Environmental Assessment

Some field activities, management plan activities, and permitting activities are outside the scope of this analysis because a detailed description of the activity was not yet available at the time of issuance of the draft management plan and development of this EA. As such, NOAA did not prepare a full analysis of the environmental consequences of the following actions:

- Modifications, expansions, or new construction of MBNMS facilities;
- Implementation of memorandums of agreement or cooperative agreements with outside groups to conduct activities in the sanctuary;

- Removal of large submerged marine debris;
- Implementation of restoration or mitigation plans and activities as part of emergency response activities or natural resources damage assessments;
- Activities that require individual permits or authorizations; and
- Surveys requiring the use of active acoustics (e.g., echosounders).

Routine permitting activities include processing permit applications and authorizations for a variety of human activities in the sanctuary, monitoring permit compliance, and using MBNMS permitting authority to reduce negative impacts from introduced species, marine debris, and wildlife disturbance. ONMS evaluates all permit applications and authorizations on a case-by-case basis. For each application, ONMS evaluates all environmental compliance requirements, including compliance with NEPA and other environmental statutes (e.g., Endangered Species Act, Coastal Zone Management Act, and National Historic Preservation Act). Some activities that require a permit or authorization may be similar to the activities described in this EA, such as a private organization requesting to conduct research within the sanctuary. The environmental documentation to support a permit or authorization decision may incorporate by reference relevant portions of this EA as appropriate.

As part of sanctuary management, ONMS conducts, permits, or authorizes several types of surveys that require the use of active acoustics (e.g., echosounders). Due to the specialized nature of the acoustical equipment and because the impacts are dependent on the species that may occur near the active acoustic equipment, ONMS determined that it does not currently have sufficient information to analyze such impacts on a programmatic-level because the exact location and acoustic equipment is not known until a research cruise has been planned. Instead, ONMS determined that it would be more appropriate to evaluate the environmental impacts from such use of active acoustics on a case-by-case basis, and therefore, the impacts from such activities are not included in this EA.

When more details become available about these activities or when new activities arise, NOAA will assess whether their effects are adequately addressed in this EA. If they are not, NOAA will conduct additional environmental reviews, and develop independent environmental compliance and consultation documentation, as needed.

1.5.4 Evaluation of Future Activities

In some cases, future field activities are not yet known, or may change in ways that cannot yet be anticipated. Therefore, a full analysis of the environmental consequences of these activities may not be included in this EA. When conducting activities in the sanctuary, NOAA staff will take the following steps to evaluate whether an activity fits within the bounds of this environmental analysis or whether an additional, independent environmental analysis is required:

1. Determine whether a proposed project or management activity is fully consistent and bounded by the activities and locations described in this EA.
2. If so, determine whether the affected environment at that time is similar to the affected environment described in this EA. The purpose of this second consideration is to evaluate whether any changes to the environment have occurred since the publication of this EA that may affect the conclusions in the EA.
3. If the affected environment at that time is similar to the description of the affected environment in this EA, and the proposed activities and resulting consequences are fully covered and bounded by the analysis in the EA, then this EA provides environmental compliance for the proposed activity.
4. If a project is not fully consistent and bounded by the activities covered in this EA, or if the affected environment has significantly changed since publication of the EA, then NOAA will need to prepare a separate environmental analysis to fulfill its responsibilities under NEPA and other related statutes and executive orders. NOAA could use relevant portions of this EA to efficiently achieve environmental compliance.

CEQ's NEPA regulations and NOAA guidance documents describe various strategies that allow NOAA to build upon the analysis in this EA when preparing future environmental compliance documentation (see NOAA's NEPA Companion Manual at <https://www.nepa.noaa.gov/>). These strategies include: 1) "tiering" and 2) incorporation by reference.

"Tiering" refers to an approach whereby federal agencies prepare a site- or project-specific analysis based on a broader, more general, NEPA analysis document. The tiered NEPA analysis would summarize and incorporate discussions from the broader assessment (i.e., this EA) and concentrate on the specific issues of the subsequent action. Agencies are encouraged to tier their EAs or EISs to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (40 CFR § 1502.20).

Incorporation by reference is a technique used to avoid redundancies in description or analysis within a NEPA document. To incorporate by reference, the EA or EIS would refer to the specific page numbers or section of a specific document (e.g., this EA) and provide a short summary of the information such that the reader has an understanding of the significance of the referenced material to the current analysis (40 CFR § 1502.21). CEQ's NEPA implementing regulations also note that any documents incorporated by reference must be publicly available.

1.6 Public Involvement in the Management Plan Review Process

This section describes the public involvement that occurred during the development of this draft EA and the activities that will occur when the draft EA is published.

1.6.1 Public Involvement During Scoping and Development of the Draft EA

NOAA selected the environmental concerns to be addressed in the revised management plan and regulatory changes following a process of public scoping and issue prioritization in coordination with the MBNMS Advisory Council. Pursuant to the NMSA, sanctuary advisory councils advise and make recommendations to NOAA regarding the designation and management of national marine sanctuaries (16 U.S.C. § 1445(a)). On August 27, 2015, NOAA published a notice of public scoping for the review of the MBNMS management plan and regulations (80 FR 51973). This notice notified the public of the proposed action, announced public scoping meetings, and solicited public comments. NOAA conducted four public scoping meetings in September and October 2015 and received over 220 written and oral comments. NOAA prepared a summary scoping report in December 2015, which is included in **Appendix A**.

The MBNMS Advisory Council used this summary scoping report to provide advice to the MBNMS superintendent on the highest priority issues for inclusion in the revised management plan and regulations. Advisory council members conducted a prioritization exercise that binned issues together, which informed their feedback and recommendations on the resource issues to be addressed. The results from the prioritization exercise are available at:

<https://montereybay.noaa.gov/intro/mp/2015review/documents.html>. Based on this input from the MBNMS Advisory Council, NOAA developed a focused set of priority issues. NOAA presented the list of priority issues to the advisory council in April 2016. Throughout 2016 and 2017, NOAA developed a series of workshops and presentations for the advisory council to gather informed feedback on this suite of priority issues. For three of the priority issues, staff, advisory council members, stakeholders, and subject matter experts established working groups to further characterize the issues and develop strategies to address them.

Subsequently, NOAA incorporated the feedback from advisory council members and working groups into proposed action plans. The action plans contain strategies and activities to address specific priority issues identified during the scoping and prioritization phases of the management plan review process. NOAA then presented these proposed action plans to the MBNMS Advisory Council for review. The advisory council members reviewed the action plans and, after consultation with their respective constituents, provided recommendations to MBNMS. In February and April of 2018, NOAA presented the revised draft action plans to the MBNMS Advisory Council for

review and comment. The advisory council reviewed the action plans and made final recommendations to sanctuary management, generally, endorsing the strategies and activities as proposed by MBNMS staff and working groups. Sanctuary staff used in-house expertise, advisory council recommendations, scoping comments, and discussions with experts in the field to determine the best approach to sanctuary management moving forward.

Based on its review of scoping comments and the analysis of issues evaluated in this draft EA, NOAA determined that the proposed action would not have any significant impact on the human environment and therefore the preparation of an environmental impact statement (EIS) was not required pursuant to NEPA. This draft EA provides a summary of the anticipated effects of the proposed action on the human environment. NOAA finds in this draft EA that none of the potential adverse or beneficial effects of the proposed action would be significant based on the context and intensity of the anticipated impacts.

1.6.2 Public Involvement After Publication of the Draft EA

The next step of public involvement is to ensure a wide circulation of the draft EA and to solicit public comments on this document. For details on how to submit comments on the proposed rule, the draft management plan, and/or the draft EA see:

<https://montereybay.noaa.gov/intro/mp/2015review/welcome.html>. All public comments received will be publicly available at www.regulations.gov under docket # NOAA-NOS-2020-0094. This Federal Register Notice also announces NOAA's withdrawal of its notice of intent to prepare an EIS (80 FR 51973).

During the public comment period, NOAA will solicit oral and written comments from federal, state, and local agencies and officials, from organizations, and from interested individuals. After the public comment period is over, NOAA will review the comments. A summary of these comments and the corresponding responses will be included in the final EA. If needed, NOAA will update the EA, as well as the proposed rule and draft management plan, based on the public comments received. If NOAA moves forward with a final action, a final EA, finding of no significant impact (if the final EA finds no significant impacts from the proposed action), and final rule with a final set of regulations, would be published in the Federal Register.

1.7 Related Consultations

In addition to NEPA, NOAA is required to comply with several related statutes. Below describes the statutes applicable to the proposed action and NOAA's responsibilities related to each statute.

1.7.1 Endangered Species Act

The Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. §§ 1531 *et seq.*) provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend. Section 7(a)(2) of the ESA states that each federal agency shall, in consultation with the Secretary of Interior and/or Commerce, ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

Section 4.3.1 of this EA describes the ESA-listed species and designated critical habitat that may occur within the action area, including all areas affected directly or indirectly by the proposed action and not merely the immediate area involved in the action (50 CFR § 402.02). **Section 5.5** describes the potential impacts to each listed species. NOAA will initiate informal consultation with the National Marine Fisheries Service (NMFS) and USFWS at the time of public release of this draft EA. **Appendix D** provides additional information regarding NOAA's ESA Section 7 consultation including correspondence with the USFWS and NMFS.

1.7.2 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA, 16 U.S.C. §§ 1361 *et seq.*) 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" (16 U.S.C. § 1362(18)(B)).

Section 4.3 of this EA describes the species covered under the MMPA that may occur within the action area. NOAA ONMS determined that potential impacts to marine mammals did not rise to a level that required consultation under MMPA.

1.7.3 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. §§ 1801 *et seq.*) fosters long-term biological and economic sustainability of the nation's marine fisheries in U.S. federal waters out to 200 nautical miles from shore. Key objectives of the MSA are to prevent overfishing, rebuild overfished stocks, increase long-term economic and social benefits, and ensure a safe and sustainable supply of seafood. The essential fish habitat (EFH) provisions of the MSA require NMFS to provide recommendations to federal and state agencies for conserving and enhancing EFH for any actions that may adversely impact EFH. EFH is defined (50 CFR § 600.10) as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Federal agencies must consult with NMFS and assess the effects of their actions on EFH.

Section 4.3.2 of this EA describes EFH designated under the MSA that may occur within MBNMS. **Section 5.5.4** describes the potential impacts of the proposed action on designated EFH. NOAA will initiate consultation with NMFS at the time of public release of this draft EA.

1.7.4 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA, 16 U.S.C. §§ 1451 *et seq.*) was enacted in 1972 to encourage coastal states, Great Lake states, and U.S. territories and commonwealths (collectively referred to as "coastal states" or "states") to preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone. Section 307 of the CZMA is known as the "federal consistency" provision. The federal consistency provision requires federal actions (inside or outside a state's coastal zone) that affect any land or water use or natural resource of a state's coastal zone, to be consistent with the enforceable policies of the state coastal management program. The term "effect on any coastal use or resource" means any reasonably foreseeable effect on any coastal use or resource resulting from the activity, including direct and indirect (cumulative and secondary) effects. The federal consistency regulations can be found at 15 CFR Part 930. In accordance with 15 CFR Part 930, subpart C, NOAA will submit a federal consistency determination to the California Coastal Commission at the time of public release of this draft EA.

1.7.5 National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 (NHPA) (54 U.S.C. § 306108) requires federal agencies to take into account the effects of their undertakings on historic properties in accordance with regulations issued by the Advisory Council on Historic Preservation (ACHP) at 36 CFR Part 800. The regulations require that federal agencies consult with states, tribes, and other interested parties (consulting parties) when making their effect determinations. NOAA will initiate Section 106 consultation

with the California State Historic Preservation Officer (SHPO) at the time of public release of this draft EA.

1.7.6 Executive Order 13175: Tribal Consultation and Collaboration

Under Executive Order 13175 of November 6, 2000, federal departments and agencies are charged with engaging in regular and meaningful consultation and collaboration with tribal officials of federally-recognized tribes in the development of federal policies that have tribal implications, and are responsible for strengthening the government-to-government relationship between the United States and Indian tribes. Within the boundaries and adjacent to MBNMS are no federally recognized Indian Tribes pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. § 479a.

1.8 Organization of Environmental Assessment

Chapter 1 (Introduction) is a background discussion of the statutory authorities of the Office of National Marine Sanctuaries; a summary of existing sanctuary management; a description of the scope of the environmental assessment; an overview of the public involvement process for the proposed action; and an overview of the regulatory requirements and consultations that NOAA will be conducting as part of this environmental review.

Chapter 2 (Proposed Action and Purpose and Need) describes the proposed action and the purpose of and need for the proposed action.

Chapter 3 (Description of Alternatives) describes the alternatives development process; the no action alternative and two action alternatives; and the alternatives considered but eliminated from detailed evaluation. For each alternative, Chapter 3 describes the components of each alternative including implementing routine field activities, updating the sanctuary management plan, and updating sanctuary-wide regulations.

Chapter 4 (Affected Environment) describes the existing conditions in MBNMS to provide a baseline for assessing environmental impacts that may occur under each alternative.

Chapter 5 (Environmental Consequences) provides an evaluation of potential impacts of the proposed action on the physical and biological environment, historical resources, and human uses; and a comparison of the relative impacts among the three alternatives.

Appendix A includes a summary of comments received during public scoping for this management plan review process.

Appendix B provides a detailed list of action plans and activities proposed to implement the revised sanctuary management plan

Appendix C provides a list of proposed best management practices for ONMS field activities.

Appendix D includes additional information and documents related to interagency consultations and a list of protected species found in the sanctuary.

Appendix E lists the Department of Defense exempted activities in the Davidson Seamount Management Zone and the exchange of letters between the U.S. Air Force and NOAA.

CHAPTER 2

PROPOSED ACTION AND PURPOSE AND NEED

2.1 Description of the Proposed Action

The proposed action is to update management activities occurring within Monterey Bay National Marine Sanctuary (MBNMS) conducted by NOAA staff that are related to research, monitoring, education, outreach, community engagement, and resource protection. The proposed management activities include implementing routine field activities, updating the sanctuary management plan, and updating sanctuary-wide regulations. The proposed action is intended to continue the protection of living marine resources and their habitats in MBNMS and nationally significant seascapes and shipwrecks, while allowing compatible recreational and commercial uses, as outlined in the NMSA. The proposed action would guide management decision-making and contribute to the attainment of the goals and objectives of the NMSA and the purposes for which MBNMS was established.

2.2 Purpose of the Proposed Action

The purpose of the proposed action is to fulfill the purposes and policies outlined in Section 301(b) of the NMSA, 16 U.S.C. § 1431(b), in order to protect and manage the resources of MBNMS. As required by Section 304(e) of the NMSA, this management plan review enables NOAA to evaluate the substantive progress toward implementing the current management plan and goals for the sanctuary, especially the effectiveness of site-specific techniques and strategies, and to revise the management plan and regulations as necessary to fulfill the purposes and policies of the NMSA. A revised sanctuary management plan and regulations would enable sanctuary staff to manage the resources of MBNMS more effectively and transparently by building stronger partnerships and providing the public with a management plan with clearly defined and detailed sanctuary priorities.

2.3 Need for the Proposed Action

The need for the proposed action is based on widespread and emerging threats to marine resources and NOAA trust resources within MBNMS. The 2008 management plan action plans are no longer sufficient to ensure long-term resource protection and ecosystem function into the future, as a large percent of the actions identified in the management plan have been completed and because new issues and threats have since emerged. This assessment is based on staff and public input on the current MBNMS management plan as well as the findings in the 2015 MBNMS condition report. The report concluded some of the most prominent pressures in MBNMS include marine debris, vessel traffic,

commercial and recreational fishing, agricultural and urban runoff, harmful algal blooms, coastal development, and disturbances to wildlife. In addition, larger, more global issues, such as climate change and ocean acidification, are significant areas of concern, where some impacts are being detected, but long-term effects are not well understood. See <https://sanctuaries.noaa.gov/science/condition/monterey-bay-2015/welcome.html> for the condition report summary and full document.

ONMS is currently operating MBNMS under a 2008 management plan and regulations. An updated management plan and associated regulations are needed because much has been accomplished, and new issues and threats have emerged:

- sanctuary resources face increased threat from local, regional, and global impacts;
- new scientific data and information has become available; and
- visitor numbers, use patterns, types, and recreational interests have changed.

Each of these changes has implications for MBNMS. Consequently, the sanctuary's current regulations and 2008 management plan need to be updated to reflect current strategies for management decisions to further natural and cultural resource protection. Public scoping for the management plan review yielded the need to address wildlife disturbance, water quality, climate change, marine debris, beach nourishment, and increased public awareness. At the same time, there is a need for continued research, exploration, restoration, and education related to the nationally significant ocean resources in MBNMS. As such, there is a need to update management activities in MBNMS relating to research, monitoring, education, outreach, community engagement, and resource protection to address these new and changed issues. This work is critical for assessing changes occurring in the environment, fostering a stewardship ethic, and developing a better understanding of the ecosystem services sanctuary resources provide for communities throughout MBNMS.

CHAPTER 3

DESCRIPTION OF ALTERNATIVES

This chapter describes the proposed range of alternatives, including the no action alternative, and detailed descriptions of the individual components of each alternative. Each action alternative includes the following components: (1) implementing routine field activities, (2) the sanctuary management plan, and (3) sanctuary-wide regulations. To implement the proposed action, NOAA is considering three alternatives:

Alternative A: No action – continued implementation of routine field activities, the 2008 sanctuary management plan, and existing sanctuary-wide regulations.

Alternative B: Continued implementation of routine field activities and existing sanctuary-wide regulations, and adoption of a revised sanctuary management plan.

Alternative C (Preferred): Continued implementation of routine field activities, adoption of a revised sanctuary management plan, and revision of sanctuary-wide regulations.

Section 3.1 summarizes the scoping and prioritization process that informed the development of the alternatives. **Sections 3.2 to 3.4** provide a description of the alternative components. **Section 3.5** summarizes the alternatives under consideration. **Section 3.6** describes the alternatives that were initially considered but eliminated from further consideration.

3.1 Development of Alternatives

The components of the proposed alternatives described below are based on Sanctuary Advisory Council recommendations and the professional expertise of NOAA staff (see **Section 1.6.1** for more details on the public involvement process). In particular, NOAA developed the draft management plan and proposed regulations based on recommendations presented by the advisory council at the February and June 2017 advisory council meetings. These recommendations included the work completed by five advisory council working groups and one subcommittee. Through an extensive multi-year review process, MBNMS staff presented draft action plan outlines to the Sanctuary Advisory Council and its working groups for recommendations. The resulting draft plans incorporated advisory council input, local agencies, and experts. Sanctuary staff reviewed and, where appropriate, further revised the components of the alternatives based on additional input from preliminary discussions with staff at the four adjacent

harbors, Elkhorn Slough National Estuarine Research Reserve, U.S. Coast Guard, and the USFWS.

The content and structure of the proposed alternatives are based upon the need for increased resource protection at MBNMS. In developing the alternatives and identifying the preferred alternative for analysis in this draft EA, NOAA considered both regulatory changes and non-regulatory management plan changes consistent with achieving the goal of increased resource protection of the sanctuary.

NOAA staff and MBNMS's advisory council members used the following questions as screening criteria to determine a range of reasonable alternatives:

- Does ONMS have the institutional responsibility and/or authority to address this issue pursuant to the NMSA?
- Does addressing this issue have positive site benefits to natural resources/ecosystem, cultural resources, habitat protection, protection of biodiversity, or resolving user conflicts of the sanctuary?
- Would addressing this issue have major, moderate, or minimal site benefits to the sanctuary?
- What is the urgency of this issue/problem?
- What is the level of response/urgency needed for this issue?
- What is the feasibility of addressing the issue?
- What is the level of effort required?
- What is the best agency to address this issue?
- Would the alternative meet the purpose and need of the proposed action?
- Would the proposed action/alternative be consistent with statutory requirements?

NOAA then applied these screening criteria to determine the appropriate types of field activities, new or revised non-regulatory management plan actions, or regulatory changes to be included in the alternatives. NOAA developed alternatives that include each component (as described in detail below). NOAA structured the alternatives to be sequentially more protective of the MBNMS sanctuary resources in order to address the current environmental threats within the sanctuary (described in **Section 2.3**). The proposed alternatives are summarized in **Table 1**.

Table 1. Summary of the Components within Each Alternative

	Alternative A: No Action Alternative	Alternative B	Alternative C
Field Activities	Current field activities	Current field activities	Current field activities
Management Plan	2008 management plan	Revised management plan	Revised management plan
Regulations	Current regulations	Current regulations	Revised regulations

3.2 Proposed Routine Field Activities by Alternative

As part of NOAA’s management responsibilities for the sanctuary’s resources, NOAA conducts routine field activities in MBNMS, along adjacent shorelines, and in sanctuary offices and visitor centers. Field activities aim to further resource protection goals, promote stewardship among local stakeholders, and educate the public and research community on the sanctuary. See **Section 3.2.4** for a summary table showing the estimated level of field activities that NOAA would conduct under alternatives A, B, and C. Generally, the same types of field activities would be conducted under all alternatives, but the estimated level of activity may vary slightly.

3.2.1 Alternative A: No Action (Status Quo)

Under the no action alternative, NOAA would continue to conduct the current levels of routine field activities to support management of the sanctuary, including implementation of the sanctuary management plan and regulations. Field activities fall into the following categories:

3.2.1.1 Operating and Maintaining ONMS Vessels

Vessel operations are generally conducted on the R/V *Fulmar*, *R4107*, and a Rigid-hull Inflatable Boat, which are shared assets operated by the ONMS West Coast Regional Office that work on behalf of Cordell Bank, Greater Farallones, and Monterey Bay national marine sanctuaries. Vessel operations within MBNMS are generally episodic and low intensity with an estimated 90 days at sea during a typical year. ONMS small boats are operated according to all NOAA Small Boat Program guidelines (<https://www.oma.noaa.gov/learn/small-boat-program>) and follow additional, voluntary sanctuary standing orders to minimize impacts on sanctuary resources, particularly large whales, sea turtles, and other smaller marine mammals. These standing orders are to be followed anytime large whales are known to be present or believed to be present in an area of operation, regardless of time of year. See **Appendix C** for a full list of standing orders.

The majority of vessel maintenance and training activities occur in or near the vessel homeport in Monterey, California. The R/V *Fulmar* and *R4107* are hauled out for dry

dock maintenance annually. Minor maintenance such as oil changes and hull cleanings generally occur up to 10 times per year and may occur both in and out of the water in harbors and associated marine repair facilities outside the sanctuary. Fueling occurs dockside in harbors outside of the sanctuary. The Rigid-hull Inflatable Boat is removed from the water for service. Vessel crew training and safety drills occur up to 25 times per year inside and outside of sanctuary waters. Training activities may include fire drills, man overboard, and scuba diver rescue.

Vessel operations in (and in transit to and from) MBNMS support the following management actions:

- On-the-water research, sampling, and monitoring activities such as geological, biological, and oceanographic characterization of the marine environment, including Sanctuary Ecologically Significant Areas, and implementing monitoring and research programs to understand natural and human caused changes in sanctuary resources;
- Routine maritime heritage activities such as locating and characterizing cultural and maritime heritage resources;
- Resource protection and stewardship, such as implementing control and eradication plans for introduced species, responding to whales entangled in fishing gear, response to vessel casualties, and conducting oil spill planning drills; and
- On-the-water monitoring and enforcement activities.

3.2.1.2 Scuba and Snorkel Operations

Science diving operations conducted by NOAA staff include nearshore characterization studies, habitat studies, species studies, oceanographic studies, benthic studies, and natural resource damage assessments. Dives typically occur along the Big Sur coast as well as proficiency dives in Monterey. Big Sur dives are sometimes multi-day missions. NOAA staff may conduct up to 250 dives per year. Depending on location and sea state, up to three dives can typically occur per day.

Scuba and snorkel operations in MBNMS support the following management actions:

- On-the-water research, sampling, and monitoring activities such as geological, biological, and oceanographic characterization of the marine environment, including Sanctuary Ecologically Significant Areas, and implementing monitoring and research programs to understand natural and human caused changes in sanctuary resources;
- Routine maritime heritage activities such as locating and characterizing cultural and maritime heritage resources; and
- Resource protection and stewardship, such as implementing control and eradication plans for introduced species, and response to vessel casualties.

3.2.1.3 Onshore Fieldwork

Onshore fieldwork in MBNMS generally involves NOAA staff, volunteers, and members of the public participating in onshore citizen science and volunteer programs. Below are some examples of these programs and the intensity of onshore fieldwork involved:

- The annual First Flush program involves up to 100 volunteers collecting water samples at storm drain outfalls during the first significant rain event of the fall season for water quality analysis.
- Snapshot Day is a spring event involving up to 250 volunteers collecting water samples from creeks and rivers for analysis.
- Urban Watch is a summer dry-weather monitoring program, involving up to 50 volunteers collecting effluent samples at key urban storm drain outfalls to test for chemical discharges into storm drains impacting MBNMS.
- As part of the Beach COMBERS (Coastal Ocean Mammal/Bird Education and Research Surveys) program, up to 100 volunteers collect baseline information on rates of beach stranding for all species of marine birds and mammals in Monterey Bay, as well as presence of tar and oil. Each volunteer conducts a visual survey of an assigned 5 km beach segment up to three times per month. The length of total shoreline visually surveyed each month is up to 50 miles. Occasionally beachcast organisms and tar/oil samples are collected.

Onshore fieldwork can also be a part of the routine work of the resource protection and research teams at MBNMS. Onshore visual surveys can be necessary to respond to vessel casualties and assess resource damage. Response to these types of vessel casualties generally occur up to 30 times per year in MBNMS.

In sum, onshore fieldwork activities support the following management actions:

- Onshore education, outreach, visitor, and volunteer field activities, such as leading and supporting citizen science and volunteer programs to conduct water quality monitoring or remove debris from coastal watersheds;
- Onshore research, sampling, and monitoring activities, such as monitoring programs to measure plastic debris in surface waters, harmful algal bloom (HAB) monitoring, conducting source tracking to reduce pollutant discharges to storm drains, monitoring introduced species, and characterizing population densities; and
- Resource protection and stewardship activities such as implementing monitoring, control, and eradication plans for introduced species, onshore restoration projects, enforcement and spill response monitoring, and removal of marine debris or grounded vessels.

3.2.1.4 Operations of Non-Motorized Craft

Operations of non-motorized craft in MBNMS are generally undertaken by NOAA staff and volunteers to support education, outreach, and citizen science activities. For example, the Team OCEAN program puts trained and knowledgeable naturalists out on the water in MBNMS-owned kayaks to greet and interact with day kayakers. The naturalists serve as docents and promote respectful wildlife viewing and protection of marine mammals from disturbance. Naturalists tend to work on weekend days for up to 50 days of effort each spring and summer.

3.2.1.5 Deployment of Equipment on the Seafloor

Research and monitoring activities that deploy equipment on the seafloor inform sanctuary condition reports and ongoing management of sanctuary resources. For example, NOAA deploys (1) water sampling devices that gather information on pollutants through time, (2) hydrophones that measure anthropogenic sounds, and (3) particle traps that measure ocean productivity to assess sanctuary health. In addition, NOAA deploys research equipment on the seafloor to answer basic science and exploration questions, and to provide material for education and outreach efforts. Specific deployments include: (1) weighted markers to identify individual deep-sea corals, (2) instruments that measure ocean temperature and oxygen in massive octopus brooding gardens, (3) camera systems placed on the seafloor to count fishes in marine reserves, and (4) hydrophones to monitor the soundscape in the sanctuary. These scientific instruments are all retrieved after data collection is completed. In Davidson Seamount, equipment is temporarily placed on the seafloor to measure water quality parameters associated with corals and octopus brooding areas. Individual animals are sometimes identified by putting weighted markers next to them. To study impacts of climate change, respirometers are used to assess the metabolism of organisms collected and placed in chambers with different water chemistry.

In addition to the instruments described above, NOAA also deploys buoy-based scientific equipment for research and monitoring, mooring buoys for marking zone boundaries for motorized personal watercraft use, hydrophones, and oil spill response booms. All of these require deployment of mooring hardware on the seafloor. The mooring hardware can range from weighted moorings systems to screw anchors that go below the marine substrate.

NOAA maintains marker buoys for three motorized personal watercraft zones outside the harbors of Monterey, Moss Landing, and Santa Cruz. This involves recovery, refurbishing, and redeployment of up to 15 Class IV ionomer foam-can marker buoys in a given year. Moorings are placed in sandy locations ranging in depth from 50 – 270 feet. Each mooring consists of a buoy, a light (for Monterey moorings), 1/2" top chain, 1" nylon riser line (for deep moorings), 3/4" chafe chain, additional 1/2" bottom chain (for deep moorings), a 200 lb steel DorMor anchor, and multiple steel shackles and swivels.

3.2.1.6 Deployment of Autonomous Underwater Vehicles, Remotely Operated Vehicles, Gliders, and Drifters

Deployment of remotely operated vehicles (ROVs) can be part of the routine work of the resource protection and research teams at MBNMS. ROV deployment can be necessary to respond to vessel casualties and assess resource damage. Response to these types of vessel casualties generally occur up to 30 times per year in MBNMS. In addition, NOAA research staff use ROVs to conduct underwater video documentation over areas that are deemed ecologically significant and to characterize and establish a baseline of seafloor habitats and associated taxa. These research activities can involve up to 10 ROV deployments per year. ROVs would generally operate at depths of approximately 300 meters. Deployment of ROVs or automated underwater vehicles (AUVs), gliders, and drifters can also support routine maritime heritage activities in MBNMS such as visual reconnaissance surveys associated with historic documentation on last reported positions of ship and aircraft wreck sites.

NOAA would also support deployment of AUVs, gliders, and drifter buoys by other individuals or organizations conducting activities in the sanctuary. The intensity of these activities would depend on the permit applications received by the sanctuary staff from outside researchers. Deployment of AUVs, gliders, or drifters is considered a discharge and requires the issuance of a Letter of Authorization under the MBNMS superintendent's permit. In addition, if an ROV or similar unmanned autonomous device were placed on the seabed in the sanctuary that action would also require a Letter of Authorization under the MBNMS superintendent's permit. At the time when sanctuary staff receive a specific permit application for such activities, they would be evaluated for compliance with NEPA and other applicable laws and regulations before issuance of a permit or Letter of Authorization.

3.2.1.7 Aircraft Operations

Aircraft operations in MBNMS would support the following management actions:

- Estimation of marine mammal, seabird, and leatherback turtle abundances by MBNMS or other resource management agencies;
- Enforcement and emergency response activities; and
- Mapping habitats using drones including kelp beds and monitoring species distribution and abundance.

Increasingly, researchers are using aerial drones to map kelp beds habitat and to monitor species distribution and abundance. Aircraft operations would be a particularly important tool for conducting aerial surveys of the Davidson Seamount Management Zone, as it is expensive to access by ships. There are regulatory overflight zones in MBNMS where flights below 1,000 feet are prohibited. These activities are either conducted outside of MBNMS regulated overflight zones where flights below 1,000 feet are prohibited or they are individually permitted after individual environmental review.

Bird and mammal rookeries are also avoided. NOAA anticipates there could be up to 10 four-hour research flights per year using unmanned aircraft systems (UAS). These systems can have land-based and ship-based uses. This is an estimate of up to 40 flight hours per year.

3.2.2 Alternative B

In Alternative B, NOAA would continue to implement all categories of routine field activities as described in the no action alternative.

3.2.3 Alternative C (Preferred)

In Alternative C, NOAA would continue to implement all categories of routine field activities as described in Alternative A, except as modified below.

3.2.3.1 Deployment of Equipment on the Seafloor

As part of implementing the revisions to motorized personal watercraft zone boundaries, NOAA would reduce the number of marker buoys deployed and maintained at the harbors of Monterey, Moss Landing, and Santa Cruz from 15 to 9 Class IV ionomer foam-can marker buoys in a given year. See **Section 3.2.1.5** for more details on buoy and mooring placements.

3.2.4 Comparison of Estimated Field Activities by Alternative

Table 2 below summarizes the categories and anticipated intensity of routine field activities NOAA would conduct to manage Monterey Bay National Marine Sanctuary under each alternative.

Table 2. Estimated Annual Field Activities by Category (All Alternatives)

Category	Estimated Activity Level (Alternative A)	Estimated Activity Level (Alternative B)	Estimated Activity Level (Alternative C)
Vessel Operations and Maintenance (number of vessels; days at sea/year)	Up to three vessels operated and maintained by sanctuary staff; each vessel is up to 65 feet in length and 20 knots cruising speed. Up to 90 total vessel days at sea/year for all three vessels, including: <ul style="list-style-type: none"> • Up to 25 vessel days at sea/year for crew training and safety drills • Up to five vessel days¹ at sea/year for whale disentanglement support 	Same as Alternative A.	Same as Alternative A.
Scuba or Snorkel Operations (dives/year)	Up to 250 dives/year	Same as Alternative A.	Same as Alternative A.
Onshore Fieldwork (number of people x days of fieldwork)	Up to 1200 person days/year for volunteer beach and water quality surveys (BeachCOMBERS: Up to 100 volunteers x 12 surveys x .5 day; water quality volunteers: Up to 400 volunteers x 3 surveys x .5 day) Up to 60 person days/year for response to vessel grounding incidents (1 person x 2 days x up to 30 grounding incidents ²)	Same as Alternative A.	Same as Alternative A.
Non-Motorized Craft (e.g., kayaks) (number of people; days at sea/year)	Up to 50 days at sea/year by up to 50 people for volunteer and outreach activities	Same as Alternative A.	Same as Alternative A.

¹ This number is highly variable dependent upon the number of whale entanglement incidents that occur in or adjacent to MBNMS that require support from MBNMS staff. These activities are conducted in close coordination with NMFS and the Whale Entanglement Team and are conducted under NMFS permits for large whale disentanglement.

² This number is highly variable dependent upon the number of vessel grounding incidents that occur in or adjacent to MBNMS that require response or salvage support from MBNMS staff.

Category	Estimated Activity Level (Alternative A)	Estimated Activity Level (Alternative B)	Estimated Activity Level (Alternative C)
<p>Deployment of Equipment on the Seafloor (deployments/year)</p>	<p>Up to 15 buoy deployments/year for mooring buoys for marking zone boundaries for motorized personal watercraft use, hydrophones, and oil spill response booms.</p> <p>Up to 20 deployments/year of small research and monitoring equipment (e.g., drop cameras, weighted markers, temperature, and oxygen sensors)</p>	<p>Same as Alternative A.</p>	<p>Up to nine buoy deployments/year for mooring buoys for marking zone boundaries for motorized personal watercraft use, hydrophones, and oil spill response booms.</p> <p>Up to 20 deployments/year of small research and monitoring equipment (e.g., drop cameras, weighted markers, temperature and oxygen sensors)</p>
<p>Deployment of AUVs, ROVs, Gliders, or Drifters (deployments/year)</p>	<p>Up to 40 ROV deployments/year; including:</p> <ul style="list-style-type: none"> Up to 30 ROV deployments/year for visual assessment of injury or damage associated with vessel casualty incidents <p>Up to 20 AUV deployments/year with each deployment lasting eight to 10 hours.</p> <p>Up to eight drifter buoy deployments/year Up to seven glider deployments/year</p>	<p>Same as Alternative A.</p>	<p>Same as Alternative A.</p>
<p>Aircraft Operations (flight hours/year)</p>	<p>Up to 40 flight hours/year of drone/unmanned aircraft systems (UAS).</p>	<p>Same as Alternative A.</p>	<p>Same as Alternative A.</p>
<p>Deployment of Remote Sensing Equipment</p>	<p>None known at this time. As described in Section 1.5.3, if a future project included remote sensing surveys that require the use of active acoustics (e.g., echosounders), NOAA would evaluate the need for environmental compliance under NEPA, ESA, and other relevant statutes at that time.</p>		

3.3 Proposed Modifications to Sanctuary Management Plan by Alternative

As part of NOAA's management responsibilities for the sanctuary's resources, NOAA periodically reviews the MBNMS sanctuary management plan. The management plan serves as a guide for implementing management activities. The purpose is to ensure the sanctuary's natural living and cultural resources are properly conserved and protected.

3.3.1 Alternative A: No Action (Status Quo)

Under the no action alternative, NOAA would continue to manage MBNMS under the current sanctuary management plan without revision. The current sanctuary management plan, published in 2008, can be found at: <https://montereybay.noaa.gov/intro/mp/welcome.html>. It is a detailed plan for resource protection, research, education, and administrative services at MBNMS, with special emphasis on key resource protection issues. The action plans in the current sanctuary management plan address the following topics:

Coastal Development Action Plans

- Coastal Armoring
- Desalination
- Harbors and Dredge Disposal
- Submerged Cables

Ecosystem Protection Action Plans

- Big Sur Coastal Ecosystem
- Bottom Trawling Effects on Benthic Habitats
- Davidson Seamount
- Emerging Issues
- Introduced Species
- Sanctuary Integrated Monitoring Network (SIMoN)
- Marine Protected Areas

Operations and Administration Action Plans

- Operations and Administration
- Performance Evaluation

Partnerships and Opportunities Action Plans

- Fishing Related Education and Research
- Interpretive Facilities

- Ocean Literacy and Constituent Building

Water Quality Action Plans

- Beach Closures and Microbial Contamination
- Cruise Ship Discharges
- Water Quality Protection Program

Wildlife Disturbance Action Plans

- Marine Mammal, Seabird, and Turtle Disturbance
- Motorized Personal Watercraft
- Tidepool Protection

Cross-Cutting Action Plans

- Administration and Operations
- Community Outreach
- Ecosystem Monitoring
- Maritime Heritage
- Northern Management Area Transition

Various proportions of the 2008 sanctuary management plan are completed, ongoing, or in progress. In 2015, MBNMS staff conducted a review of progress toward completing the action plans in the 2008 sanctuary management plan. This analysis (summarized in **Table 3**) informed the decision to undertake a full management plan review and the identification of priority topics to be addressed in the new management plan. Activities that are **in progress** are at various stages of completion and were not expected to be completed by the start of the management plan review process. Activities that are described as **completed** are successfully accomplished and do not continue year to year. Activities that are described as **ongoing** are successfully implemented over the long term, i.e., they are activities that continue year to year.

Table 3. Percent of Action Plan Activities from 2008 Management Plan by Stage of Completion

Topic	Action Plan	Number of Activities in Action Plan	Not Initiated	In progress	Completed	Ongoing
Coastal Development	Coastal Armoring	22	9%	27%	37%	27%
	Desalination	16	12%	44%	25%	19%
	Harbors and Dredge Disposal	13	0	23%	8%	69%
	Submerged Cables	7	0	0	86%	14%
Ecosystem Protection	Big Sur Coastal Ecosystem	11	69%	15%	6%	8%
	Bottom Trawling Effects on Benthic Habitats	19	17%	55%	22%	6%
	Davidson Seamount	23	4%	56%	17%	23%
	Emerging Issues	8	25%	38%	0	39%
	Introduced Species	10	30%	30%	10%	30%
	Sanctuary Integrated Monitoring Network (SIMoN)	28	0	4%	21%	75%
	Marine Protected Areas	41	46%	54%	0	0
Operations and Administration	Operations and Administration	61	0	16%	6%	78%
	Performance Evaluation	5	0	40%	0	60%
Partnerships and Opportunities	Fishing Related Education and Research	24	9%	22%	55%	14%
	Interpretive Facilities	13	0	30%	62%	8%
	Ocean Literacy and Constituent Building	20	5%	50%	25%	15%
Water Quality	Beach Closures and Microbial Contamination	29	4%	61%	0	36%
	Cruise Ship Discharges	7	28%	14%	58%	0

Topic	Action Plan	Number of Activities in Action Plan	Not Initiated	In progress	Completed	Ongoing
	Water Quality Protection Program	73	8%	31%	7%	54%
Wildlife Disturbance	Marine Mammal, Seabird, and Turtle Disturbance	31	23%	22%	13%	42%
	Motorized Personal Watercraft	14	8%	39%	31%	15%
	Tidepool Protection	26	50%	42%	4%	4%
Cross Cutting	Administration and Operations	20	27%	45%	22%	6%
	Community Outreach	10	10%	10%	10%	70%
	Ecosystem Monitoring	19	42%	21%	26%	11%
	Maritime Heritage	21	26%	37%	11%	26%
	Northern Management Area Transition	34	16%	29%	37%	18%

Note: Total percentage may not always add up to 100% due to rounding.

Under the no action alternative, NOAA would continue to implement the current sanctuary management plan focusing on the action plans that are not yet completed. NOAA would undertake the following types of activities to support continued implementation of the remaining action plans in the current sanctuary management plan.

3.3.1.1 Office and Classroom-Based Activities

NOAA staff would conduct meetings, policy development and planning, risk assessments, education and training programs, prepare research reports, and produce and maintain online resources and databases. These activities would take place in existing facilities.

3.3.1.2 Administration of the Sanctuary

NOAA staff would perform budgeting, staffing, information technology support, and provide support to the MBNMS Advisory Council. These activities would take place in existing facilities.

3.3.1.3 Permitting Administration

NOAA staff would process permit applications and authorizations, monitor permit compliance, and use the sanctuary’s permitting authority to reduce negative impacts from introduced species, marine debris, and wildlife disturbance. As described in **Section 1.5.3**, NOAA evaluates all permit applications and authorizations on a case-by-case basis. For each application, ONMS evaluates all environmental compliance requirements, including NEPA and other environmental statutes (e.g., Endangered

Species Act, Coastal Zone Management Act, National Historic Preservation Act). The environmental documentation to support a permit or authorization decision may incorporate by reference relevant portions of this EA as appropriate.

3.3.1.4 Education and Outreach Activities

NOAA staff would produce and maintain visitor exhibits and interpretive signage in the field; create programming and host events at visitor centers, museums, libraries, conferences, community events, and online media; and lead and support citizen science and volunteer wildlife disturbance prevention programs within sanctuary waters or along adjacent shorelines.

3.3.1.5 Coordination and Collaboration with Local and Regional Partners and Stakeholders

NOAA staff would work with local and regional partners and stakeholders on research, resource protection, and other sanctuary management topics. Topics include: policy development, beach nourishment, dredge material and emergency landslide disposal, encouraging research on sanctuary priorities, and public outreach on best practices to avoid wildlife disturbance and marine debris in sanctuary waters.

3.3.1.6 Research, Sampling, and Monitoring Activities

NOAA staff would conduct research, sampling, and monitoring activities within the sanctuary or along adjacent shorelines, such as: characterization and oceanographic surveys³ of marine environments, species distribution studies, monitoring marine debris and pollutant loads flowing into MBNMS, sound monitoring, research and monitoring of natural and human caused changes in sanctuary resources, developing new technologies for studying the ocean, developing restoration methods for species and habitats, and studying the use of motorized personal watercraft zones and boater implementation of wildlife approach distances.

3.3.1.7 Resource Protection and Stewardship Activities

NOAA staff would conduct resource protection and stewardship activities within the sanctuary or along adjacent shorelines, such as: implementing early detection, monitoring, eradication, and restoration programs for introduced species; coordinating with U.S. Coast Guard; responding to emergency marine vessel incidents and other discharge incidents (e.g., sunken and grounded vessels, vehicles going off road, downed aircraft); implementing restoration and recovery plans for habitat damages and endangered species; and oil spill response planning.

³ As described in **Sections 1.5.3 and 1.5.4**, if a future management action included surveys that require the use of active acoustics (e.g., echosounders), NOAA would evaluate the need for environmental compliance under NEPA, ESA, and other regulatory statutes at that time.

3.3.1.8 Maritime Heritage Activities

NOAA staff would conduct activities to implement its maritime heritage program, such as: shipwreck reconnaissance expeditions, submitting nominations to the National Register of Historic Places, conducting research on maritime cultural landscapes, and monitoring hazardous shipwreck sites. Pursuant to the National Historic Preservation Act (NHPA), MBNMS addresses preservation mandates to inventory and protect historical and cultural resources for the benefit of the public. This includes locating, visually surveying, and monitoring potentially polluting wrecks in MBNMS; providing early notification of potential leaks of hazardous cargoes and bunker fuel; and taking appropriate steps to mitigate negative impacts to water quality within the sanctuary.

3.3.2 *Alternative B: Implement Revised Sanctuary Management Plan*

Under Alternative B, NOAA proposes to implement a revised sanctuary management plan that would serve as an overarching framework for sanctuary management and outline the non-regulatory activities the sanctuary would undertake in the next five to 10 years. As a result of the public scoping process and internal prioritization exercises, NOAA determined that the revised sanctuary management plan for MBNMS would outline actions and activities aiming to accomplish one or more of the following goals:

- Collaborate with strategic partners to conserve natural habitats, populations, and ecological processes by preventing, minimizing, and/or mitigating stressors on resources in the sanctuary.
- Enhance the understanding of ecosystem processes and inform ecosystem-based management efforts through scientific research, monitoring, and characterization.
- Enhance ocean and climate literacy, promote awareness of the sanctuary, and foster ocean stewardship through education, outreach, and interpretation efforts.
- Maintain and protect the sanctuary's natural biological diversity and, where appropriate, restore and enhance sanctuary ecosystems.
- Increase knowledge and appreciation of maritime heritage (living cultures, traditions, and cultural resources).
- Facilitate wise and sustainable use in sanctuaries to the extent such uses are compatible with resource protection.
- Build, maintain, and enhance an operational capability and infrastructure.

The revised sanctuary management plan would consist of 14 action plans to support these goals: eight are issue-based (i.e., intended to address a specific environmental topic or concern) and six are program-based (i.e., intended to address the administrative aspects of sanctuary management). Each new or revised action plan was designed to address a priority management issue. In 2015, MBNMS staff analyzed progress toward completing the action plans in the 2008 sanctuary management plan, as described in **Section 3.3.1**. Using this analysis, as well as input from the public scoping report and

MBNMS Advisory Council, MBNMS staff identified the priority environmental concerns and management priorities for inclusion in the revised sanctuary management plan. Then, NOAA consulted with regional experts to develop and refine the strategies and activities contained in each action plan.

NOAA identified the following new environmental concerns, which are not addressed in the 2008 sanctuary management plan, to be addressed in new action plans in the revised sanctuary management plan:

- climate change;
- implementation of coastal erosion and sediment management plans;
- marine debris;
- impacts to and management options for Sanctuary Ecologically Significant Areas (SESAs);
- assessing use of motorized personal watercraft in the sanctuary; and
- evaluating offshore wind energy and artificial reefs.

NOAA also identified the following environmental concerns and management topics to be addressed through revisions to existing action plans in the 2008 sanctuary management plan:

- addressing wildlife entanglement and anthropogenic ocean noise in the Wildlife Disturbance Action Plan;
- identifying and implementing new programs at MBNMS visitor centers;
- outlining an approach to media (print, television, and social) in the Education, Outreach and Communications Action Plan;
- expanding research and monitoring efforts at Davidson Seamount and extending those research efforts to Sur Ridge; and
- outlining a clear approach to addressing invasive species in sanctuary waters.

Provided below is a brief summary of each proposed new or revised action plan in the revised sanctuary management plan. A detailed list of the specific activities that would take place to implement each action plan is included in **Appendix B**. The draft revised sanctuary management plan is available at <https://montereybay.noaa.gov/intro/mp/2015review/welcome.html>. The proposed new or revised action plans address the following topics.

3.3.2.1 Issue-Based Action Plans (Alternative B)

- *Climate Change* – (New) Proposes to address coastal resilience, climate adaptation, and ocean acidification through capacity building and collaborative partnerships.
- *Coastal Erosion and Sediment Management* – (New) Implements plans to reduce human-caused coastal erosion through collaboration with local, state, and

- federal agencies to address and restore sediment balance in nearshore habitats throughout the sanctuary.
- *Davidson Seamount* – (Existing, new elements) Proposes to increase our understanding of the Davidson Seamount Management Zone and Sur Ridge through characterization and ecological process studies, and the development of education programs of these unique features of the sanctuary.
 - *Emerging Issues* – (Existing, new elements) Focuses on developing a framework to identify and address future resource protection issues.
 - *Introduced Species* – (Existing) Outlines efforts to prevent the introduction, spread, and establishment of introduced species, and to control and eradicate populations of introduced species already established in the sanctuary.
 - *Marine Debris* – (New) Assesses and seeks to reduce the amount of marine debris in or entering the sanctuary.
 - *Water Quality Protection Program* – (Existing, new elements) Raises awareness of water quality issues and improves the quality of water entering the sanctuary.
 - *Wildlife Disturbance* – (Existing, new elements) Increases efforts to maintain and improve protection of sanctuary wildlife by evaluating and remediating adverse impacts from human activities.

3.3.2.2 Program-Based Action Plans (Alternative B)

- *Education, Outreach, and Communication* – (Existing, new elements) Increases protection and appreciation of sanctuary resources by building greater public understanding, engagement, and stewardship throughout our highly diverse coastal communities.
- *Marine Spatial Planning* – (New) Seeks to balance uses and protections of sanctuary resources and improve scientific understanding.
- *Maritime Heritage* – (Existing, new elements) Inventorying, locating, surveying⁴, and monitoring historic shipwrecks and those posing potential threats to sanctuary resources; and characterizing and protecting maritime heritage resources.
- *Operations and Administration* – (Existing, new elements) Addresses the necessary operations and administration activities required for implementation of an effective program, including identifying staffing, infrastructure needs, and operational improvements.
- *Research and Monitoring* – (Existing, new elements) Assesses changes in species, habitats, and ecosystem processes, to better characterize and understand the sanctuary ecosystem, and support ecosystem-based management, resource protection, and education.

⁴ As described in **Sections 1.5.3** and **1.5.4**, if a future management action included surveys that require the use of active acoustics (e.g., echosounders), NOAA would evaluate the need for environmental compliance under NEPA, ESA, and other regulatory statutes at that time.

- *Resource Protection* – (Existing, new elements) Seeks to protect and restore the biological, historical, and cultural resources in the sanctuary.

Implementation of these proposed revised and new action plans would involve undertaking the same broad types of management activities described in Alternative A (see **Section 3.3.1**).

3.3.3 Alternative C: Implement Revised Sanctuary Management Plan (Preferred)

In Alternative C, NOAA would implement the draft revised sanctuary management plan outlined in **Section 3.3.2**.

3.4 Proposed Modifications to Sanctuary-Wide Regulations by Alternative

As described in detail below, in the no action alternative and Alternative B, NOAA would continue to implement the existing MBNMS sanctuary-wide regulations with no change (codified at 15 CFR Part 922 Subpart M). NOAA most recently amended the sanctuary-wide regulations for MBNMS in 2008 and analyzed the impacts of these regulatory modifications in a final EIS published on September 26, 2008 (73 FR 55842). Under Alternative C, NOAA proposes to make the following revisions to the MBNMS sanctuary-wide regulations:

- add a definition for the phrase “beneficial use of dredged material” and new regulatory language to clarify MBNMS’s ability to authorize beneficial use of clean and suitable dredged material for beach nourishment restoration purposes within MBNMS (see **Section 3.4.1**);
- modify the prerequisite conditions for motorized personal watercraft access to the riding zone at Mavericks surf break (see **Section 3.4.2**);
- reconfigure four motorized personal watercraft zones (see **Section 3.4.3**); and
- make a minor technical correction to document the list of exempted Department of Defense activities at the Davidson Seamount Management Zone that was inadvertently left out of the 2008 final EIS (see **Section 3.4.4**).

Below is a summary of the proposed regulatory changes that would be included within the proposed rule that will be published concurrently with this draft EA.

3.4.1 Beneficial Use of Clean and Suitable Dredged Material Definition (New)

3.4.1.1 Alternative A

Under the no action alternative, NOAA would continue to implement the existing sanctuary-wide regulations regarding discharge or disposal of any dredged material. The current regulations prohibit “[d]ischarging or depositing from within or into the

Sanctuary... any material or other matter” (15 CFR § 922.132(a)(2)(i)). There is also a list of exceptions to this prohibition at 15 CFR § 922.132(a)(2)(i)(A-F). In addition, current regulations prohibit MBNMS from issuing a permit or authorization for “the disposal of dredged material within the Sanctuary other than at sites authorized by the U.S. Environmental Protection Agency (in consultation with the U.S. Army Corps of Engineers (COE)) prior to January 1, 1993” (15 CFR § 922.132(f)). MBNMS staff can currently accommodate requests for beneficial use of sediment for beach nourishment in locations where the bathymetry and topography allow space for sediment placement above the mean high water line (outside the sanctuary boundary).

3.4.1.2 Alternative B

Alternative B would be the same as Alternative A.

3.4.1.3 Alternative C (Preferred)

Under Alternative C, NOAA proposes to add a new definition for “beneficial use of dredged material” and to clarify NOAA’s ability to authorize beneficial use of clean and suitable dredged material for habitat restoration purposes within MBNMS.

To do this, NOAA would amend the sanctuary-wide regulations to add a definition for the phrase “beneficial use of dredged material” at 15 CFR § 922.131, as proposed below:

Beneficial use of dredged material means the use of dredged material removed from any of the four public harbors immediately adjacent to the shoreward boundary of the sanctuary that has been determined by the director to be clean (as defined by 15 CFR § 922.131) and suitable (as consistent with regulatory agency reviews and approvals applicable to the proposed beneficial use) as a resource for habitat restoration purposes only. Beneficial use of dredged material is not considered the disposal of dredged material.

In addition, NOAA would amend 15 CFR § 922.132(f) by inserting the following sentence immediately before the last sentence in the existing paragraph: “For the purposes of this Subpart, the disposal of dredged material does not include the beneficial use of dredged material as defined by 15 CFR § 922.131.”

The new definition would clarify that the existing prohibition on permitting the disposal of dredged material in MBNMS does not apply to habitat restoration projects using clean dredged material, because such a beneficial use of dredged material would not be considered “disposal.” In addition, this definition would apply only to dredged material removed from any of the four harbors immediately adjacent to the sanctuary (Pillar Point, Santa Cruz, Moss Landing, or Monterey). This action would also amend 15 CFR § 922.132(f) to clarify that the disposal of dredged material does not include the beneficial use of dredged material.

This regulatory change would clarify that the language in the terms of designation and MBNMS regulations that prohibit permitting the disposal of dredged material within the sanctuary other than at sites authorized by the U.S. Environmental Protection Agency prior to the effective date of designation (Article V of the MBNMS Terms of Designation, 73 Fed. Reg. 70477, 70494 (Nov. 20, 2008); 15 CFR § 922.132(f)), does not preclude the sanctuary from authorizing the beneficial use of clean dredged material within sanctuary boundaries when suitable for habitat restoration purposes. This action would clarify that NOAA has the authority to review and permit beneficial use of dredged material projects within the sanctuary (i.e., below the mean high water line) for the purpose of habitat restoration.

The beneficial use of dredged material for restoration at sites within the sanctuary would require a sanctuary permit or authorization; additional rigorous testing and screening of the material to ensure that the material is both clean and suitable for habitat restoration; additional review of the proposed project under NEPA and other applicable statutes; and permitting, as applicable, by other federal, state, and local regulatory authorities over the proposed beneficial use project. Furthermore, proposed projects involving use of dredged material would only be eligible for approval by NOAA if the projects demonstrated a sanctuary habitat restoration purpose under the proposed definition language of 15 CFR §§ 922.131, and if the projects otherwise met the permit or authorization procedures and review criteria described in 15 CFR §§ 922.48, 922.49, and 922.133. The permit and environmental reviews of the proposed beneficial use projects would continue to prevent the disposal of unsuitable and unclean material into the sanctuary that could adversely affect sanctuary resources.

This proposed action, which would clarify NOAA's ability to authorize beneficial use of clean and suitable dredged material for habitat restoration purposes within the sanctuary, would be consistent with the regulatory framework for dredge, fill, and disposal projects as outlined by the Clean Water Act (33 U.S.C. §§ 1251 *et seq.*), the Ocean Dumping Act (33 U.S.C. §§ 1401 *et seq.*), and applicable U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) regulations. The existing regulatory framework differentiates between the disposal (i.e., discarding) of dredged material and its beneficial use (i.e., purposeful application). For example, the "disposal into ocean waters" of dredged material is regulated under provisions of the Ocean Dumping Act, whereas discharge of dredged material for fill, including beach restoration, is regulated under Section 404 of the Clean Water Act (33 CFR § 336.0). Furthermore, any proposed project for beneficial use of dredged material in MBNMS would be subject to applicable permit and regulatory reviews of other federal, state, and local authorities with jurisdiction over the proposed project.

Finally, pursuing this proposed action would be consistent with current state and federal coastal management practices that favor softscape approaches to restoring and

protecting beaches and shorelines over hardscape methods (e.g., riprap, groins, and seawalls). For example, the USACE Engineering and Design Manual on Dredging and Dredged Material (July 2015) states, “Interest in using dredged material as a manageable, beneficial resource, as an alternative to conventional placement practices, has increased” (USACE, 2015 at p. 5-1). In addition, the USACE/EPA Beneficial Use Planning Manual states, “the promotion of beneficial uses continues to require a shift from the common perspective of dredged material as a waste product to one in which this material is viewed as a valuable resource that can provide multiple benefits to society.” The planning manual further notes that in general, “clean, coarse-grained sediments (sands) are suitable for a wide variety of beneficial uses” (USACE/EPA, 2007a at p. 9). Finally, the USACE/USEPA Manual on The Role of the Federal Standard in the Beneficial Use of Dredged Material indicates, “a beneficial use option may be selected for a project even if it is not the Federal Standard for that project” (USACE/EPA, 2007b at p. 3).

3.4.2 Access to Motorized Personal Watercraft Zone at Mavericks Surf Break (Proposed Update)

3.4.2.1 Alternative A

Under the no action alternative, NOAA would continue to implement the existing sanctuary regulation regarding the motorized personal watercraft zone at Mavericks surf break. In 2009, NOAA created a seasonal-conditional motorized personal watercraft zone at Mavericks (Zone 5) primarily to allow motorized personal watercraft to support big-wave surfing at Mavericks during winter months. Wildlife activity in this area during winter months is significantly reduced. Currently, motorized personal watercraft can freely access the Mavericks seasonal-conditional zone only when High Surf Warning conditions are in effect (predicted breaking waves at the shoreline of 20 feet or greater), as announced by the National Weather Service for San Mateo County during the months of December, January, and February (15 CFR § 922.132(a)(7)). However, due to the unique bathymetric features at Mavericks, waves can exceed 20 feet well before High Surf Warning conditions are announced county-wide. Surfers have developed new techniques for paddling onto larger and larger waves, so paddle surfers now routinely surf extremely large waves at Mavericks during winter High Surf Advisory conditions (predicted breaking waves at shoreline of 15 feet or greater), when motorized personal watercraft access to the zone is currently prohibited.

The Mavericks surf break lies within three overlapping marine protected areas: MBNMS, the Pillar Point State Marine Conservation Area, and the James V. Fitzgerald Area of Special Biological Significance. It also lies immediately adjacent to San Mateo County’s James V. Fitzgerald Marine Reserve, where federally protected harbor seals pup each spring. These designations by federal, state, and local governments denote an area of

high ecological value and special protection for the natural resources present in the coastal zone and nearshore waters.

3.4.2.2 Alternative B

Alternative B would be the same as Alternative A.

3.4.2.3 Alternative C (Preferred)

Under Alternative C, NOAA would amend the sanctuary regulations to change the current High Surf Warning requirement for motorized personal watercraft access to Mavericks to a less stringent High Surf Advisory requirement. High surf warnings and advisories are issued for specified periods of time by the National Weather Service. Access to Zone 5 would continue to be seasonal, only allowed during winter months (December, January, and February). Allowing motorized personal watercraft access to Mavericks during High Surf Advisory conditions would allow for their presence at the surf break approximately three to five more days per year to provide safety assistance to surfers operating in a highly energized surf zone.

3.4.3 Motorized Personal Watercraft Zone Boundary Changes (Proposed Update)

3.4.3.1 Alternative A

Under the no action alternative, NOAA would continue to implement the existing sanctuary regulations that establish boundaries for four motorized personal watercraft zones in the sanctuary. The current zone boundaries are listed at 15 CFR Part 922 Subpart M, Appendix E. NOAA established these zones in 1992 to safeguard marine wildlife and habitats from the unique capability of motorized personal watercraft to sharply maneuver at high speeds in the ocean environment and freely access remote and sensitive marine habitat areas. NOAA established the zones near each of the four harbors in the sanctuary where motorized personal watercraft typically launch: Half Moon Bay, Santa Cruz, Moss Landing, and Monterey. NOAA currently maintains 15 buoys and mooring stations within the sanctuary to implement the current zone boundaries.

3.4.3.2 Alternative B

Alternative B is the same as Alternative A.

3.4.3.3 Alternative C (Preferred)

Under Alternative C, NOAA would amend the sanctuary regulations to modify the boundaries of the four motorized personal watercraft riding zones. The proposed modifications would reduce the number of deployed boundary buoys from 15 to nine and reduce associated navigational hazards, aesthetic impacts, and mooring failures that create public safety hazards, marine debris, seafloor impacts, and excessive maintenance

effort. The current zone boundaries were delineated without consideration of practical matters such as buoy station integrity or sustainability. As a result, current zone boundary buoys stationed off rocky points have experienced repeated mooring failures due to heavy wave diffraction/reflection, abrasive and mobile rocky substrate impacts on mooring tackle, and lack of soft sediments for secure anchor set. Deeper moorings have repeatedly failed due to suspected interactions with vessels and commercial fishing gear. Failed moorings cause deposition of chain and anchors on the seafloor and pose a hazard to mariners and the public from drifting buoys. Even when buoys hold station, they could present navigation obstacles and affect visual aesthetics.

NOAA proposes to change the size and shape of the four zones at Half Moon Bay, Santa Cruz, Moss Landing, and Monterey, while maintaining the original intent of the zones: *to provide recreational opportunities for motorized personal watercraft within the sanctuary, while safeguarding sensitive sanctuary resources and habitats from unique threats of disturbance by these watercraft*. NOAA proposes to reduce the number of boundary buoys by utilizing more existing marks and geographical features (e.g., U.S. Coast Guard navigational buoys and points of land), with a goal of reducing navigational hazards, mooring failures, and aesthetic impacts. NOAA also proposes to reconfigure the zones to be smaller and closer to shore in order to aid zone enforcement, allow for more secure shallower mooring depths, and support visual surveys of zone use, as described in the draft revised sanctuary management plan.

Each zone would remain in its current geographical area, with the following changes:

Half Moon Bay Zone

Modify the year-round Half Moon Bay zone to use U.S. Coast Guard red bell buoy “2” and U.S. Coast Guard green gong buoy “1S” as boundary points instead of current MBNMS buoys PP2 and PP3. By re-shaping the current zone from a parallelogram to a concave pentagon, the zone’s general position south of Pillar Point Harbor would be maintained, the zone area would increase by 9% (from 0.87 sq mi to 0.96 sq mi), and two buoys would be permanently removed from the waterway.

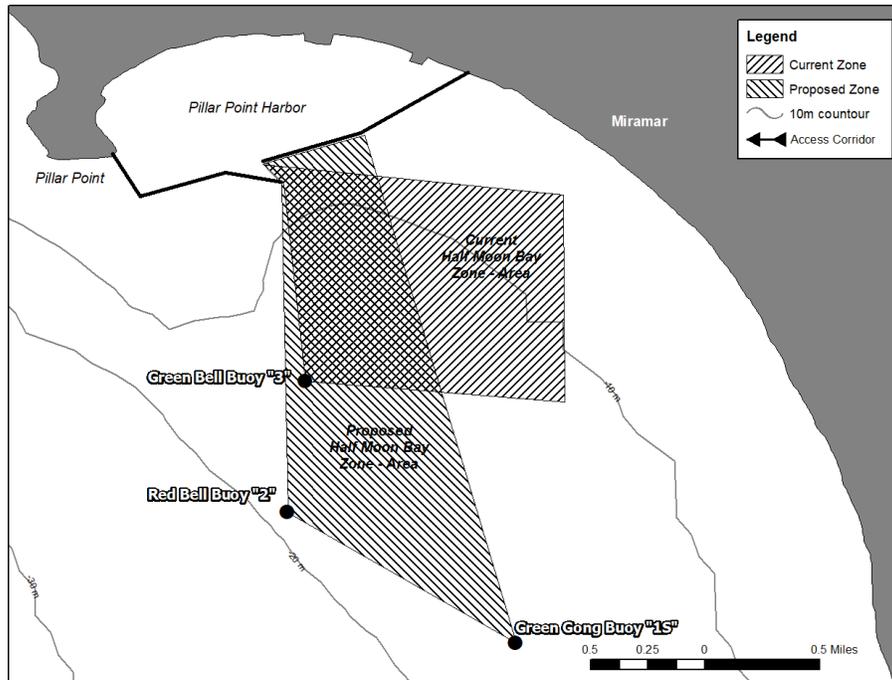


Figure 2. Map of Proposed Boundary Changes to Zone 1 at Half Moon Bay

Santa Cruz Zone

Modify the year-round Santa Cruz zone to use U.S. Coast Guard red/white whistle buoy “SC” as a boundary point instead of current MBNMS buoy SC7. By re-shaping the current zone from a rectangle to a parallelogram, the zone position would rotate 45° clockwise to the NE and the zone area would be reduced by 59% (from 6.36 sq mi to 2.63 sq mi). One MBNMS buoy would be permanently removed from the waterway, one buoy would remain on station, and two buoys would be redeployed to shallower depths. The redistributed buoys would be positioned within better visible range of one another, in softer sediments, and away from rocky points.

These proposed reconfigured zone boundaries would shift the zone closer to shore, providing motorized personal watercraft operators easier and quicker access to the riding area and improved safety. In addition, the transit route to the zone from the entrance of the Santa Cruz Small Craft Harbor would be reduced from 1.35 miles to 0.5 miles, providing a 66% shorter route and transit time for motorized personal watercraft operators.

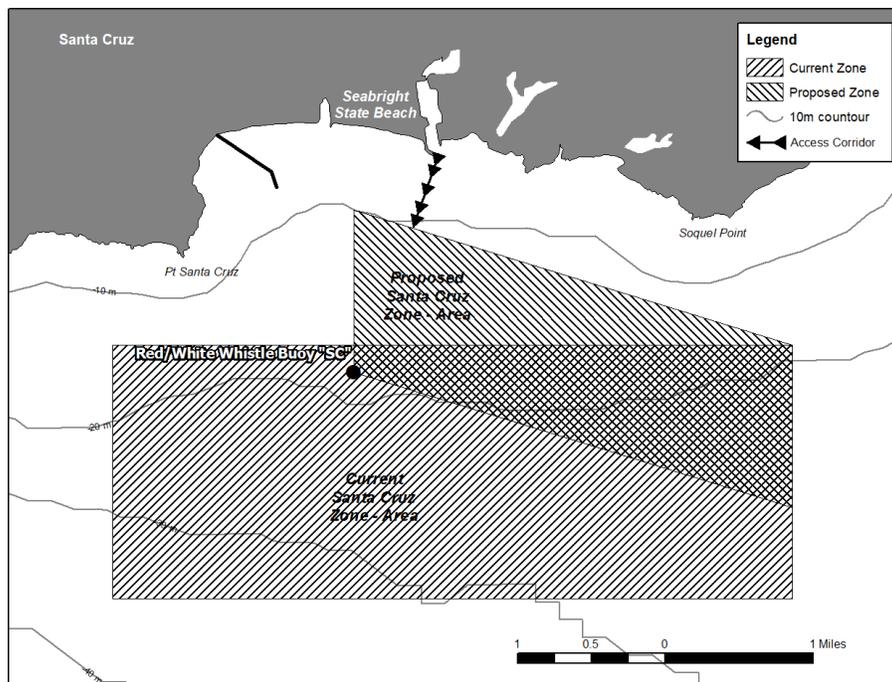


Figure 3. Map of Proposed Boundary Changes to Zone 2 at Santa Cruz

Moss Landing Zone

Modify the year-round Moss Landing zone to eliminate current MBNMS buoys ML4 and ML5. By re-shaping the current zone from an irregular hexagon to a trapezoid, the eastern portion of the zone would remain in its current position, the zone area would be reduced by 72% (from 8.10 sq mi to 2.29 sq mi), and two MBNMS buoys would be permanently removed from the waterway.

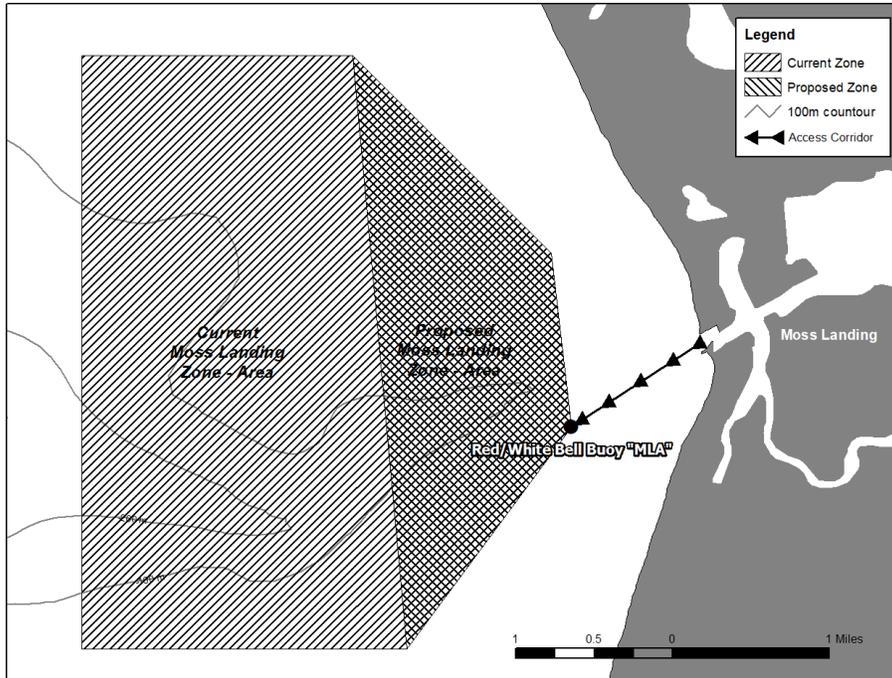


Figure 4. Map of Proposed Boundary Changes to Zone 3 at Moss Landing

Monterey Zone

Modify the year-round Monterey zone to use U.S. Coast Guard red bell buoy “4” as a boundary point instead of MBNMS buoy MY3. By re-shaping the current zone from a trapezoid to a parallelogram, the zone position would rotate 90° clockwise to the NE, and the zone area would be reduced by 51% (from 6.36 sq mi to 3.10 sq mi). One MBNMS buoy would be permanently removed from the waterway, one buoy would remain on station, and two buoys would be redeployed to shallower depths. The redistributed buoys would be positioned within better visible range of one another, in softer sediments, and away from rocky points and popular commercial squid fishing grounds.

The length of the prescribed zone transit route from Monterey Harbor would decrease from 1.00 mile to 0.77 mile, reducing the length of the transit corridor by 23% and facilitating more immediate access to and from the harbor by motorized personal watercraft operators. In addition, the transit corridor would be rotated 52° further east from the harbor entrance, away from the predominant marine traffic pattern to/from the harbor.

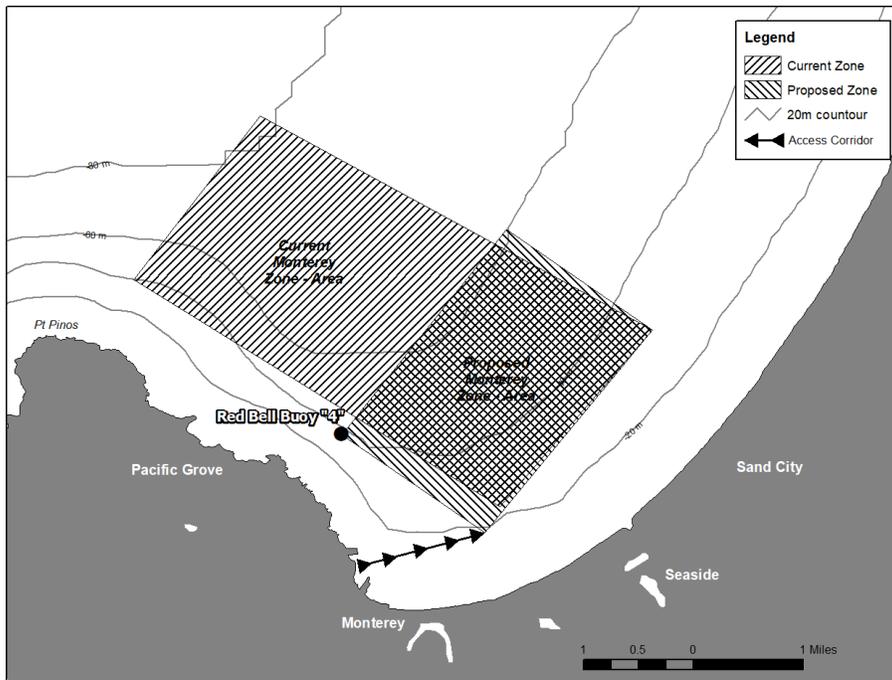


Figure 5. Map of Proposed Boundary Changes to Zone 4 at Monterey

3.4.4 Technical Correction (Alternative C)

Under Alternative C, NOAA proposes to make a minor technical revision to the sanctuary-wide regulations at 15 CFR § 922.132(c)(1) to correct an error. This regulation

currently states, in part, that a list of exempted Department of Defense activities at the Davidson Seamount Management Zone is published in the final EIS for the 2008 MBNMS management plan review and regulatory changes. Due to an administrative error, this list of exempted activities (identified in a December 18, 2006 letter to NOAA from the U.S. Air Force 30th Space Wing), though affirmed by NOAA, was not included in the 2008 final EIS as intended. The MBNMS superintendent subsequently confirmed in a January 5, 2009 letter to the U.S. Air Force 30th Space Wing that NOAA acknowledged the list of exempted activities as valid from the effective date of inclusion of the Davidson Seamount Management Zone within MBNMS (March 9, 2009). This letter also stated that NOAA would correct the administrative record and regulations to properly document the exempted Department of Defense activities within the Davidson Seamount Management Zone. This correspondence between MBNMS and the U.S. Air Force 30th Space Wing is included in **Appendix E**. Accordingly, NOAA proposes to modify 15 CFR § 922.132(c)(1) by replacing “2008 Final Environmental Impact Statement” with the phrase “2020 Environmental Assessment for the MBNMS Management Plan Review.”

Appendix E of this EA serves as the published list of exempted Department of Defense activities within the Davidson Seamount Management Zone referenced and confirmed by the January 5, 2009 letter to the U.S. Air Force 30th Space Wing from the MBNMS superintendent. As such, the proposed technical correction is not further analyzed in this EA because it is purely administrative and would not result in any environmental effects.

3.5 Summary of Alternatives

Alternative A: The no action alternative would allow many current programs and functions (administration, resource protection, research, education and outreach, and maritime heritage) to continue, but would not address a suite of new environmental concerns and programs that were identified as priority management topics during public scoping. The no action alternative would not provide an opportunity for MBNMS to update the management plan and regulations as needed to fulfill the purposes and policies of the NMSA, as required by Section 304(e) of the NMSA (16 U.S.C. § 1434(e)). As such, the no action alternative would not adequately address the purpose and need for this action.

Alternative B: Alternative B would address the following needs of MBNMS: (1) updating an out-of-date management plan to address issues that have emerged since the publication of the 2008 sanctuary management plan; (2) filling data gaps critical to furthering resource protection goals; and (3) incorporating the use of new technologies into research, monitoring, and outreach. Alternative B would meet the purpose and need of this proposed action in a non-regulatory manner compatible with the existing programs, policies, and regulations of MBNMS, as well as those of key ocean management and conservation partners in the region. However, Alternative B would not enable NOAA to update the sanctuary regulations as necessary to fulfill the purposes and

policies of the NMSA, as required by Section 304(e). In this way, Alternative B would not allow MBNMS to fully meet the purpose and need of the proposed action.

Alternative C: Alternative C (Preferred Alternative) would include many of the same components as Alternative B, including: (1) a revised sanctuary management plan and (2) continued field activities to manage the sanctuary. In addition, Alternative C would allow NOAA to meet the purpose and need of the proposed action by incorporating the management plan changes in Alternative B and proposing regulations that would address several resource protection concerns at MBNMS. If finalized, the proposed regulatory changes would:

- make available an additional option for addressing shoreline erosion in the sanctuary by clarifying NOAA’s ability to identify and permit application of clean dredged material suitable for beach nourishment;
- allow modest increased access for motorized personal watercraft users at the Mavericks surf zone (Zone 5) by reducing the requirement of High Surf Warning conditions to High Surf Advisory conditions;
- improve buoy station integrity and reduce the likelihood of detached buoys by changing the configuration of four motorized personal watercraft zones; and
- rectify an omission of Department of Defense’s exempted activities in the 2008 final EIS.

In sum, implementing Alternative C would enable NOAA to revise the management plan and propose updates to the regulations as necessary to fulfill the purposes and policies of the NMSA, as required by Section 304(e) of the NMSA (16 U.S.C. § 1434(e)).

3.6 Alternatives Identified but Removed from Consideration

This section summarizes the management plan activities and regulatory changes that the public raised during scoping or NOAA considered internally, but that NOAA removed from further consideration in this proposed action. The majority of the topics identified through public scoping are addressed in some manner in the draft revised sanctuary management plan and proposed regulations. However, a few topics raised during public scoping were not incorporated into the alternatives analyzed in this draft EA. NOAA could consider any of these eliminated topics during future sanctuary management plan reviews.

NOAA eliminated topics from further consideration for the following reasons:

- lack of feasibility;
- failure to fulfill the stated purpose and need of the proposed action;
- other regulatory agencies could provide a more direct response to the environmental concern;

- the topic needs further analysis beyond the scope of this management plan review process; or
- based on recommendations and feedback from the MBNMS Advisory Council.

3.6.1 Boundary Expansion to the South and Clarification of Shoreward Boundaries

Several public comments requested that NOAA expand MBNMS to the south if the proposed Chumash Heritage National Marine Sanctuary nomination does not progress. The Chumash Heritage nomination is still under consideration by NOAA. For additional information regarding the current status of the Chumash Heritage nomination, please see <https://nominate.noaa.gov/nominations/>. Given that NOAA is still considering this nomination, it is too early to determine whether this area should be included within MBNMS's boundary. The expansion of MBNMS to the south could be considered, as applicable, after a decision is made regarding the Chumash Heritage nomination.

Additional public comments discussed better defining the sanctuary's boundary lines across entrances to annual/seasonal streams and lagoons. In considering these comments, NOAA determined the current boundary of MBNMS is sufficient for management purposes and therefore changes to the shoreline boundaries are not needed. NOAA did not further analyze this topic in the alternatives presented in this document.

3.6.2 Boundary Expansion to Include the San Francisco – Pacifica Exclusion Area

On August 7, 2012, NOAA published a notice in the Federal Register requesting public comment on a possible expansion of MBNMS in the San Francisco – Pacifica Exclusion Area off San Mateo County (77 FR 46985). The public comments received during scoping indicated the potential for significant conflict with existing public and private uses of the area. For additional information regarding scoping comments, please see: <https://www.regulations.gov/docket?D=NOAA-NOS-2012-0153>. A comment from the U.S. Coast Guard on the proposed expansion of MBNMS off San Mateo County as well as the proposed expansion of Greater Farallones and Cordell Bank national marine sanctuaries to include an area off of Sonoma and Mendocino Counties (77 FR 75601) indicated that expanding sanctuary discharge regulations to both of the then proposed expansion areas would curtail the U.S. Coast Guard's ability to stay "mission ready" (<https://www.regulations.gov/document?D=NOAA-NOS-2012-0228-0143>).

NOAA acknowledges and supports the U.S. Coast Guard mission to enforce all applicable federal laws, and U.S. Coast Guard activities supporting resource protection, such as emergency oil spill response, and facilitating public and private uses, particularly within national marine sanctuaries. In addition, NOAA recognizes that the U.S. Coast Guard is charged with conducting missions that are of national importance, such as national

security readiness, even if not related to sanctuary management. Though this action could have been included in this sanctuary management plan review with certain exemptions for U.S. Coast Guard discharges necessary to support their mission or other state or local agencies and utilities, NOAA decided not to pursue expanding MBNMS to include the area of San Mateo County. As a result of the comments on expanding MBNMS into the Exclusion Area that identified potential conflict with existing public and private uses of the area, NOAA believes that it would not be feasible to resolve these conflicts while maintaining a high standard of resource protection under the NMSA in that area. NOAA did not further analyze this topic in the alternatives presented in this document.

3.6.3 Fishing Impacts Including Anchovy Management

NOAA received 77 postcards and emails on this topic during the public scoping period. Several comments described an incident that resulted in a loss of forage fish for humpback whales, and suggested that NOAA take steps to reduce the impacts from the anchovy fishing industry on humpback whales. Specifically, a highly publicized incident occurred when a purse seiner was fishing for northern anchovy near feeding humpback whales. The purse seiner captured too many fish causing the vessel to capsize and lose the netted fish. The subsequent mass of dead fish and loss of a food source for humpback whales and other sanctuary animals generated public concern regarding the sustainability of the northern anchovy fishery. NOAA chose to refer this issue to those regulatory agencies whose jurisdictional authority is more appropriate for addressing fishery management issues. MBNMS staff work closely with the National Marine Fisheries Service (NMFS), Pacific Fisheries Management Council (PFMC), and the California Department of Fish and Wildlife (CDFW) on a wide variety of fishery related issues. NOAA did not further analyze this topic in the alternatives presented in this document.

3.6.4 Joint Powers Authority for the MBNMS Advisory Council

Four public comments suggested the MBNMS Advisory Council be decoupled from MBNMS oversight and a Joint Powers of Authority be established so the membership of the advisory council could be selected independent of sanctuary management input. Section 315 of the NMSA describes the responsibilities of sanctuary advisory councils (16 U.S.C. § 1445A), and requires that the advisory councils advise and make recommendations to MBNMS and ONMS, as delegated. As such, this proposal is beyond the scope of the current sanctuary management plan review and rulemaking process. Therefore, NOAA did not further analyze this topic in the alternatives presented in this document.

3.6.5 Motorized Personal Watercraft Safety Training

Concerns for big wave surfers prompted comments for an exemption to current sanctuary regulations for motorized personal watercraft on the water for safety and training purposes. The existing MBNMS regulations allow an individual or entity to apply for a permit to use motorized personal watercraft in the sanctuary for safety training. Consistent permit criteria are applied to entities conducting public safety search and rescue. Any group or organization requesting such a permit would be required to meet the same permit criteria as public search and rescue agencies. NOAA did not further analyze this topic in the alternatives presented in this document.

3.6.6 Install Mooring Buoys at Popular Dive Sites

Comments from divers suggested installation of mooring buoys at several popular dive sites in sanctuary waters. Mooring buoys for dive boats are regularly seen at popular dive sites in other places and can be very beneficial to boaters and the environment since it allows a boater to easily identify the dive site. In addition, in calm water the mooring buoy prevents individuals from anchoring in and potentially disturbing benthic habitats.

At MBNMS, the deep depths coupled with dynamic ocean waves create a situation where buoy chains from the surface to the seafloor would have to carry significant slack. This could result in buoy chains becoming scouring agents along the seafloor during high surf situations. Implementing this proposal would require NOAA to issue permits for seafloor disturbance and to conduct frequent maintenance of buoys and mooring hardware. As a result, NOAA determined that installing moorings would create more of a benthic impact than current anchoring activities. NOAA did not further analyze this topic in the alternatives presented in this document.

3.6.7 Wildlife Disturbance Regulations

Several public comments suggested NOAA establish a regulation that sets a minimum distance for approaching whales. As a result of these comments, the draft revised sanctuary management plan includes many strategies and activities aimed at addressing emerging wildlife disturbances issues including close approaches to marine mammals, turtles, and nesting and roosting birds, and impacts to marine life from underwater sound. Current MBNMS regulations protect these species from “take” as defined in ONMS regulations and from low overflights in specific zones. As a result, NOAA determined that current regulations combined with new action plan strategies in the revised sanctuary management plan would be sufficient for management purposes at this time. NOAA did not further analyze this topic in the alternatives presented in this document.

3.6.8 Topics Removed as a Result of Advisory Council Recommendations Adopted by MBNMS

After the public scoping period, the MBNMS Advisory Council conducted a prioritization process, ranking each issue using the criteria outlined in **Section 3.1**. After subsequent discussions on topics in the middle ranking area, the advisory council recommended MBNMS staff exclude several topics from the proposed action. NOAA adopted that recommendation and did not include the following topics in the development of alternatives:

- **Topic:** Explore the designation of a new overflight zone at Devil’s Slide Rock to protect seabirds.
Rationale: The Greater Farallones National Marine Sanctuary Advisory Council issued a 2017 report (https://nmsfarallones.blob.core.windows.net/farallones-prod/media/archive/manage/pdf/sac/17_02/final_overflight_recommendations011917.pdf) recommending more education and outreach and suggesting a symbol on the aeronautical sectional chart at this location in lieu of a regulation at this time. NOAA is pursuing that recommendation in partnership with the Seabird Protection Network, and will focus efforts in the next few years on monitoring the area to determine if this non-regulatory approach is effective.
- **Topic:** Do not allow/permit desalination.
Rationale: Water supply is a great need for communities along the central coast of California. The sanctuary developed guidelines for permitting the siting and sizing of facilities and is the federal lead for permits and environmental reviews of proposed desalination projects in sanctuary waters.
- **Topic:** Address drought related issues as related to the protection of steelhead.
Rationale: Steelhead protection is more appropriately addressed by NMFS and the state of California.
- **Topic:** Establish a visitor center in Monterey.
Rationale: MBNMS does not currently have the capacity to open a second visitor center in Monterey. MBNMS partners with numerous existing facilities and local organizations to conduct public involvement and outreach regarding the sanctuary in Monterey.
- **Topic:** Increase business representation on the advisory council.
Rationale: The MBNMS Advisory Council is limited to 20 voting seats. There is currently a Business seat as well as seats for Recreation and Tourism, Diving, Agriculture, and Commercial Fishing, which includes all the various business types in the region.
- **Topic:** Monitor for radiation from the nuclear power plant fallout in Fukushima, Japan.
Rationale: Monitoring for radioactive material is currently being conducted by the U.S. Environmental Protection Agency.
- **Topic:** Allow chumming to attract seabirds.

Rationale: MBNMS allows individuals and entities to apply for a permit to use chumming techniques to attract seabirds.

- **Topic:** Expand management focus to include more avian species of concern that use MBNMS resources (e.g., California condors and ashy storm petrels).

Rationale: USFWS and the California Department of Fish and Wildlife currently lead several activities to manage these species and MBNMS staff work collaboratively with them on a variety of projects.

3.6.9 Alternative Regulations

NOAA developed and initially considered several regulatory actions, mostly minor in nature (e.g., clarifications), and presented them to the Sanctuary Advisory Council during the development of the proposed action. The regulatory changes NOAA considered but did not include in the development of the alternatives include:

- **Topic:** Clarification of shoreward boundary lines across seasonal streams and river mouths.

Rationale: The issue is primarily related to the need for seasonal opening of specific rivers and streams to prevent flooding upstream. Current coastal erosion conditions make it difficult to address with regulatory changes, which are not adaptive at the same time scale as environmental conditions. As this proposal is fairly limited in scope, NOAA proposes to work with permittees and local municipalities on identification of these boundaries on a case-by-case basis in lieu of a regulatory change.

- **Topic:** Modification of the definition of motorized personal watercraft to include remotely operated motorized personal watercraft.

Rationale: This is not a current issue in the sanctuary, but is a topic MBNMS staff wished to address in a proactive manner. Remotely operated motorized personal watercraft raise concerns related to wildlife disturbance. However, NOAA concluded that current regulations to address “take” of sanctuary resources are sufficient to address resource protection concerns regardless of the status of the definition.

- **Topic:** Modification of the definition of “motorized aircraft” to include model aircraft and unmanned aircraft.

Rationale: The major concern associated with deployment of drones in MBNMS is the potential for wildlife disturbance. NOAA intends to address potential environmental concerns associated with drones at a higher level. Therefore, MBNMS staff decided to wait before pursuing any action at a sanctuary-level. Current sanctuary regulations prohibit “take” regardless of the type of aircraft or activity conducted. Therefore, MBNMS determined that existing sanctuary regulations are currently sufficient to address this environmental concern, pending further guidance from NOAA.

- **Topic:** Providing a definition for “mean high water.”

Rationale: This term is currently defined, and while not updated regularly, it might prove confusing to have two sources of information with different results based on when updates occur.

- **Topic:** Providing a definition for “emergency.”

Rationale: This mainly occurs when emergency permitting is required. NOAA concluded it would determine what constitutes an emergency and when prohibited activities may occur on a case-by-case basis since each permitting situation is unique.

- **Topic:** Inclusion of a prohibition against tampering with MBNMS signage, buoys, or other property.

Rationale: It was determined there are prohibitions in place, outside of the National Marine Sanctuaries Act, to address this issue.

- **Topic:** A few other potential regulatory changes related to definitions, such as the definition of a cruise ship or what constitutes deserting a vessel or disturbing historical resources.

Rationale: NOAA considered making some changes to definitions in the MBNMS regulations to increase the effectiveness of enforcement efforts for existing regulations. However, after receiving input from enforcement partners, NOAA concluded that it could achieve the desired enforcement outcomes without making changes to the regulations.

CHAPTER 4

AFFECTED ENVIRONMENT

This chapter describes the environmental, human, and socioeconomic setting for the proposed action. The description of the affected environment focuses on the resources most likely to be affected by the specific field activities, management actions, and regulatory changes being considered in the alternatives. For more information about the history and current status of Monterey Bay National Marine Sanctuary (MBNMS) and the sanctuary resources, see:

- MBNMS 2015 Condition Report Partial Update: A New Assessment of the State of the Sanctuary Resources:
<https://sanctuaries.noaa.gov/science/condition/monterey-bay-2015/>
- Final Environmental Impact Statement (EIS) for the 2008 Joint Management Plan Review (2008): <https://sanctuaries.noaa.gov/jointplan/welcome.html>

4.1 Physical Setting

The physical setting of the sanctuary is the structural and dynamic foundation for its biological processes. Through the physical setting and the linkages between its geography, geology, and oceanography, regional and large-scale ecosystem processes connect with and directly impact local productivity and biodiversity patterns in the sanctuary.

4.1.1 Geography, Geology, and Oceanography

MBNMS extends from Rocky Point, California (7 miles north of the Golden Gate Bridge) in the north to Cambria in the south, covering a shoreline length of approximately 276 miles. Geologic features in MBNMS include rocky shores, sandy beaches, estuaries, bays, lagoons, islands, pinnacles, ridges, underwater canyons, an underwater mountain, the continental shelf, the slope, and the abyssal plain, which reaches depths of 12,743 feet. Bottom types on the continental shelf include the sand and mud sediments, rocky and mud outcrops, and rocky reefs. Some of the seafloor features of MBNMS include cold seeps, underwater canyons, an underwater seamount formed from an ancient volcano, earthquake faults, and fossils. Coastal topography varies greatly, encompassing steep bluffs with flat-topped terraces and pocket beaches to the north; large sandy beaches bordered by cliffs and large dunes in the central area; and predominantly steep, rocky cliffs to the south. Low- to high-relief mountain ranges and broad, flat-floored valleys are prevalent farther inland.

MBNMS contains one of the world's most geologically diverse and complex seafloors and continental margins. MBNMS is characterized by its deep underwater canyons, the

largest of which is the Monterey Canyon. The deepest point of MBNMS lies within the Davidson Seamount Management Zone and is 12,743 feet deep. 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. This is an active tectonic region with common occurrences of earthquakes, submarine landslides, turbidity currents, flood discharges, and coastal erosion. 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 events steepened the canyon's walls, exposed basement and bedrock, and eroded the canyon (NOAA ONMS, 2002).

Near the southwest corner of MBNMS is Davidson Seamount, an ancient volcano that last erupted 9.8 million years ago. This pristine undersea mountain habitat is located 80 miles to the southwest of Monterey and 75 miles west of San Simeon. Davidson Seamount is one of the largest known underwater mountains in U.S. coastal waters; it is 26 miles long, 8 miles wide, and rises 7,480 feet from the ocean floor, with its summit at 4,101 feet below the sea surface.

The oceanographic setting in MBNMS is shaped by the California Current and the Davidson Current, with seasonal upwelling in localized areas off Año Nuevo and Point 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 820 feet during spring and summer, and has speeds that can be as strong as the surface California Current. Wind-driven upwelling does not normally occur within Monterey Bay due to the topographic break of the coastal mountains afforded by the Salinas Valley. However, some upwelled water may be transported into the bay from areas to the south of Año Nuevo (NOAA ONMS, 2002).

Longer-term oceanographic variations also occur in MBNMS, including sporadic El Niño Southern Oscillation events and Pacific Decadal Oscillation, both of which influence and interact with climate change, and marine heatwaves. These phenomena affect local physical and biological systems. In the central-north coast region of California, these 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, with the most recent event occurring 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 as a result of global warming or interdecadal climate shift (NOAA NCCOS, 2003).

4.1.2 Water Quality

The area of interest for water quality extends beyond the sanctuary's boundaries due to the fluid nature of the marine environment and freshwater inputs from nearby rivers and tributaries. The area of interest includes oceanic waters within MBNMS, the marine areas adjacent to MBNMS, including the oceanic waters of Greater Farallones and Cordell Bank national marine sanctuaries, and the watersheds contributing to the chemical composition in MBNMS. This includes San Francisco Bay, Elkhorn Slough, and more than 100 coastal rivers and streams draining from approximately 7,000 square miles of watersheds in the region. The major freshwater sources are the Sacramento and San Joaquin rivers that enter MBNMS through the San Francisco Bay.

4.1.2.1 Land-Based Pollution

The offshore waters of the sanctuary are considered to be of relatively good quality. This is primarily attributed to the lack of urbanization along much of the San Mateo and Big Sur coastlines. Meanwhile nearshore waters are in comparatively worse condition because they are affected by land-based nonpoint source pollution from anthropogenic sources. Livestock grazing, agriculture, and urban areas are primary sources of land-based nonpoint source pollution affecting MBNMS. The threat of these nonpoint source pollutants is relatively minor for most of the coastal marine area due to large distances from pollution sources and the strong circulation patterns of the Pacific Ocean. However, the discharge of the San Francisco Bay Estuary is a threat to the water quality of MBNMS. By far, the largest sources of nutrients and persistent organic pollutants to Monterey Bay come from large watersheds primarily comprised of agriculture operations and the five wastewater treatment plants discharging to MBNMS. Other sources of land-based pollution of nearshore waters in MBNMS include runoff from urban areas due to aging sewer infrastructure systems, flows from creeks and rivers, and other unknown or unidentified sources. Concentration of microbial contaminants in nearshore waters has resulted in numerous beach warnings in MBNMS.

The waters of Monterey Bay close to shore contain numerous legacy pesticides such as organochlorine pesticides, Dieldrin, polychlorinated biphenyls (PCBs), and dichlorodiphenyltrichloroethane (also known as DDT), as well as chemical products in current use such as organophosphate pesticides and polynuclear aromatic hydrocarbons (PAHs). The largest source of these contaminants is agricultural runoff into the San Lorenzo, Pajaro, and Salinas rivers. Seasonal data collected by the Central Coast Long-term Environmental Assessment Network (CCLEAN) between 2001 and 2017 indicate numerous instances where water quality criteria and human health alert levels have

exceeded the California Ocean Plan due to the presence of contaminants in nearshore waters and sediment of Monterey Bay. Annual data collected from 2004 to 2017 indicate that waters of Monterey Bay exceeded the Ocean Plan's PCB water quality objective for most of the years between 2004 and 2017 with the highest concentrations observed since 2010 (CCLEAN, 2018).

Monterey County Water Resources Agency operates and maintains drainage facilities in 14 drainage maintenance zones and districts throughout Monterey County. The stormwater drainage system is composed of approximately 57 miles of drainage ways (e.g., streams, drainage ditches, and drainage channels); eight pump stations; nine miles of river levees; two large earthen dams; and numerous culverts, tide gates, and concrete structures (MCWRA, 2019). In addition, each municipality maintains its own sanitary sewer and stormwater conveyance infrastructure and natural drainage courses for their jurisdictions.

The Salinas Valley is a major vegetable and berry growing area in the U.S., with vegetable crops topping \$3.2 billion and fruit and nut crops topping \$1.1 billion in revenues in Monterey County (MCAC, 2016). Despite the agricultural productivity of this region, little is known about the agricultural use and disposal of plastic, the prevalence of recycling, nor the environmental fate and ecological effects of macro and microplastics in Salinas Valley rivers or MBNMS. Irrigated agriculture applies plastics in the field for a variety of purposes including as a mulch for weed control, in drip irrigation systems, as a fumigation tarp, coverings over hoop houses, or as a liner in ditches to prevent erosion. The use of plastics in agriculture increases yields, reduces reliance on herbicides and pesticides, increases efficiency of water use, extends the growing season and decreases disease (Kyrikou and Briassoulis, 2007). However, most plastic does not degrade and waste can end up in landfills, be buried in the soil, or it can be recycled. These plastics can also eventually enter MBNMS and compromise water quality within the sanctuary.

4.1.2.2 Vessel Discharges

During the course of normal operations, seagoing and coastal transiting vessels produce a multitude of wastes, which, when discharged into the marine environment even when operating under typical conditions and meeting compliance standards, can influence the water quality of MBNMS. The marine vessels that operate in or transit through MBNMS include a wide array of boats and motorized personal watercraft that are used in both commercial, research, public safety, and recreational activities. Operating vessels requires the use of various hazardous materials and generates hazardous wastes. Pollutants that have the potential to be discharged in the water include: oil, hydrocarbons, hazardous wastes, volatile organic compounds (VOCs), and sewage. These substances can be toxic or carcinogenic to marine life.

The Resource Conservation and Recovery Act requires that vessels that generate or transport hazardous waste offload these wastes at treatment or disposal facilities (NOAA ONMS, 2003a, 2003b, 2003c). In addition, MBNMS regulations prohibit discharging or depositing from within or into the sanctuary any material or other matter from vessels that is not specifically excepted by sanctuary regulations. These prohibitions reduce the potential for discharges of sewage, gray water, bilge water, ballast water, hazardous wastes, and solid wastes from vessel operating in or transiting through the sanctuary.

The volume of discharges from large cruise ships transiting through MBNMS is of particular concern. Cruise ships regularly transit sanctuary waters and embark at ports within the San Francisco and Monterey bays. Up to 80 cruise ships visit San Francisco Cruise Terminal each year with the majority transiting through MBNMS either before or after the visit. Cruise ship visits to this area are likely to continue to grow as the fleet shifts from international to more domestic cruises, and due to the new cruise ship docking facility in San Francisco Bay. Cruise ships transiting through the sanctuary have a potential for waste generation of up to 11 million gallons per ship per day.

NOAA conducted a detailed analysis of cruise ship activity in MBNMS and discharges during the 2008 sanctuary management plan review process. The 2008 final EIS associated with this action contains a detailed discussion of these activities and associated impacts on sanctuary resources (NOAA ONMS, 2008). The MBNMS regulations define a cruise ship as “a vessel with 250 or more berths for hire.” In 2008, NOAA amended the MBNMS regulations to prohibit the discharging or depositing from within or into the MBNMS any material or other matter from a cruise ship except engine cooling water, clean vessel generator cooling water, vessel engine or generator exhaust, clean bilge water, or anchor wash (15 CFR § 922.132(a)(2)(ii)). Cruise ships making port calls inside the sanctuary are periodically boarded by U.S. Coast Guard and NOAA staff to ensure compliance with this discharge regulation. Passenger vessels that contain privately-owned residential spaces are not currently subject to sanctuary regulations restricting discharges from cruise ships.

In addition, despite existing vessel discharge prohibitions, accidental spills from vessels occurring within or outside the sanctuary pose a persistent threat to water quality. Spills occurring far offshore, particularly near high-use shipping lanes, have the potential to severely impair water quality. In the event of an oil spill, the severity of the impact on the sanctuary would depend on the spill location and the wind and sea conditions (NOAA ONMS, 2003a, 2003b, 2003c).

4.1.2.3 Historic Dumping, Dredge Disposal, and Beach Nourishment

Hundreds of millions of tons of hazardous and nonhazardous waste have historically been dumped on the continental shelf and slope in MBNMS, particularly outside of the San Francisco Bay. These wastes include 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 and aircraft are scattered on the seafloor of MBNMS, although most of these ships and aircraft are not sources of hazardous contamination (MBNMS 2009 Condition Report).

In addition, local harbors adjacent to MBNMS regularly dredge harbor bottoms and dispose of dredge sediments in multiple possible locations: in the ocean, on land at landfill sites, or at designated beach nourishment sites. Dredge materials can contain a variety of hazardous materials including mercury and other heavy metals, chlorinated pesticides, PCBs, and PAHs. Disposing dredged material in the ocean may impact the marine environment by temporarily increasing water column turbidity and depositing other persistent contaminants into the sediment, water column, and food chain.

Since at least 1959, dredging activities, mostly in Santa Cruz and Moss Landing harbors, have disposed of dredged sediments in the area now designated as MBNMS. When NOAA designated MBNMS in 1992, the sanctuary regulations prohibited the establishment of new dredge disposal sites within the sanctuary. However, sites in use and permitted before designation of MBNMS are still authorized. Santa Cruz, Monterey, and Moss Landing harbors conduct regular dredging of the bottom of their harbors and dispose of the bulk of their dredge sediments within MBNMS at four designated dredge disposal sites: SF-12 and SF-14 (offshore sites) and Twin Lakes State Beach and Monterey Harbor (onshore sites). The location and use of these four sites are summarized below.

Table 4. Dredge Disposal Activities at Designated Sites in Monterey Bay National Marine Sanctuary

Name of disposal site	Location of disposal site	Permittee and use of site	Volume of material disposed
SF-12	50 yards off the beach near Moss Landing Harbor at the head of the Monterey Canyon	Moss Landing Harbor; material piped from harbor to the disposal site	Historically: up to 50,000 to 150,000 cubic yards per year
SF-14	A deepwater site 2.3 miles west of Moss Landing Harbor	Rarely used due to the need for a barge and the associated expense	In 2012, the U.S. Army Corps of Engineers dredged the federal entrance of Moss Landing Harbor and disposed of 12,600 cubic yards of shoaled material from the Federal Entrance Channel.
Moss Landing Beach	An area above mean high water up to 600 yards south from the south entrance jetty and north from the north	Moss Landing Harbor	In 2019, multiple agency approvals permitted dredging of up to 550,000 cubic yards of sediment over a 10-year period, with a dredging cap of no more than 80,000 cubic yards in any given year. Clean sediments greater than or equal to 80% sand

	entrance jetty to the limit of harbor district jurisdiction		composition could be placed on harbor beaches. Clean sediments less than or equal to 80% sand composition had to be placed at SF-12 or SF-14.
Twin Lakes State Beach	Harbor-adjacent beaches and the surf zone in Santa Cruz Harbor	Santa Cruz Harbor	Up to 2,560,000 cubic yards of sandy entrance channel sediment over 10 years Up to 20,000 cubic yards per year of sandy inner harbor sediment OR Up to 10,000 cubic yards per year of sandy inner harbor sediment AND 10,000 cubic yards per year of finer-grained inner harbor sediment (at a rate not to exceed 550 cubic yards of silts and clays per day Up to 35,000 cubic yards of inner harbor sediment at an upland site or at a federally approved offshore disposal site over a 10-year period
Monterey Harbor	Within Monterey Harbor adjacent to Wharf 2; and an area above mean high water at Del Monte Beach	Monterey Harbor	Historically, up to 10,000 cubic yards of dredged sediment annually

Due to human reshaping of coastal environments (e.g., the creation of artificial harbors, river/stream diversion, shoreline armoring, installation of piers and jetties), longshore sediment transport patterns can become altered or interrupted. This, in turn, can lead to accelerated accretion or erosion of beaches. Whenever a fixed and hardened object is placed at the shoreline, it often interrupts natural sediment transport patterns and can block a beach downcoast from receiving sand needed to offset sediment stripped from that beach by daily waves, tides, and currents. In such cases, the beach loses equilibrium and begins to erode, allowing ocean waters to encroach on formerly backshore areas, threatening coastal ecosystems and infrastructure (NOAA ONMS, 2016). Equilibrium can be restored to the beach by artificially supplying sediment equal to the volume and composition of sediment normally supplied by natural processes. This is known as “beach nourishment.” It is essentially a corrective engineering measure to restore balance to the sediment budget for a given beach.

Some dredged sediment is used for beach nourishment along shorelines adjacent to MBNMS. Beach nourishment is the introduction of sand onto a beach in order to supplement a decreased supply of sand due to coastal erosion or seasonal beach elevation changes. Nourishment projects have been implemented and are proposed in a number of coastal towns, mainly for the purposes of beach restoration, enhancement,

and/or maintenance. NOAA can currently accommodate requests for beneficial use of sediment for beach nourishment in locations where the bathymetry and topography allow space for sediment placement above the mean high water (MHW) line. Beach replenishment projects currently occur at Del Monte Beach in Monterey, Salinas River and Moss Landing State beaches at Moss Landing, and Twin Lakes State Beach in Santa Cruz. Summaries of these activities are found in **Table 4**. Past habitat restoration projects at Santa Cruz and Monterey have proven successful in maintaining the integrity of high public use beaches that would otherwise suffer from accelerated erosion due to urban interruptions of natural sediment transport patterns in the area. Placement of clean dredged material on these beaches has helped stabilize beach profiles at these sites.

At some sites in MBNMS, shoreline habitat, beach access, and resources are increasingly impacted by shoreline erosion associated with shoreline structures, coastal armoring, sea level rise, and documented, increased storm activity. One example of such a site is Surfer's Beach, which is immediately adjacent to Pillar Point Harbor. Due to the interruption of natural sand transport patterns by shoreline infrastructure, the beach has eroded to such a degree that ocean waters now extend to the toe of the riprap armoring that safeguards Highway 1 (between the base of the East Breakwater and the ocean terminus of Coronado Street).

4.1.3 Air Quality

In 1970, Congress passed the federal Clean Air Act in order to protect human health and welfare from air pollution. As part of implementing the Clean Air Act, the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: particulate matter (PM₁₀ and PM_{2.5}); sulfur dioxide; nitrogen dioxide; ozone; carbon monoxide; and lead. NAAQS are defined as levels of pollutants above which detrimental effects on human health or welfare may result.

For the purpose of planning and maintaining ambient air quality under NAAQS, EPA developed air quality control regions. Air quality control regions are intrastate or interstate areas that share a common airshed. MBNMS is located within the North Central Coast air basin and the South Central Coast air basin in San Luis Obispo County (NOAA ONMS, 2008). The North Central Coast air basin is designated as a maintenance area for the one-hour ozone standard, an attainment area for the eight-hour ozone standard, and is classified as attainment or unclassified for the rest of the pollutant standards. The South Central Coast air basin is designated as unclassified/attainment for the one-hour and eight-hour ozone standards, except for Ventura County (outside MBNMS) which is designated nonattainment. The South Central Coast air basin is designated unclassifiable for the PM₁₀ standard and unclassifiable/attainment for the other criteria pollutant standards (NOAA ONMS, 2008).

Vessel traffic within MBNMS contributes to the degradation of air quality. The main sources of air pollution from within MBNMS are diesel exhaust from ship engines and incineration of garbage on vessels within the sanctuary. 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. Consistent with MARPOL Annex VI “Regulations for the Prevention of Air Pollution from Ships,” vessels transiting through MBNMS along the California coast must use marine diesel oil or exhaust scrubbers to minimize the emissions of air pollutants.

The extent and severity of the air pollution problem in the North Central Coast air basin is a function of the area’s weather and topography, as well as human-created influences such as development patterns and lifestyle. In general, the air pollution potential of the coastal areas is relatively low due to persistent winds. The North Central Coast air basin is, however, subject to temperature inversions that restrict vertical mixing of pollutants, and the warmer inland valleys of the basin have a high pollution potential. Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the area (City of Santa Cruz, 2004).

The southernmost section of MBNMS abuts San Luis Obispo County and the South Central Coast air basin, 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.

4.1.4 Climate Change

The waters of MBNMS, as well as surrounding coastal areas and communities, are experiencing the effects of climate-related stressors (e.g., sea level rise, extreme storms, and ocean acidification) and these stressors are expected to worsen over the coming decades. Through regional collaboration and coordination, coastal communities are preparing for the effects of increasing greenhouse gas emissions, increased levels of ocean carbon dioxide, and ocean acidification. Climate change is a global problem requiring solutions at many levels.

Oceanic and coastal waters are expected to become more acidic as pH lowers in response to increased concentrations of atmospheric carbon dioxide settling in the ocean. Current knowledge is insufficient to be certain how pH will change in MBNMS, however research is critical as this phenomenon is likely to decrease the availability of chemical building blocks for marine organisms using structural components made out of calcium carbonate (e.g., shells, spines, and bones). Ocean acidification leads to decreased shell growth in

key species (sea urchins, mussels, oysters, abalone, and crabs) making the animal more susceptible to predation or mortality at early life stages. It also decreases skeleton production of deep-sea corals and hydrocorals. As deeper water tends to be more acidic naturally, deep-sea corals may be among the first to experience the deleterious effects of ocean acidification. The larval and juvenile stages of many marine organisms rely on calcium structures and will be more susceptible to the effects of ocean acidification due to their small size. In addition, there is concern for negative effects on shell-building plankton at the base of the food web.

MBNMS staff have worked on a number of climate change projects in recent years including coordinating a set of collaborative workshops for regional public works staff, developing a west coast action plan on ocean acidification, and contributing to a report clarifying the benefits, costs, and effectiveness of a range of erosion mitigation management measures for the entire California shoreline. MBNMS staff will continue to work with other west coast national marine sanctuaries and partners to integrate coastal resilience adaptation planning, climate change monitoring, education, and adaptation into sanctuary management.

4.1.5 Soundscape

Haver et al. define the soundscape as the “sources and acoustic characteristics of all biotic and abiotic ambient sounds present in a particular location and time” (Haver et al., 2019; Pijanowski et al., 2011). NOAA and other agency and scientific partners are working to better understand the underwater soundscape within national marine sanctuaries, including MBNMS (Haver et al., 2019). This research primarily relies on deployment of hydrophones to assess sounds produced by marine animals, physical processes, and human activities and to provide data on baseline acoustic conditions and sound levels in national marine sanctuaries. Find more information on these research efforts at these links: <https://sanctuaries.noaa.gov/science/sentinel-site-program/monterey-bay/noise.html> and <https://sanctuaries.noaa.gov/science/monitoring/sound/>.

Generally, the anthropogenic sources of noise present in MBNMS include commercial shipping traffic, recreational and commercial boats, military training and testing, research activities, and aerial overflights. Shipping, boating, and operation of sonar systems can emit mechanical and electronic sounds 24 hours a day. In addition, low-altitude flight operations, coastal construction activity, marine fireworks displays, and large-scale public shoreline events can elevate atmospheric sound levels in MBNMS. At the same time, low-intensity sound is an effective tool for vessel navigation and conducting valuable marine research that aids protection of marine ecosystems and the sanctuary’s resources.

4.2 Biological Setting

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, more than 180 species of seabirds and shorebirds, at least 525 species of fishes, and an abundance of invertebrates, algae, and marine plants. For the purposes of the 2015 MBNMS Condition Report, the sanctuary was divided into four main areas, shown below in **Figure 6**.

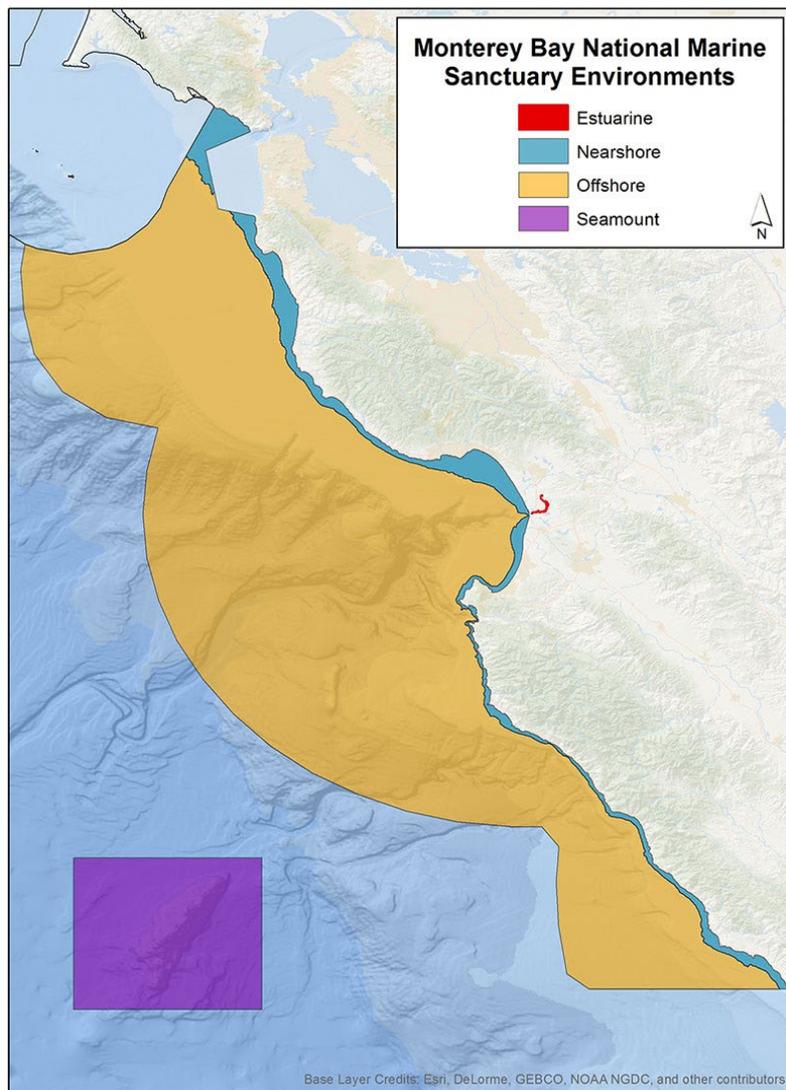


Figure 6. Monterey Bay National Marine Sanctuary was subdivided into estuarine, nearshore (shoreline to 30 meters depth), offshore (30 meters depth to seaward boundary), and seamount environments for the purpose of assessment in the 2015 MBNMS Condition Report.

4.2.1 Habitats

The sanctuary's kelp forests, rocky and soft bottom sub- or inter-tidal habitats, Monterey Canyon, underwater seamount, cold seeps, and open ocean (pelagic) habitats support a variety of organisms. Major habitat types found in MBNMS are described below.

4.2.1.1 Rocky Shores

Rocky shores are among the most accessible habitats within the sanctuary, and at low tide an incredible diversity of organisms can be observed. Approximately 39% of the MBNMS coast is rocky shore habitat. Particularly in central California, rocky shores are highly diverse, well-studied, and contribute significantly to our understanding of this habitat, both locally and globally.

MBNMS experiences mixed semidiurnal tides, with two high and two low tides each day (NOS, 2019). The rocky intertidal area can be categorized into four zones based on the relative exposure to air and the intertidal organisms found in each zone. The splash zone is exposed to air most of the time and has relatively few species present. The periwinkle snail (*Littorina keenae*) is indicative of the splash zone. Microscopic algae are common in winter, when large waves produce consistent spray on the upper portion of the rocky shore. The high intertidal zone is exposed to air for long periods twice per day. The acorn barnacle (*Balanus glandula*) and red algae (*Endocladia muricata* and *Mastocarpus papillatus*) are indicative of this zone. However, these species are also found in other areas of the rocky shore. The mid intertidal zone is exposed to air briefly once or twice per day and has many well-known organisms. At wave exposed sites, the California mussel (*Mytilus californianus*) can dominate this zone. The low intertidal zone is exposed only during the lowest tides and the presence of the seagrass *Phyllospadix* is a good indicator of the mean lower low water tide level. The low intertidal zone is also where sponges and tunicates are most common, typically on the underside of large boulders.

4.2.1.2 Subtidal and Nearshore Waters

Subtidal and nearshore waters refer to the area from the lowest low tide line to a depth of 100 feet (30 meters) where the seafloor drops and the deeper offshore waters begin. The substrate in this habitat can be sand, mud, or rock which provide habitat for a diversity of algae, invertebrates, and fishes. Upwelling transports cold nutrient-rich water to the surface, fueling a productive ecosystem in the nearshore environment.

4.2.1.3 Estuarine

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 (Airamé, Gaines, and Caldow, 2003). Estuaries represent the confluence of terrestrial, freshwater, and marine ecosystems, creating multiple, unique habitats supporting highly

diverse communities and providing important ecosystem services (NOAA ONMS, 2015). There are a few large and many small estuaries along the central California coast; however, Elkhorn Slough is the only estuary located within the boundaries of MBNMS (NOAA ONMS, 2015). Estuaries adjacent to MBNMS include San Francisco Bay and Pescadero Marsh. Estuaries are among the most productive natural ecosystems. Their physical, chemical, and biological characteristics are critically important to sustaining living resources. Estuaries serve as important habitats for many fishes, birds, and mammals (Caffrey et al., 2002). They provide suitable microhabitats for reproduction, feeding, resting, and cover. Phytoplankton is the primary vegetation in the open water portion of these habitats, while seagrasses dominate the channels and benthos.

Seagrass beds in MBNMS are highly productive habitats that support a unique assemblage of invertebrates and fishes. Seagrasses provide ecosystem services, including secondary production, habitat for many other species, shoreline protection, and carbon sequestration (Hughes et al., 2013). The structure of seagrass beds provides protection from predation for juvenile invertebrates and fishes. Many fishes, including Pacific herring (*Clupea pallasii*), spawn in seagrass beds. Large numbers of shorebirds and waterfowl are attracted to seagrass beds, where they feed on the seagrass, fishes, and invertebrate eggs and young.

4.2.1.4 Continental Shelf and Slope

The continental shelf is the gradually sloping submerged margin of a continent that extends from shore to the shelf break. The shelf break is where the continental slope descends off into a steep slope. The sanctuary's continental shelf is relatively broad from the northern boundary to southern Monterey Bay and then narrows considerably south of Monterey Bay except around Point Sur and near the southern boundary in Cambria. The vast majority (~93%) of the shelf in MBNMS is composed of soft bottom habitats. The shelf edge is marked by the abrupt break in slope that occurs at a depth of approximately 325 to 410 feet (Greene et al., 2002). The continental slope usually begins at 430 feet depth and ends at approximately 9800 feet. The continental slope, together with the continental shelf, is called the continental margin.

The continental margin is generally an area of very productive habitat for many species. The central segment of the seafloor in MBNMS extends from the Point Año Nuevo area to south of Point Sur. This segment 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, Carmel Canyon, and the many heads of Sur Canyon, which have cut the continental slope just south of Point Sur, provide valuable habitat for many species, as does Sur Ridge (Brown et al., 2013).

Davidson Seamount has been called “An Oasis in the Deep,” hosting large coral forests, vast sponge fields, crabs, deep-sea fishes, shrimp, basket stars, and high numbers of benthic species that have yet to be named. The surface habitat hosts a variety of seabirds, marine mammals, and fishes, including albatross, shearwaters, jaegers, sperm whales, fin whales, albacore tuna, and ocean sunfish. Rarely seen organisms, such as swimming nudibranchs (an undescribed mollusk) and red jellyfish, have been observed above Davidson Seamount (Brown et al., 2013).

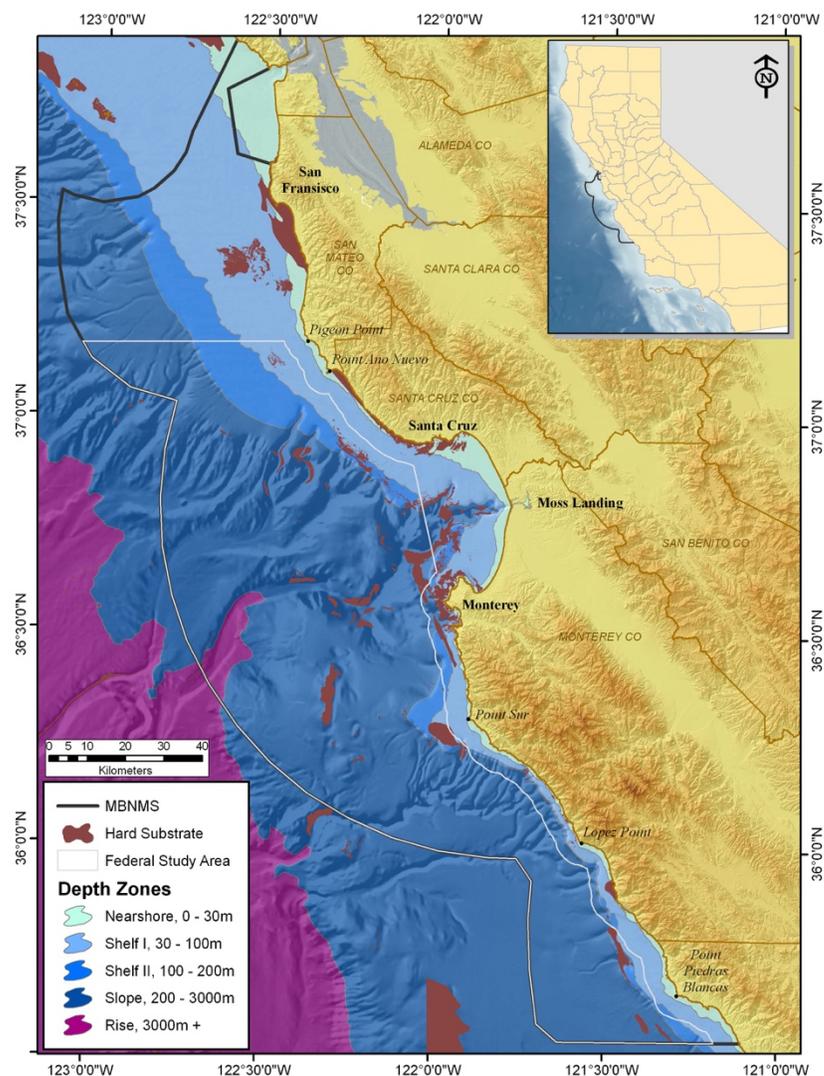


Figure 7. *Depth Zones and Substrate Types in Monterey Bay National Marine Sanctuary (Brown et al., 2013)*

4.2.1.5 Offshore Waters

Offshore waters refer to open water areas that extend beyond 100 feet seaward from the continental margin (Shaffer, 2002). Offshore water habitat and deep-sea communities

occur in MBNMS at Monterey Canyon and Davidson Seamount, as well as cold seeps. 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. 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 Caldow, 2003).

Seasonal upwelling occurring off Año Nuevo and Point Sur brings up cold nutrient-rich waters to the surface and also has an effect on animal movement. As such, coastal upwelling ecosystems are some of the most productive ecosystems in the world and support many of the world's most important fisheries. Movement of cold waters to the surface (i.e., upwelling) encourages seaweed growth and supports blooms of phytoplankton, the primary vegetation in offshore waters. Phytoplankton blooms serve as nutrients and both directly and indirectly support large predator populations, such as fishes, marine mammals, and seabirds. Upwelling also moves surface waters offshore, providing a mechanism to transport 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 and transport species incapable of swimming long distances.

4.2.1.6 Kelp Forests

Kelp provides a unique and diverse habitat used by numerous species, including marine mammals, fishes, other algae, and vast numbers of invertebrates. Adjacent to the rocky coastline but beyond the shore break, several species of kelp cling to hard substrates and lend added vertical structure to the rocky reef habitat. Although some individual kelps can persist for up to three years, the overall structure of the kelp forest is very dynamic. Kelp canopy cover varies seasonally: thickest in late summer and thinnest in winter, when large swells and old age combine to remove weakened adults. During the following spring, the next generation grows rapidly, taking advantage of the thin canopy cover and the increase in available light. When coupled with upwelling, which brings cold, nutrient-rich waters to the surface, these spring-time conditions allow some species of kelp to grow up to twelve inches per day.

Kelp forests consist of layers similar to terrestrial forests. In central California, the two primary canopy forming species in kelp forests are giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis luetkeana*), both of which are brown seaweeds. Both species can be found within the same kelp forest. Giant kelp is more typical of the Monterey Bay area and bull kelp is more common north of Santa Cruz and in patches along the Big Sur coastline. The understory is the layer three to six feet above the seafloor and is dominated by stalked (i.e., stipitate) brown algae such as *Pterygophora californica* and

Laminaria setchellii. The lowest layer, turf algae, consists of several red algae, including articulated corallines. These layers support a rich diversity of fishes and invertebrates.

The kelp canopy, stipes, and holdfasts increase the available habitat for nearshore species and offer protection to juvenile finfish. Sea otters reside within kelp forests. Seabirds, harbor seals, California sea lions, and even gray whales will visit kelp forests while foraging for food. Giant kelp and other algae support large populations of benthic invertebrates, which in turn attract higher-order predators. A variety of fishes are also common in kelp forests, such as the señorita (*Oxyjulis californica*), kelp surfperch (*Brachyistius frenatus*), blue rockfish (*Sebastes mystinus*), and vermilion rockfish (*S. miniatus*). Kelp forests and their associated flora and fauna are important resources for fisheries. The kelp forest canopies serve as nurseries for newly-recruited rockfishes, providing refuge during a vulnerable stage of the life cycle (Butler et al., 2012). As these rockfish grow, some leave the kelp forest for deeper waters and support commercial and recreational fisheries.

4.2.1.7 Offshore Islands

Offshore from Point Año Nuevo, 46 miles 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. The island is a highly sensitive habitat, and its use is restricted.

Año Nuevo Island supports an abundant wildlife population, primarily seabirds and pinnipeds. The island contains nesting colonies of sea birds, including the rhinoceros auklet (*Cerorhinca monocerata*), Cassin's auklet (*Ptychoramphus aleuticus*), Brandt's cormorant (*Phalacrocorax penicillatus*), black oystercatcher (*Haematopus bachmani*), and western gull (*Larus occidentalis*). California brown pelicans (*Pelecanus occidentalis*) are also seen there, although they do not use the island for breeding. Año Nuevo Island also serves as a breeding ground for northern elephant seals (*Mirounga angustirostris*), Pacific harbor seals (*Phoca vitulina*), California sea lions (*Zalophus californianus*), and Steller sea lions (*Eumetopias jubatus*). The northern elephant seal population is the most predominant and has recovered to the carrying capacity of the island, extending to the mainland. Northern fur seals (*Callorhinus ursinus*) and southern sea otters (*Enhydra lutris nereis*) are occasional visitors.

4.2.1.8 Benthic Communities

The benthic community is made up of organisms that live in and on the ocean floor, which can consist of rocky reef or sediments. Benthic species include worms, clams, crabs, and sponges. Benthic communities occur in subtidal rocky reefs, kelp forests, soft bottom habitats, and deep ocean floor habitats. Benthic communities along the continental shelf are covered in part by a layer of mud. Deep reef areas provide

important habitat for a unique assemblage of fishes and invertebrates and are very different from shallow water communities. For example, upwelling and substantial offshore transport occur off Point Sur, where a coastal current flowing northward and extending from the surface to 656 feet 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. 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.

4.2.2 Invertebrates and Plants

Thousands of species of invertebrates are found in MBNMS, including sponges, anemones, jellies, worms, corals, urchins, sea stars, tunicates, snails, octopus, clams, squid, and arthropods, such as barnacles, crabs, and spot prawns. Most invertebrate species are not harvested commercially, with the exception of squid, spot prawn, red urchins, sea cucumbers, Dungeness crab, rock crab, and octopus. Invertebrates are found in all habitats from the intertidal to the deep sea. A wide variety of invertebrates, including anemones, barnacles, limpets, and mussels, compete for space with the algae in the intertidal zone. Common crustaceans seen at the beach include the beach hopper (*Megalorchestia californiana*), spiny mole crab (*Blepharipoda occidentalis*), and sand crab (*Emerita analoga*). In tidepools, observers often see hermit crabs, shore crabs, anemones, urchins, nudibranchs, and sponges.

The marine algae found in MBNMS range from microscopic phytoplankton that fuel the oceanic food web or giant kelp that create kelp forests along the shoreline. Kelp forests are prominent throughout nearshore waters in MBNMS and support a variety of species, including sea otters and sea urchins, marine mammals, fishes, algae, and invertebrates. Bat star (*Patiria miniata*), sea lemon (*Peltodoris nobilis*), barnacles (*Balanus* spp.), red volcano sponge (*Acarnus erithacus*), and urchin inhabit the kelp forest and rocky subtidal habitats.

Seagrass beds are situated on subtidal estuarine flats, in bays, and in 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.

Krill (euphausiids) is a crucial or “keystone” species in MBNMS. 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 MBNMS. Krill feed on phytoplankton and are very important in the food web since many other species of

seabirds, fish, and baleen whales consume krill. Krill form a key trophic link in coastal upwelling systems between primary production and higher trophic level consumers.

Invertebrate species protected under the ESA that are present in MBNMS are described in **Section 4.3.1.4.3**.

4.2.3 Fishes

The fish fauna in MBNMS constitute a diverse and important ecological resource. There are at least 525 fish species (Burton and Lea, in prep.) distributed across a wide variety of habitats, with each habitat having its own characteristic fish assemblage (ONMS, 2009). Estuaries and lagoons support a distinctive assemblage of fish species that tolerate a variety of salinity conditions. Some species (e.g., flatfishes, sharks, and rays) use estuaries during the juvenile phase, but move out onto the continental shelf as they mature. A number of small and specialized fishes, such as gunnells, pricklebacks, and tidepool sculpins, are found in tide pools along the rocky coast. Rockfishes (genus *Sebastes*) compose a very diverse group found in many subtidal habitats in the sanctuary, but they are especially common on rocky reefs. Flatfishes, skates and rays, sablefish, and Pacific hake are typical of soft bottom habitats on the shelf and upper slope. Most deep-sea bottom fishes off central California belong to one of four families: grenadiers, eelpouts, codlings, and skates. Anadromous fish, including coho salmon, Chinook Salmon, and steelhead, are mobile, nonresidential, nearshore pelagic species. The open waters of the sanctuary are occupied by a large diversity of pelagic fishes ranging from small schooling fishes (e.g., anchovy, sardine, mackerel, and mesopelagic fishes like lanternfishes, deep-sea smelts, and bristlemouths) to large solitary predators (e.g., tuna and sharks).

The sanctuary is located at the southern end of the range of many species that are part of the very diverse, cold-temperate fauna that make up the Oregonian Province. Occasionally, southern species from the California Province (south of Point Conception) extend their ranges to central and northern California during warm oceanographic events, such as El Niño and the Pacific Decadal Oscillation. Many organisms, including some fishes, depend on ocean currents for larval dispersal and recruitment. Therefore, the variability of oceanographic features and events in MBNMS (e.g., upwelling and El Niño) affects fish populations. Rockfishes (genus *Sebastes*), for example, exhibit extreme variability in reproductive success.

Fish species protected under the ESA are described in **Section 4.3.1.4.1**. Designated EFH present in MBNMS is described in **Section 4.3.2**. Commercial fishing activities in MBNMS are discussed in **Section 4.4.3**.

4.2.4 Birds

Approximately 100 bird species use the sanctuary's marine environment, including open ocean and nearshore waters. Millions of seabirds migrate through sanctuary waters in spring and fall. Seabirds are relatively numerous at MBNMS compared to other portions of the west coast due to an abundance of prey. This abundance is a result of nutrient-rich waters brought to the surface by persistent upwelling plumes emanating westward from Año Nuevo Point and Point Sur. Seasonal shifts and temporal shifts in seabird distribution have been observed within MBNMS. There is some evidence that the numbers of marine birds, such as ash storm petrel (*Oceanodroma homochroa*), using MBNMS habitat are declining, most likely due to a shift in ocean climate.

The waters of MBNMS provide wintering habitat for many species that use the sanctuary's rich prey resources for foraging. Very deep water occurs within a few miles of shore in MBNMS because of the presence of submarine canyons. As a result, surface waters overlying the submarine canyons (over 6,562 feet deep) can provide habitat for deep water pelagic birds, such as the black-footed albatross (*Phoebastria nigripes*), ash storm petrel (*Oceanodroma homochroa*), and Scripps's murrelet (*Synthliboramphus scrippsi*) during summer and fall, and northern fulmars (*Fulmarus glacialis*) and black-legged kittiwakes (*Rissa tridactyla*) during winter and early spring. Along the continental shelf break, a relatively narrow habitat, seabird densities are also substantial. These waters are dominated by sooty shearwaters (*Ardenna grisea*) during spring and summer and by fulmars and gulls during winter. Other characteristic species of the continental shelf break are pink-footed shearwaters (*Puffinus creatopus*), Buller's shearwaters (*P. bulleri*), black storm petrels (*Oceanodroma melania*), and rhinoceros auklets (*Cerorhinca monocerata*). Inshore of slope waters (greater than 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 pelagic cormorants (*Phalacrocorax pelagicus*), surf (*Melanitta perspicillata*) and white-winged scoters (*M. fusca*), and marbled murrelets (*Brachyramphus marmoratus marmoratus*). Shorebirds, such as sanderlings and long-billed curlew (*Numenius americanus*), willet (*Tringa semipalmata*), and whimbrel (*Numenius phaeopus*), routinely forage in the receding surf, an indication that there are sand-dwelling crustaceans present there. Elkhorn Slough is one of California's last great coastal wetlands. Flushed by ocean tides in the heart of Monterey Bay, its waterways, mudflats, and marsh support a huge diversity of wildlife. Not only is the slough part of MBNMS, a portion of it is protected as a National Estuarine Research Reserve. Elkhorn Slough is part of the Pacific flyway and tens of thousands of birds migrate through the area every year. Over 340 species of birds have been identified in and around the slough. Various types of plovers, godwits, turnstones,

sandpipers, hummingbirds, phalaropes, murrelets, auklets, terns, cormorants, egrets, hawks, and gulls can all be found in Elkhorn Slough.

There are a few breeding bird 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 (*Phalacrocorax penicillatus*), which breeds in large numbers in MBNMS. Otherwise, typical breeding species in MBNMS are the pelagic cormorant (*Phalacrocorax pelagicus*) and double-crested cormorants (*P. auritus*), western gulls, Caspian terns (*Sterna caspia*), common murre, pigeon guillemots (*Cepphus columba*), rhinoceros auklets, and marbled murrelets. Swallows, pigeon guillemot (*Cepphus columba*), and pelagic cormorants breed and feed along coastal bluffs. Nesting sites of the common murre (*Uria aalge*) occur at the Devil's Slide area and Hurricane Point near Big Sur.

Bird species protected under the ESA are described in **Section 4.3.1.4.5**.

4.2.5 Introduced Species

Introduced species (also known as nonnative, invasive, or exotic species) are present in the marine and estuarine environment in MBNMS and are a major environmental threat to living resources and habitats in the sanctuary. Invasive species are defined as organisms that invade ecosystems beyond their natural, historic range. Introducing invasive species into waters where they are not already established is considered a significant threat to water quality and is capable of disrupting native marine ecosystems. Introduced species 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. They may cause local extinction of native species either by preying on them directly or by out-competing them. Introduced species may cause changes in physical habitat structure through ecosystem engineering. Once established, introduced species can be extremely difficult to control or to eradicate. Their presence may also harm commercial, agricultural, or recreational activities dependent on native ecosystems (USFWS, 2007). Hundreds of federal programs, state organizations, international organizations, and non-profit organizations have established databases, community outreach, monitoring, eradication, research, and education programs to deal with this ongoing threat to native biodiversity.

4.3 Protected Species and Habitats

This section describes biological species and associated habitats that are protected by the Endangered Species Act (ESA; 16 U.S.C. §§ 1531 *et seq.*), the Marine Mammal Protection Act (MMPA; 16 U.S.C. §§ 1361 *et seq.*), and the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. §§ 1801 *et seq.*). The MMPA and MSA are administered by the National Marine Fisheries Service (NMFS). The ESA is administered jointly by the U.S. Fish and Wildlife Service (USFWS) and NMFS. See **Section 4.3.1** for

an overview of ESA-protected species and designated critical habitat found in the action area. See **Section 4.3.2** for an overview of designated EFH found in the action area.

Section 7 of the ESA requires federal agencies to consult with USFWS and/or NMFS, as applicable, before initiating any action that may affect a listed species or designated critical habitat. NOAA ONMS will initiate informal consultation with NMFS and USFWS under Section 7 of the ESA related to the proposed action. NOAA ONMS notified NMFS and USFWS regarding the proposed federal action in its August 27, 2015 (80 FR 51973) notice of intent to initiate review of the sanctuary's management plan and regulations and to conduct public scoping. This draft EA provides information about the potential impacts of the proposed action on protected species and designated critical habitat in the project action area.

4.3.1 Species and Critical Habitat Protected Under the ESA or MMPA

Under the ESA, USFWS manages the protection of, and recovery effort for, listed terrestrial and freshwater species, and NMFS manages the protection of, and recovery effort for listed marine and anadromous species. The ESA protects plant, fish, and wildlife species (and their habitats) that are listed as **endangered** and **threatened**. A species is defined as **endangered** if it is at risk of extinction throughout all, or a significant portion of, its range. A species is defined as **threatened** if it is likely to become endangered within the foreseeable future. When USFWS or NMFS lists a species under the ESA, they are required to determine whether critical habitat exists. **Critical habitat** is defined as (1) specific areas within the geographical area occupied by the species at the time of listing that contain physical or biological features essential to conservation of the species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species only upon a determination that such areas are essential for the conservation of the species (16 U.S.C. § 1532(5)(A)).

The MMPA, enacted by Congress on October 21, 1972, establishes a national policy to prevent marine mammal species and population stocks from declining beyond the point where they ceased to be significant functioning elements of the ecosystems of which they are a part. The MMPA established a moratorium on the taking of marine mammals in U.S. waters. It defines "take" to mean "to harass, hunt, capture, collect, or kill" any marine mammal or attempt to do so (50 CFR § 216.3). Three federal entities share responsibility for implementing the MMPA. NMFS has the responsibility for the conservation and management of whales, dolphins, porpoises, seals, and sea lions. NMFS also prepares marine mammal stock assessment reports to track the status of marine mammal stocks. USFWS has responsibility for the conservation and management of walrus, manatees, sea otters, and polar bears. The Marine Mammal Commission provides independent, science-based oversight of domestic and international policies and actions of federal agencies addressing human impacts on

marine mammals and their ecosystems (NOAA NMFS, 2019b). Some marine mammals are also protected under the ESA. If a species or population stock is listed as an endangered species or a threatened species under the ESA, NMFS determines that such species or stock is below its optimum sustainable population and it is designated as a depleted stock under the MMPA.

4.3.1.1 Action Area for Analysis of Impacts to Protected Species

The implementing regulations for Section 7(a)(2) of the ESA states the action area “means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR § 402.02). The action area effectively bounds the analysis of ESA-protected species and habitats because only species that occur within the action area may be affected by the federal action.

For the purposes of this analysis of the proposed management plan, regulatory changes, and continued field activities at MBNMS, NOAA ONMS defined the action area as:

- 1) the boundaries of MBNMS,
- 2) the main routes vessels would travel to operate within the sanctuary,
- 3) shorelines adjacent to MBNMS where noise and human disturbance from MBNMS activities would impact wildlife or where onshore fieldwork would occur, and
- 4) rivers in the local watersheds within which NOAA staff and volunteers conduct periodic water sampling.

NOAA ONMS expects all direct and indirect effects of the proposed action to be contained within the action area as defined above. NOAA ONMS recognizes that while the action area is stationary, federally listed species can move in and out of the action area. For instance, a migratory bird species could occur in the action area seasonally as it forages or breeds at or near MBNMS. Thus, in its analysis, NOAA ONMS considers not only those species known to occur directly within the action area, but also those species that may passively or actively move into the action area for limited periods of time. NOAA ONMS then considered whether the life history of each species makes the species likely to move into the action area where it could then be affected by the proposed action. A detailed list of protected species, their habitat requirements, and potential to occur in the MBNMS action area is provided in **Appendix D**.

4.3.1.2 Species and Critical Habitat Under USFWS Jurisdiction that may Occur Within the Action Area

NOAA ONMS used the USFWS’s Environmental Conservation Online System (ECOS) Information for Planning and Conservation (IPaC) tool to search for ESA-listed species that may be present in the action area. The ECOS IPaC tool identified 55 species listed as endangered or threatened under USFWS jurisdiction that could occur in the action area, as well as designated critical habitat for six species (western snowy plover, marbled

murrelet, California red-legged frog, tidewater goby, robust spineflower, Monterey spineflower) (USFWS, June 18, 2020; Consultation Code: 08EVEN00-2019-SLI-0565, and 08ESMF00-2019-SLI-2224).

As described in **Appendix D**, based on an evaluation of the species ranges, habitat use, and the components of the proposed action, NOAA ONMS determined that 9 ESA-listed species and designated critical habitat for four species under USFWS jurisdiction may occur within the action area and could be affected by the proposed action. These nine species are: southern sea otter, green sea turtle, California red-legged frog, tidewater goby, California condor, California least tern, short-tailed albatross, marbled murrelet, and western snowy plover. These designated critical habitats are: western snowy plover, marbled murrelet, California red-legged frog, and tidewater goby.

4.3.1.3 Species and Critical Habitat Under NMFS Jurisdiction that may Occur Within the Action Area

To compile the list of ESA-listed species under NMFS jurisdiction that may occur within the action area, NOAA ONMS used the NMFS West Coast Region Protected Resource Division's Threatened and Endangered Species Directory (accessed March 2020). These lists are composed of 10 marine mammal species or distinct population segments (DPS), two marine invertebrate species, seven fish species or DPSs, five sea turtle species, and 26 DPSs or evolutionarily significant units (ESU) of West Coast salmon and steelhead. Critical habitat is designated for 37 species or DPS/ESUs under the jurisdiction of NMFS West Coast Region, in addition to proposed revisions to designated critical habitat for two species.

As described in **Appendix D**, based on an evaluation of the species ranges, habitat use, and the components of the proposed action, NOAA ONMS determined that 22 ESA-listed species (or DPS/ESUs) and designated critical habitat for four species under NMFS jurisdiction occur in the action area and could be affected by the proposed action. These species are: black abalone, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, California coastal Chinook salmon, Central California coast coho salmon, Central California coast steelhead, South Central California coast steelhead, North American green sturgeon southern DPS, longfin smelt, eulachon, leatherback sea turtle, green sea turtle, loggerhead sea turtle, olive ridley sea turtle, Guadalupe fur seal, blue whale, humpback whale, fin whale, sperm whale, killer whale, North Pacific right whale, and sei whale. These designated critical habitats are: green sturgeon southern DPS, three DPS of salmon and steelhead, black abalone, leatherback sea turtle. Proposed revisions to designated critical habitat for two species (southern resident killer whale and humpback whale) overlap with the action area. Marine mammals protected under the MMPA are discussed in **Section 4.3.1.4.2** below.

4.3.1.4 Species Descriptions

Below are brief descriptions of the listed species most likely to occur within the action area that could be affected by the proposed action. A detailed list of species protected under ESA and MMPA, their habitat requirements, and potential to occur in the MBNMS action area is provided in **Appendix D**. These species listed below are identified in the table in **Appendix D** as having a high potential to occur in the action area or with critical habitat that intersects with the action area. NOAA ONMS compiled the information below and in **Appendix D** using species profiles in the USFWS's ECOS database, NMFS species directory, final rules published in the Federal Register for species listings and designations of critical habitat, and species status reviews.

4.3.1.4.1 Fishes

Tidewater goby, listed as endangered, and the threatened southern DPS of North American green sturgeon inhabit MBNMS. Designated critical habitat for these species also overlaps with the action area. In addition, designated critical habitat for the endangered California Coastal evolutionarily significant unit (ESU) of coho salmon, and threatened Central California Coast and South Central California Coast DPS of steelhead overlaps with rivers in the action area where NOAA conducts annual water sampling during Snapshot Day. The likelihood of these species occurring in the action area is moderate or low and most likely during annual migration.

Tidewater Goby (*Eucyclogobius newberryi*) The likelihood of occurrence of tidewater goby in the action area is low and seasonal. California's coastal estuaries, enclosed lagoons near the mouths of coastal streams, and brackish waters of adjoining marshes and streams provide habitat for endangered tidewater goby. These are dynamic environments subject to considerable fluctuations on a seasonal and annual basis. Tidewater goby are seasonally present in habitats adjacent to MBNMS, including Bennett Slough, the Salinas River, and occasionally in upper tributaries of Elkhorn Slough, all of which are outside of the action area. USFWS designated revised critical habitat for the species in 2013 (78 FR 8745). In total, 65 critical habitat units are designated for the tidewater goby throughout its range. Twenty of these units are adjacent to MBNMS from Rodeo Lagoon in the north to San Simeon Creek in southern MBNMS. These units are essential for the recovery of the tidewater goby as described in the 2005 Recovery Plan for the tidewater goby (USFWS 2005).

Green Sturgeon (*Acipenser medirostris*) The likelihood of occurrence of the Southern DPS of green sturgeon in the action area is moderate and seasonal. Within the marine environment, the Southern DPS occupies coastal bays and estuaries from Monterey Bay, California to Puget Sound in Washington. Individuals occasionally enter coastal estuaries to forage. Subadult and adult green sturgeon may undergo extensive seasonal migrations to reach productive feeding grounds, including Monterey Bay. On

November 9, 2009, NMFS designated final critical habitat for the threatened Southern DPS of green sturgeon. Designated critical habitat areas found in or adjacent to the action area are: coastal U.S. marine waters 60 fathoms depth isobath from Monterey Bay to the U.S.-Canada border, and San Francisco Bay Estuary (74 FR 52299).

4.3.1.4.2 Marine Mammals

The sanctuary has one of the most diverse and abundant assemblages of marine mammals in the world, including six species of pinnipeds (seals and sea lions), 32 species of cetaceans (whales, dolphins, and porpoises), and one species of fissiped (sea otter). Pinnipeds spend a large amount of time in offshore waters, or on offshore islands, but some rookeries or haul-out areas occur in nearshore habitats. California sea lions are the most common pinnipeds in the sanctuary, and their numbers continue to increase. Probably the fastest growing population of marine mammals in the sanctuary is the northern elephant seal, with haul-out sites at Año Nuevo, Point Piedras Blancas, and isolated Big Sur beaches. The most dramatic increase in their population has occurred at beaches near Point Piedras Blancas, from 400 adults in 1991 to more than 20,000 in 2015, according to observations from the U.S. Geological Survey. Año Nuevo Island serves as a breeding ground for northern elephant seal (*Mirounga angustirostris*), Pacific harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), and Steller sea lion (*Eumetopias jubatus*).

Numerous species of large whales occur occasionally in MBNMS, several of which are listed under the ESA, including humpback whales (*Megaptera novaeangeliae*), fin whales (*Balaenoptera physalus*), blue whales (*Balaenoptera musculus*), and, very rarely, North Pacific right whale (*Eubalaena japonica*). Gray whales (*Eschrichtius robustus*), delisted under ESA in 1994, are known migrants through MBNMS and pass through on both their southward and northward migratory routes. In addition, minke whales (*Balaenoptera acutorostrata*) and several toothed whale species, such as killer whales and beaked whales (family Ziphiidae), occur in MBNMS. Sperm whales (*Physeter macrocephalus*) can occur in waters of the continental slope and in the vicinity of seamounts in MBNMS where subsurface topography is steep.

Below are brief descriptions of the protected species most likely to occur within the action area which are indicated in **Appendix D** as having a high potential to occur in the action area or with critical habitat that intersects with the action area.

California Sea Lion (*Zalophus californianus*) The likelihood of occurrence of MMPA-protected California sea lions in the action area is high and seasonal. The species is the most abundant pinniped in MBNMS and uses the coastal waters of Monterey Bay for foraging with haul-out sites near Fisherman's Wharf and multiple other sites up and down the coast of MBNMS.

Harbor Seal (*Phoca vitulina richardii*) The likelihood of occurrence of MMPA-protected harbor seals in the action area is high and year-round. Harbor seals are year-round residents along the MBNMS coastline, occurring mostly close to shore. They use the offshore waters of Monterey Bay for foraging and beaches for resting. Harbor seals also occur on offshore rocks and on sand and mudflats in estuaries and bays.

Risso's Dolphin (*Grampus griseus*) The likelihood of occurrence of MMPA-protected Risso's dolphins in the action area is high and year-round. They are generally found in waters greater than 1,000m in depth and seaward of the continental shelf and slopes. However, they have been sighted associated with squid congregations in the nearshore environment of Monterey Peninsula.

Common Dolphin - Long-Beaked (*Delphinus capensis*) The likelihood of occurrence of MMPA-protected common long-beaked dolphins in the action area is high and year-round. The common dolphin is the most abundant cetacean found in the coastal waters of California, and the abundance within MBNMS has increased in recent years.

Humpback Whale (*Megaptera novaeangliae*) The likelihood of occurrence of ESA endangered humpback whales in the action area is high and seasonal. The humpback whale ESA listing final rule (81 FR 62259, September 8, 2016) established 14 DPS with different listing statuses. The California/Oregon/Washington humpback whale stock that occurs in MBNMS primarily includes whales from the endangered Central American DPS and the threatened Mexico DPS, plus a small number from the non-listed Hawai'i DPS. The central California population of humpback whales migrates from their winter calving and mating areas off Mexico to their summer and fall feeding areas off coastal California. Humpback whales generally occur in Monterey Bay from late April to early December. Proposed critical habitat for the Central American and Mexico DPSs of humpback whales include the waters of MBNMS (84 FR 54354). NMFS lists the biggest threats to these DPSs as entanglement in fishing gear, ship strikes, and environmental pollutants.

Steller Sea Lion (*Eumetopias jubatus*) The likelihood of occurrence of Steller sea lion in the action area is low and seasonal, however, designated critical habitat for the species is found in the action area. A small population breeds on Año Nuevo Island and occasionally individuals use MBNMS waters in fall and winter for foraging. Steller sea lions were first listed under the ESA in 1990. In 1997 NMFS recognized two populations, classifying the eastern population as threatened and the western population as endangered. The eastern population has since recovered and is no longer listed.

Southern Sea Otter (Enhydra lutris nereis) The likelihood of occurrence of ESA southern sea otter in the action area is high and year-round. The threatened southern sea otter is a top carnivore in its coastal range and a keystone species of the nearshore coastal zone. The southern sea otter is commonly found in the nearshore waters and kelp forests of Monterey Bay, along the Big Sur coastline and in Elkhorn Slough, all of which are within the action area. Recent counts of the southern sea otter have made population trends difficult to interpret. A census was conducted from late April to mid-May 2018 along the mainland coast of central California and in April 2018 at San Nicolas Island in southern California. The three-year average of combined counts from the mainland range and San Nicolas Island was 3,128 individuals, a decrease of 58 sea otters from the previous year. The five-year average trend in abundance, including both the mainland range and San Nicolas Island populations, remains positive at 1.3% increase per year. Continuing lack of growth in the range peripheries likely explains the cessation of range expansion (Hatfield et al., 2018, <https://pubs.usgs.gov/ds/1097/ds1097.pdf>). **Figure 8** below shows local trends in abundance of sea otters along the mainland coast of central California using a five-year exponential rate of change based on the census results.

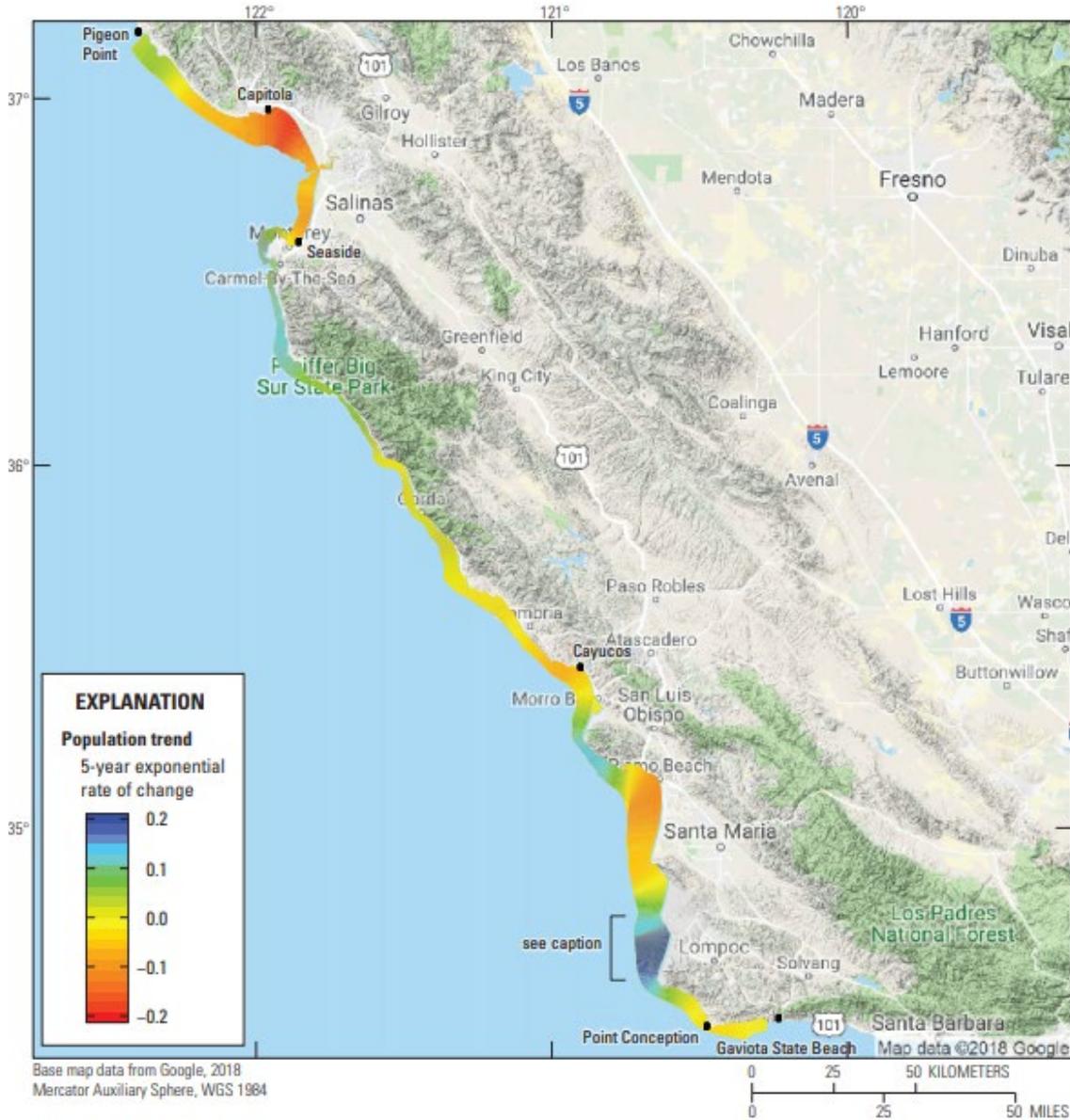


Figure 8. Abundance of sea otters along the mainland coast of central California using a five-year exponential rate of change. For more details see Hatfield et al., 2018.

4.3.1.4.3 Marine Invertebrates

Black Abalone (*Haliotis cracherodii*) The likelihood of occurrence of endangered black abalone in the action area is moderate and year-round. Coastal and offshore island intertidal areas provide habitat for black abalone on exposed rocky shores where bedrock provides deep, protective crevices for shelter. In MBNMS, black abalone could be present on hard substrate in nearshore, intertidal areas. In 2011, NMFS designated approximately 140 square miles of rocky intertidal and subtidal habitat as critical habitat

for black abalone along five segments of the California coast (76 FR 66805). Año Nuevo Island and most of the MBNMS rocky shoreline is included in these areas, from the mean higher high water line to a depth of -6 meters (relative to the mean lower low water line), as well as the coastal marine waters encompassed by these areas.

4.3.1.4.4 Amphibians and Reptiles

Leatherback Sea Turtle (Dermochelys coriacea) The likelihood of occurrence of endangered leatherback sea turtle in the action area is low and seasonal, however, designated critical habitat for the species is found in the action area. The leatherback sea turtle is occasionally seen in MBNMS between July and October, when the surface water temperature warms to 15-16°C and large jellyfish, the primary prey of the turtles, are seasonally abundant offshore. In 2012, NMFS revised the designated critical habitat for the species to include additional areas within the Pacific Ocean (77 FR 4169). This designation includes approximately 16,910 square miles along the California coast from Point Arena to Point Arguello east of the 3,000-meter depth contour.

California Red-Legged Frog (Rana draytonii) The likelihood of occurrence of the threatened California red-legged frog in the action area is low and seasonal. The California red-legged frog is the largest native frog in the western United States. It has been extirpated from 70% of its former range and now is found primarily in coastal drainages of central California, from Marin County, California south to northern Baja California, Mexico. The breeding season runs from November to April and mating depends on seasonal climatic patterns but commonly occurs in February or March. Adults are predominantly nocturnal but juveniles can be active during the day. California red-legged frogs may temporarily disappear from an area during periods of extended drought. In 2010, USFWS revised the designated critical habitat for the species (75 FR 12815). The California red-legged frog uses a variety of habitats. It requires a breeding pond, slow-flowing streams or deep pools which hold water long enough for the tadpoles to undergo metamorphosis. MBNMS conducts an annual water sampling event in the spring at rivers in the action area that occasionally overlap with designated critical habitat for the California red-legged frog. Primary constituent elements for the California red-legged frog identified by USFWS are aquatic breeding habitat, aquatic non-breeding habitat, upland habitat, and dispersal habitat.

4.3.1.4.5 Birds

There are several species of protected bird species that occasionally use MBNMS, including the endangered California condor, California least tern, and short-tailed albatross. In addition, designated critical habitat for the threatened marbled murrelet and western snowy plover overlaps with the action area.

Marbled Murrelet (*Brachyramphus marmoratus*) The likelihood of occurrence of the threatened marbled murrelet in the action area is low and seasonal. The marbled murrelet, a small diving seabird of the family Alcidae, can be found in small flocks, predominantly north of Monterey Bay. They are more frequently sighted in MBNMS in the summer months although can occur year-round. USFWS listed the Washington/Oregon/California population of the murrelet as threatened on October 1, 1992 (57 FR 45328). In 2016, USFWS determined that the critical habitat for the marbled murrelet (*Brachyramphus marmoratus*), as designated in 1996 and revised in 2011, meets the statutory definition of critical habitat under the ESA (50 CFR Part 17, Vol. 81, No. 150). The current designation includes approximately 3,698,100 acres of critical habitat in the states of Washington, Oregon, and California. Throughout the forested portion of the species' range, the marbled murrelet typically nests in forested areas containing characteristics of unfragmented older coniferous forest types with nest platforms. For nesting habitat to be accessible to the marbled murrelet, it must occur close enough to the marine environment for marbled murrelets to fly back and forth. The farthest inland distance for a site with nesting behavior detections in California is 24 miles. Marbled murrelet reproductive success is strongly correlated with the abundance of mid-trophic level prey as it dives underwater to search for fish and invertebrates. Effects on the marine environment that impact the availability of that prey can occur through overfishing or oceanographic variation from weather or climate events.

Western Snowy Plover (*Charadrius nivosus nivosus*) The likelihood of occurrence of the threatened western snowy plover in the action area is common and year-round. On June 19, 2012, USFWS revised the designated critical habitat for the threatened western snowy plover (77 FR 36728). In total, the boundaries of the critical habitat designation encompass approximately 24,527 acres of coastline in Washington, Oregon, and California. This includes approximately 16,337 acres in 47 units within California, some of which overlap with the action area. Western snowy plover nest in the action area from March to September. Their habitat includes barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, river bars, and along alkaline or saline lakes, reservoirs, and ponds. Western snowy plovers make nests in a natural or scraped depression on dry ground.

4.3.2 Essential Fish Habitat

EFH is defined under the Magnuson Stevens Fishery Conservation and Management Act (MSA) as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.” EFH is described in fishery management plans developed by the Regional Fishery Management Councils, which on the west coast is the Pacific Fishery Management Council (PFMC). The MSA requires fishery management councils to minimize impacts on EFH from fishing activity and that they and federal agencies consult with NMFS about activities that may harm EFH. Habitat Areas of Particular

Concern (HAPCs) are a subset of EFH designated to focus management and restoration efforts for habitats particularly susceptible to human-induced degradation, especially those that are ecologically important or located in an environmentally stressed area.

In 2006, through amendment 19 to the Pacific Coast Groundfish Fishery Management Plan, NMFS described EFH for groundfish off the west coast as waters and substrate in depths less than or equal to 3,500 meters to mean higher high water level. This groundfish EFH completely overlaps with the area of MBNMS. As a precautionary measure to mitigate the adverse effects of fishing on EFH, NMFS implemented the bottom trawl footprint closure west coast wide between 1,280 meters (700 fathoms) and 3,500 (1,094 fathoms), which is the outer extent of the groundfish EFH. The 700 fathom isobath is an approximation of the historic extent of bottom trawling in U.S. west coast waters. Deeper portions of MBNMS overlap with the bottom trawl footprint closure. In addition, to minimize impacts from fishing activity on ecologically important habitats of groundfish EFH, NMFS implemented coastwide 51 EFH Conservation Areas, which are areas closed to bottom trawl gear or all bottom contact gear (trawl and other bottom tending gear). Four of these EFH Conservation Areas prohibit bottom trawl gear (other than demersal seine) and cover large expanses of MBNMS. The EFH Conservation Areas in MBNMS are: Half Moon Bay, Monterey Bay/Canyon, Point Sur Deep, and Big Sur Coast/Port San Luis.

A different type of EFH Conservation Area overlaps with the Davidson Seamount Management Zone. This EFH Conservation Area prohibits bottom contact gear or any other gear that is deployed deeper than 914 meters (500 fathoms) to conserve the rich community of fragile deep sea corals and sponges on the seamount. NMFS identified HAPC types for groundfish as: estuaries, canopy kelp, seagrass, rocky reefs, and “areas of interest” (a variety of submarine features, such as banks, seamounts, and canyons). A number of these HAPC types occur in MBNMS.

In 2012, PFMC and NMFS initiated a five-year review of groundfish EFH. As part of that process, MBNMS submitted a collaborative proposal among Monterey Bay trawl fisherman, environmental groups, scientists, and others to the PFMC to modify groundfish EFH. The MBNMS collaborative approach used local stakeholder input combined with newly-collected benthic habitat and fisheries data, since amendment 19, with local fisherman knowledge, to develop a collaborative proposal for modifying boundaries of EFH Conservation Areas. The proposal uniquely considered new protections for groundfish EFH coupled with opportunities for fisherman to access valuable fishing grounds, by proposing to open portions of existing EFH Conservation Areas. The MBNMS proposal served as a model for the Coastwide Collaborative, which incorporated all the MBNMS-proposed modifications to groundfish EFH Conservation Areas into their proposal.

On November 19, 2019, NMFS issued a final rule establishing new and revised areas closed to bottom trawling to conserve and protect Pacific Coast groundfish EFH and reopened areas that were closed to bottom trawling to rebuild previously-overfished groundfish stocks (84 FR 63966). The provisions of the final rule for amendment 28 of the groundfish Fishery Management Plan went into effect on January 1, 2020 and include a number of changes in EFH management measures for MBNMS. NMFS slightly modified the boundary line that approximates the 700 fathom isobaths of the bottom trawl footprint closure in Monterey Bay, resulting in relatively small reopenings and closures that affect less than 20 square miles. Portions of three EFH Conservation Areas designated in 2006 were reopened to trawl fishing: Monterey Bay/Canyon, Point Sur Deep, and Big Sur Coast/Port San Luis. The boundaries for the Half Moon Bay and Davidson Seamount EFH Conservation Areas remained the same. NMFS also designated seven new EFH Conservation Areas that prohibit bottom trawl fishing: Pescadero Reef, Ascension Canyonhead, South of Davenport, West of Sobranes Point, La Cruz Canyon, and West of Piedras Blancas State Marine Conservation Area.

4.4 Human and Socioeconomic Setting

The California coastline adjacent to MBNMS has a rich history supporting diverse commercial, recreational, cultural, research, and education activities. This section describes the character of the sanctuary and adjacent areas, including human uses of the sanctuary, and the local economy, population, employment, and housing. For the purposes of this analysis, the discussion of the affected environment is focused on those areas immediately adjacent to the sanctuary. Additional discussion focuses on the commercial activity dependent on the sanctuary.

4.4.1 Local and Regional Economies

Five counties border MBNMS: Marin, San Mateo, Santa Cruz, Monterey, and San Luis Obispo. In addition to these five primary counties, there are several secondary counties that are inland. These inland counties do not directly border the sanctuary, but still may incur economic benefit or costs as a result of changes to resources used, extracted, or enjoyed from the sanctuary. These secondary counties are determined by looking at commuter flows in and out of the primary counties. For MBNMS, the secondary counties include: San Francisco, Alameda, Contra Costa, Santa Clara, and Solano. Each of these counties is diverse in population and economic base.

The northern region of MBNMS borders Marin County and the San Francisco Peninsula, and north of the San Mateo County line, day-to-day operations of the sanctuary are managed by the staff of Greater Farallones National Marine Sanctuary. In the southern region of MBNMS, Monterey County faces significant growth challenges. Agriculture is the leading industry, followed by tourism. San Luis Obispo County's economy focuses on agriculture, tourism, and education. These counties face significant economic and developmental challenges in addressing population growth. Limited infrastructure to

accommodate the coastal population growth, a lack of labor supply for growing companies, a growing gap between the wealthy and other residents, and environmental pressures comprise the main constraints to urban expansion in this region.

Travel and tourism are one of the most significant industries in this region, with a total travel-spending revenue in 2017 of \$10.3 billion for the five counties adjacent to MBNMS. San Mateo leads in total spending at \$3.9 billion, followed by Monterey at \$2.8 billion and San Luis Obispo at \$1.7 billion (Dean Runyan Associates Inc., 2018). Agriculture is also an important industry in the MBNMS region and the area is a national leader in the production of artichokes, strawberries, and salad greens. In 2016, it was valued at \$6 billion for the five counties adjacent to MBNMS (CDFA, 2018). Monterey County, valued at \$4.25 billion, is by far the most significant producer in the region and ranks fourth highest statewide (Monterey County Agricultural Commissioner's Office, 2017). Other MBNMS-related industries include research, aquaculture, kelp harvesting, and commercial shipping (including cruise ships). The adjacent San Francisco Harbor is the largest harbor on the U.S. Pacific Coast with millions of tons of cargo passing under the Golden Gate Bridge annually. The main consumptive activities in sanctuary waters are commercial and recreational fishing, shipping, shellfish collecting, and kelp harvesting.

Land use immediately adjacent to the sanctuary is a diverse combination of open space (including national, state, and local parklands), commercial uses (including agriculture, aquaculture, ocean related businesses, hotels, and restaurants), and single-family and multi-family residential. Land use is urbanized in these coastal areas in the cities of Pacifica, Half Moon Bay, Santa Cruz, the Monterey Peninsula, and Cambria. In these cities, development is denser than the rest of the coastal areas.

There are electricity generating power plants at Moss Landing and Morro Bay and sewage treatment facilities in coastal areas in San Mateo, Santa Cruz, Monterey, and San Luis Obispo counties. Due to threats to the Carmel River and limited water supply in the coastal counties, new water supply projects are being implemented, and desalination projects are being assessed for environmental impacts. There are also limited industrial uses in the project area associated with commercial and recreational fishing harbors at Half Moon Bay, Santa Cruz, Moss Landing, and Monterey harbors. Three of the harbors have ocean dredge disposal sites, as described in **Section 4.1.2.3**. In addition, every county adjacent to MBNMS contains coastal developments or beaches that serve as water-oriented recreational uses and much of the coastal area is set aside for open space (see **Section 4.4.4**, Public Access, Recreation, and Tourism).

4.4.2 Marine Transportation

Marine transportation is essential to California's economy. California seaports are a major economic force and are critically important elements to the growth of California

and the nation's economy. Seaports depend on the goods movement chain to efficiently distribute freight around the globe and across the nation. California has 11 public ports, which include three "megaports" (Los Angeles, Long Beach, and Oakland); eight smaller niche ports (Hueneme, Humboldt Bay, Redwood City, Richmond, West Sacramento, San Diego, San Francisco, and Stockton); and one private port (Benicia). The ports of Oakland, Stockton, and West Sacramento are developing a new barge shipping service funded through a federal Transportation Investment Generating Economy Recovery (TIGER) grant.

The ports of Los Angeles and Long Beach comprise the largest port complex in the United States and are key players in global enterprise. Together, they handle a fourth of all container cargo traffic in the United States. The Port of Oakland, the fourth largest port in the nation, handles trade from the Pacific Rim countries, delivering 99% of the ocean containers passing through Northern California to the rest of the nation (California Department of Transportation, 2019).

Several thousand large commercial vessels (e.g., container vessels, tankers, dry bulk vessels, car carriers, and cruise ships) pass through MBNMS each year en route to California ports. Vessels larger than 300 gross tons typically transit through the sanctuary within one of four recommended tracks established by the International Maritime Organization (IMO) in 2000. The tracks (shown in **Figure 9**) were created specifically to keep routine shipping traffic far enough from MBNMS shorelines to allow for effective emergency response were a ship to become disabled or involved in a marine casualty and/or spill incident. The tracks lie parallel to the coastline between 15 and 35 miles offshore. The two tracks farthest offshore are reserved for vessels carrying hazardous cargo in bulk. Many tankers typically operate at least 57 miles offshore (outside MBNMS boundaries), while others use the IMO recommended tracks within the sanctuary.

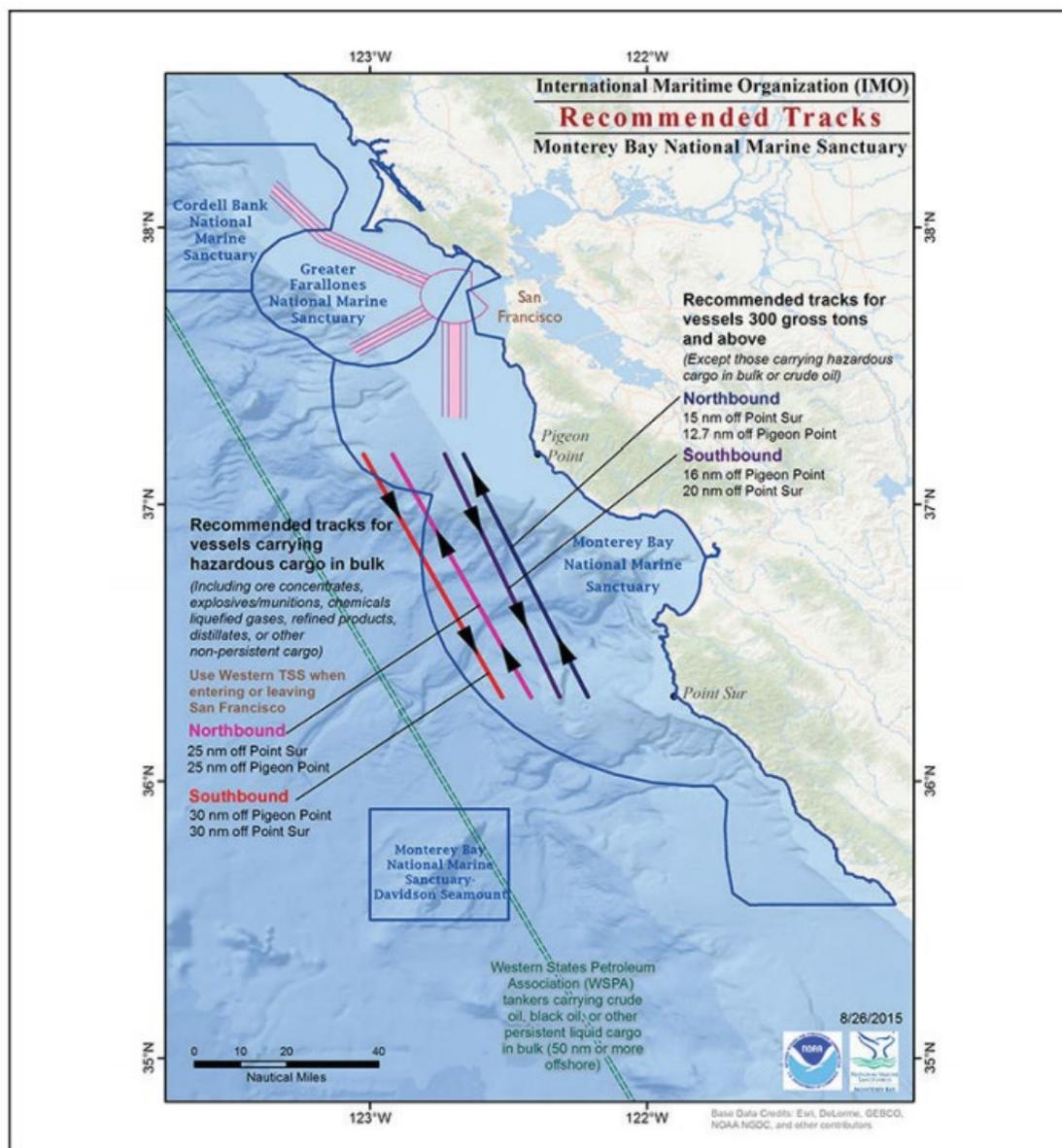


Figure 9. International Maritime Organization (IMO) recommended tracks for large shipping vessels (greater than 300 gross tons), including container ships, bulk freighters, hazardous materials carriers, and tankers. Western States Petroleum Association recommends tankers carrying crude oil, black oil, or other persistent liquid cargo in bulk to transit 50 nautical miles or more offshore. This graphic is from the 2015 MBNMS Condition Report Update.

The Port of San Francisco reported 85 scheduled cruise ship port calls for 2019 (Port of San Francisco, 2019). San Francisco serves as both a cruise ship port-of-call (visitation port) and an embarkation port (home port) for cruise ships. The city of Monterey reported 20 cruise ship port calls scheduled for Monterey Harbor in 2020 (Monterey Harbor, 2019). Most of the visiting ships anchor off Monterey Harbor for one day en

route to San Francisco, Los Angeles/Long Beach, or San Diego. Cruise ships have visited Monterey each year since 2002, and the number of annual port calls has varied from 3-20 ships.

4.4.3 Commercial Fishing and Aquaculture

4.4.3.1 Commercial Fishing

The contribution of harvest revenue from commercial fishing to California's economy is relatively small, given that California's economy totals \$2.7 trillion per year. Commercial fishing harvest revenue for the period 2012 to 2017 was \$1.3 billion with an average of \$264 million per year, which equates to less than one tenth of a percent of the California's economy (NOAA NMFS, 2019a). The fishing industry in the area of MBNMS mirrors the statewide economic contribution regionally. However, commercial fishing is an important component of the historical, economic, and cultural fabric of the Monterey Bay region and the sanctuary. Most fish caught within MBNMS are landed at one of five main ports: Princeton /Half Moon Bay, Santa Cruz, Moss Landing, Monterey, or Morro Bay/Avila/Port San Luis.

An economic analysis of commercial fishing within MBNMS in 2010 to 2012 (Leeworthy et al., 2014) shows more than 600 commercial vessels fished within MBNMS in 2012, which was an increase from 374 vessels in 2010. More than 90% of the landings by weight were comprised of market squid (37%), Dungeness crab (32%), salmon (14%), coastal pelagics (sardine and northern anchovy; 5%), and spot prawn (5%). The gear used to target these species groups are purse seine (market squid and coastal pelagic), pots and traps (Dungeness crab and spot prawns), and troll gear (salmon). Trawling, typically for groundfish, accounted for between 2.4% to 4.3% of the value of catch from MBNMS. The groundfish complex comprises 92 species of fishes, predominantly from the rockfish family (64 species), flatfishes (12 species), and sharks and skates (six species). In the period from 2010 to 2012, the harvest value for all fisheries combined within MBNMS was between \$24 million and \$30 million annually. Beyond harvest revenue, additional revenue is generated from the businesses associated with commercial fishing operations, including marinas, harbors, maintenance, and fish processing and distribution.

According to California Sea Grant, commercial fishing in California over the past four decades has declined tremendously due to a combination of environmental, economic, and social factors that are constantly in flux (California Sea Grant, 2019). Increased regulations to conserve fishery resources and improve ecosystem health have contributed to the general decline in commercial fishing effort. In the past decade alone, state and federal fishery managers imposed emergency closures from 2008 to 2010 on salmon fishing in zones of California and Oregon marine waters. These emergency closures aimed to protect Sacramento River Chinook salmon, then in a state of collapse.

The salmon populations were at historically low levels due to natural ocean variations and a host of threats in the Sacramento River Basin, such as dams, loss of suitable habitat, and lack of functional water flow. Many vessels departed the fishery during the salmon closure, but eventually returned when the salmon season reopened in 2011 and 2012. In 2019, the Dungeness crab fishery ended their season three months early on California's Central Coast (including the sanctuary) to avoid entanglement of endangered whale species in crab pot gear. The fleet was already recovering from losses suffered from the domoic acid outbreak in 2015, which delayed the season opening. Warming ocean conditions contributed to the algal blooms producing the domoic acid and likely also caused whales to venture closer to shore in search of food, where they interact more frequently with crab gear. These examples from two influential fisheries within the sanctuary highlight the variability in fishing effort caused by changing ocean and river conditions and the regulatory environment.

NMFS, with advice from the PFMC, manages federal fisheries along the Pacific Coast. The California Department of Fish and Wildlife and California Fish and Game Commission manage state fisheries. MBNMS does not manage commercial or recreational fisheries; however, it does play a role in protecting fishery habitat and conducting research on fish and fish populations. MBNMS staff also provide advice and recommendations to federal and state fishery managers. A noteworthy example of the role MBNMS staff plays with fishery management is the collaborative proposal MBNMS submitted to PFMC in 2013 as part of the five-year review of groundfish EFH. MBNMS staff led a collaborative effort of local trawl fishermen, environmental groups, and scientists in developing a proposal that modified EFH Conservation Areas within the sanctuary by adding protections to fragile deep sea coral and sponge communities, while also re-opening trawl effort to historically productive fishing grounds. The collaborative effort of MBNMS was hailed as a success by fishermen and fishery managers and duplicated off Oregon and other regions of California by a coastwide "Collaborative" led by fishermen and environmental groups. On November 19, 2019, NMFS issued a final rule establishing new and revised areas closed to bottom trawling to conserve and protect Pacific Coast groundfish EFH, and re-opening areas that were closed to bottom trawling to rebuild previously-overfished groundfish stocks (84 FR 63966). The provisions of the final rule went into effect on January 1, 2020.

4.4.3.2 Aquaculture

The U.S. Department of Agriculture's most recent Census of Aquaculture reports \$84 million in sales generated in California in 2013 from aquaculture (USDA, 2014). Aquaculture in California occurs in some coastal waters and in ponds and tanks inland. However, none of these operations currently occur within the boundaries of MBNMS. Current coastal aquaculture operations in the region include oysters grown in the bays and lagoons of Humboldt, Tomales, Morro Bay, Agua Hedionda, and San Diego. Mussel farms exist in the Santa Barbara Channel and off of Long Beach. Abalone are raised on

land close to the coast in Santa Barbara, Cayucos, and Davenport, and in the ocean under a wharf in the Monterey Harbor (California Sea Grant, 2019).

The California Department of Fish and Wildlife is the lead agency for leasing and permitting marine aquaculture on state and private water bottoms in bays and estuaries. Marine aquaculture in California is currently limited to oysters, abalone, clams, and mussels. Several other state agencies have regulatory authority over different aspects of aquaculture, such as:

- California Department of Public Health for disease and health,
- California State Lands Commission for leased lands,
- California Coastal Commission for coastal uses and public recreation and access,
- California State Water Resources Control Board for water quality, and
- local jurisdictions (counties, harbors, and special districts).

In federal waters many federal agencies have jurisdictional oversight over aquaculture facilities and operations. These agencies include: NOAA, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, USFWS, U.S. Department of Agriculture, and Department of Health and Human Services. In 2015, NOAA issued a final rule to revise the prohibition on the introduction of introduced species in state waters for MBNMS and Greater Farallones National Marine Sanctuary (80 FR 8778). The regulations allow for MBNMS specifically to authorize the state of California permits or leases for commercial aquaculture projects in state waters involving introduced species of shellfish. An authorization could be issued if the state management agencies and NOAA determined: (1) that the shellfish species is non-invasive, and (2) that the activity would not have significant adverse impacts to sanctuary resources or qualities. NOAA also entered into a memorandum of agreement with the state of California to describe how NOAA (i.e., MBNMS) will coordinate with the California Department of Fish and Wildlife, Fish and Game Commission, and Coastal Commission on any future proposals to develop commercial shellfish aquaculture projects involving a non-invasive introduced species.

4.4.4 Public Access, Recreation, and Tourism

Two of the main reasons given for travel to the central California coastal region include natural and scenic beauty and recreational opportunities. Popular recreational activities in the MBNMS area include pleasure boating, whale watching, kayaking, surfing, tidepooling, wildlife viewing, hiking, swimming, scuba diving (both consumptive and non-consumptive), personal watercraft use, horseback riding, dog walking, and beachcombing. The major marine recreational access areas within or adjacent to the sanctuary are the harbors at Monterey, Moss Landing, Santa Cruz, and Pillar Point. Sailing and powerboat clubs in 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, 1984).

Onshore recreational uses of MBNMS predominantly occur in very shallow nearshore areas or along the shorelines adjacent to the sanctuary. These beach-related activities include: coastal hiking, nature observation, tidepooling, surfing, windsurfing, surf fishing, swimming, and duck hunting (in Elkhorn Slough only) (CDFG, 1979; NOAA, 1984). Several onshore locations adjacent to the sanctuary have become popular in recent years for wildlife watching. Large numbers of marine mammal enthusiasts and bird-watchers spend time along the sanctuary's coastal estuaries and shorelines observing marine mammals, seabirds, shorebirds, waders, and waterfowl. Some of the most popular places to view sea lions, harbor seals, and elephant seals include: Año Nuevo State Park, Cannery Row in Monterey, Pebble Beach, and San Simeon. Visitation to the Elkhorn Slough National Estuarine Research Reserve, a popular bird watching and recreational kayaking area in the sanctuary, 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).

4.4.4.1 Motorized Personal Watercraft

Motorized personal watercraft, also known by the brand names of the 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 can 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.

The two primary uses for motorized personal watercraft in MBNMS are public safety and recreation. The main public safety use is for search and rescue and occasional patrol work. Additionally, public safety organizations conduct motorized personal watercraft training sessions in the sanctuary (under an MBNMS-issued permit) in order to prepare for search and rescue work. Recreational use of motorized personal watercraft in MBNMS includes two categories: (1) general recreational riding and (2) tow-in surfing. Because the waters of MBNMS are generally cold and rough, few motorized personal watercraft owners choose to ride in the sanctuary, and as a result there is little of this type of recreational activity. Use for tow-in surfing or safety assist is the most common private use of motorized personal watercraft within the sanctuary.

Formal statistics documenting use of motorized personal watercraft within the sanctuary boundary 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. The harbors at Monterey, Moss Landing, Santa Cruz, and Pillar Point are the primary locations for launching motorized personal watercraft

within MBNMS. Morro Bay Harbor is also a launch site, but it is 15 miles beyond the southern boundary of MBNMS and sees very little launch activity related to the sanctuary. Based upon sanctuary staff observations and reports from harbormasters, motorized personal watercraft operation within three of the four zones in the sanctuary is infrequent and of low volume (on average, less than 10 trips per-year, per-zone).

The majority of recreational use occurs in the seasonal-conditional access zone at the Mavericks surf break off Pillar Point. Mavericks is a world-renowned big-wave surfing location one-quarter mile off the coast of Half Moon Bay within MBNMS. Motorized personal watercraft are typically used at this site for access, safety assists, and photography. The seasonal-conditional riding zone is only open when a High Surf Warning is in effect for San Mateo County during the months of December through February. Motorized personal watercraft operators can also access the zone at other times of the year by sanctuary permit. Activity at Mavericks easily exceeds 200 motorized personal watercraft trips per year, many of which are non-compliant with the regulatory seasonal and conditional terms for accessing the zone. Operators pass briefly through the year-round Half Moon Bay zone en route to Mavericks, but very few operate in the Half Moon Bay zone.

4.4.5 Research and Monitoring

Rich marine biodiversity and close proximity to the deep sea provide unparalleled research opportunities for approximately 25 marine science facilities operating in the vicinity of MBNMS. In 2017, these facilities employed almost 2,500 staff and researchers with a combined budget of over \$350,000,000. This includes government agencies, public and private university research institutions, and private facilities such as the Monterey Bay Aquarium and the Monterey Bay Aquarium Research Institute.

MBNMS's research program focuses on science to inform resource management, including determining information gaps, developing collaborative studies to improve understanding of issues, and interpreting research for decision makers. MBNMS has conducted several large-scale programs to map habitats, assess biodiversity, and model ocean circulation. Research activities cover a broad spectrum, 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, fishery impacts from trawling and gill net by-catch, coastal erosion, ship groundings and oil spills, restoring fragile and endangered species, and human use effects in kelp forest ecosystems.

NOAA developed the Sanctuary Integrated Monitoring Network (SIMoN) as a key regional source of scientific information. SIMoN is a long-term program that takes an ecosystem approach to identify and understand changes in the sanctuary. The program

enables researchers (more than 200 of them) 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 observing and characterizing habitats, assessing the impact of natural processes or human activities on specific resources, and long-term monitoring. Further details about characterization, research, and monitoring projects in MBNMS can be found on the SIMoN website: <https://sanctuarysimon.org/>

4.4.6 Education and Outreach

Sanctuary education and outreach efforts focus on 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.

Outreach activities and programs in MBNMS include public events, interpretive signs and displays at parks and beaches, volunteer trainings, water quality/urban runoff information, shipboard “teacher-at-sea” opportunities, intertidal monitoring programs for students, an annual Coastal Discovery Fair, and Get Into Your Sanctuary Day. In addition, NOAA manages two visitor centers – the Sanctuary Exploration Center in Santa Cruz and the Coastal Discovery Center in San Simeon – which provide a variety of interpretive displays and educational activities. Programs range from K-12 school field trips, teacher workshops, family learning programs, public lecture series, and volunteer docent training. For more information see:

<https://montereybay.noaa.gov/educate/welcome.html>

4.4.7 Visual Resources

Visual resources in MBNMS include ocean vistas, offshore islands, coastal landforms (e.g., rocky bluffs), coastal waves, and marine flora and fauna. One of the main reasons given for travel to this coastal region is its natural and scenic beauty. 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. With nearly 300 miles of shoreline, there are many viewing opportunities of the sanctuary and the scenic coastline. 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 and provides hikers with opportunities to view flora and fauna and scenic vistas.

The following human activities are also visible in MBNMS (U.S. Department of Commerce, 1989; NOAA, 2001a; NOAA, 2001b):

- commercial and recreational fishing,
- commercial shipping,
- training activities by the U.S. Navy and U.S. Coast Guard,
- operations of research vessels and whale watching or oceanic birding boats, and
- recreational activities (e.g., bird watching, coastal hiking, wildlife viewing, tidepooling, surfing, kayaking, canoeing, boardsailing, clamming, abalone diving, surf fishing, and duck hunting).

4.5 Historical and Cultural Setting

The area encompassed by the boundaries of MBNMS is rich in cultural and historical 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, 2003a, 2003b, 2003c). NOAA implements comprehensive management of historical and cultural resources within the sanctuary by regulating activities affecting the qualities, values, or purposes of resources; and facilitating, to the extent compatible with the primary objective of resource protection, all public and private uses of said resources. Under sanctuary regulations, removing or damaging any historical or cultural resource is prohibited within MBNMS. Additionally, the NMSA requires each sanctuary to inventory and document its maritime heritage resources. A number of additional laws and executive orders govern the protection and management of maritime heritage resources in the sanctuary:

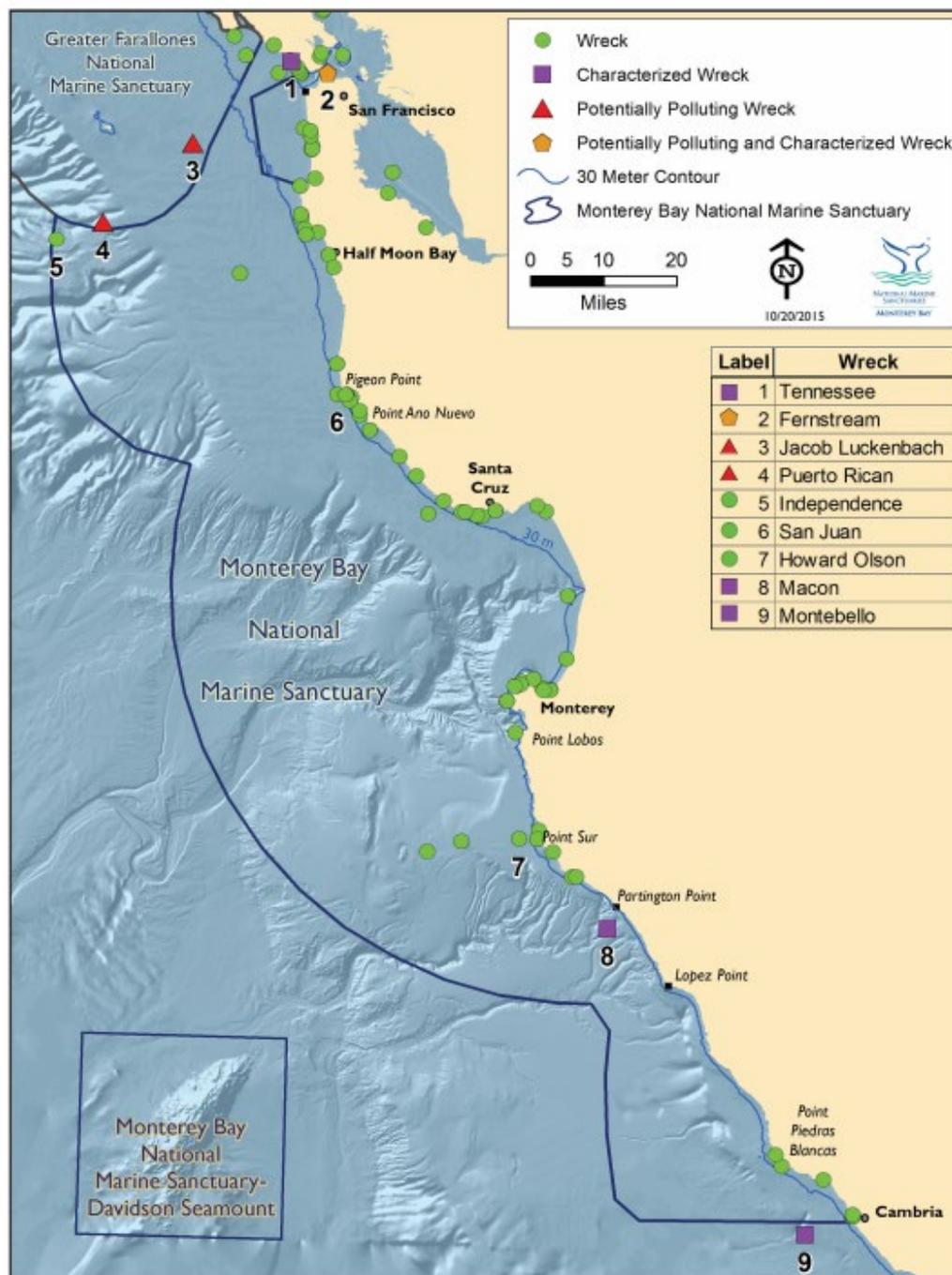
- The Abandoned Shipwreck Act of 1987 charges each state with preservation management for “certain abandoned shipwrecks, which have been deserted and to which the owner has relinquished ownership rights with no retention.”
- The Federal Archaeology Program and Section 110 of the National Historic Preservation Act create preservation mandates for maritime heritage resources for federal agencies. Section 110 of the National Historic Preservation Act states that each federal agency shall establish a preservation program for the protection of historic properties.
- The Antiquities Act of 1906, Archaeological Resources Protection Act of 1979, the Sunken Military Craft Act, and Executive Order 13287 Preserve America, which all aim to improve federal stewardship of historic properties and protect heritage sites from illegal salvage, damage, and looting.

NOAA’s Maritime Heritage Program is specifically designed to address and implement these preservation mandates and to inventory and protect these special resources for the benefit of the public. California state regulations prohibit the unpermitted disturbance of submerged cultural and historical resources. Additionally, ONMS and the California State Lands Commission have an archaeological resource recovery permit system in place.

Given the existence of historically important shipwrecks in MBNMS, the likelihood of finding more shipwrecks, and the keen public interest in these resources, NOAA identified the following priorities:

- (1) to continue efforts to inventory and document archaeological resources, and
- (2) to develop a maritime cultural landscape-focused education and outreach program in the MBNMS region to educate and inform staff and the public along the California coast and throughout the country about the relationship between humans and the ocean.

A brief summary of the known historical and cultural resources located in MBNMS is provided in the following subsections: Native American Cultural Resources and Maritime Heritage Resources.



Data Source: MBNMS Inventory of known vessel losses; Map: S. De Beukelaar, NOAA/MBNMS

Figure 10. Approximate locations of known vessel losses in and adjacent to Monterey Bay National Marine Sanctuary from the sanctuary’s inventory of submerged cultural resources. Three vessels have been characterized (purple square), two are considered to be “potentially polluting wrecks” (red triangle), and one vessel has been both characterized and determined to be a “potentially polluting wreck” (orange pentagon). For the rest of the vessels in the inventory, there is little to no verified location information (green circles). This graphic is taken from the 2015 MBNMS Condition Report update. Since the time of the creation of this graphic, the wreck of the Independence has been characterized.

4.5.1 Native American Cultural Resources

From the days of the early Ohlone inhabitants, to the exploration and settlement of California to the present, coastal waterways remain a main route of travel, subsistence, and supply. The coastal lands of central California contain numerous archaeological sites, most of which represent Native American cultural resources. There are approximately 718 reported and verified historical sites in the sanctuary and adjacent coastal zone (MMS, 1990). Traditional knowledge and archaeological evidence indicate that the coastal peoples subsisted largely on the products of the marine environment – harvesting salt, kelp, marine mammals, shellfish, and fish. Recent geologic history produced a number of geomorphic changes in the Monterey Bay area as a result of sea level change, tectonics, and changing erosion and sedimentation rates. Thus, there may be many additional undiscovered inundated historical and aboriginal sites within the sanctuary. To date no prehistoric sites underwater have been recorded.

The seafloor at MBNMS preserves remnants of the sites where people lived and of the vessels in which they conducted trade and fought wars. Ships, boats, wharves, lighthouses, lifesaving stations, whaling stations, prehistoric sites, and myriad other heritage treasures lie covered by water, sand, and time. Sanctuary staff has 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.

4.5.2 Maritime Heritage Resources

The history of California's central coast is predominantly a maritime one. In 2001, MBNMS staff commissioned a shipwreck inventory from established shipwreck databases, and a review of primary and secondary source documentation. These studies provide a foundation for an inventory of the historical resources in the sanctuary. The 2001 Maritime Heritage Resources Study includes a database of 445 reported vessel losses that occurred within the jurisdiction, or adjacent to the boundaries, of MBNMS (Smith and Hunter, 2003). Upon wrecking, vessels are known to drift at least 15 miles. Therefore, losses located just to the north of the sanctuary in Marin County and just to the south of the sanctuary in San Luis Obispo County are included. All wrecks on the Pacific side of San Francisco County (10) and those located at in Greater Farallones National Marine Sanctuary (8) are included. These wrecks were a result of the significant maritime exploration and commerce which historically occurred in the region, coupled with a coastline dotted with shallow, rocky headlands, largely exposed to prevailing winds, storms, and fog.

There is one shipwreck located in MBNMS listed on the National Register of Historic Places. It is *Tennessee*, a California Gold Rush side-wheel passenger steamer. *Tennessee* sunk in 1853 in MBNMS just north of the Golden Gate Bridge. In addition, the wreck of the USS *Macon* is listed on the National Register of Historic Places. The USS *Macon*, a

dirigible airship, was lost offshore of Point Sur in 1935, along with four Curtiss Sparrowhawk F9C-2s bi-plane aircraft.

4.6 Resource Areas Not Further Analyzed

Sections 4.1 to 4.5 describe the physical, biological, human/socioeconomic, and historical or cultural resources relevant to the proposed action. As part of this analysis, NOAA determined that several resource areas have no potential to be impacted by the proposed action. As such, the following resource areas are generally not discussed in this EA:

- Coastal and Offshore Energy Development – None of the proposed regulatory changes or management plan activities would affect coastal and offshore energy development at this time
- Hydrology and Flood Plains – None of the proposed regulatory changes or management plan activities would affect hydrology or flood plains within or around the sanctuary
- Public Safety – None of the proposed regulatory changes or management plan activities would cause public safety risks
- Military and Homeland Security Activities – None of the proposed regulatory changes or management plan activities would prohibit current military activities
- Population and Housing – None of the proposed regulatory changes or management plan activities would impact population and housing
- Growth-Inducing Effects – None of the proposed regulatory changes or management plan activities would result in direct or indirect effects that would induce changes in population density or growth rate
- Public Services and Utilities – None of the proposed regulatory changes or management plan activities would affect public services and utilities, including, wastewater treatment facilities and hazardous waste disposal

In Chapter 5, within the discussion of each resource area, the impact analysis addresses only those proposed field activities, management activities, or regulatory changes that have the potential to impact the specific resource. An action is not discussed when there is no potential for a proposed field activity, management action, or regulatory change to affect a particular resource.

CHAPTER 5

ENVIRONMENTAL CONSEQUENCES

This chapter evaluates the environmental consequences of the proposed range of alternatives. NOAA evaluated the environmental consequences of the proposed action within the context of the physical, biological, human and socioeconomic, historical, and cultural settings within the sanctuary, as described in **Chapter 4**. The environmental consequences of the no action alternative (A) and both action alternatives (B and C) are summarized in **Section 5.7**.

5.1 Framework of Impacts Analysis

5.1.1 Summary of Analyzed Actions

Table 5 provides a summary of the proposed management plan activities, field activities, and regulatory changes that would take place under alternatives A, B, and C. These actions are described in detail in **Chapter 3** and their impacts are analyzed further in **Sections 5.2 to 5.6**.

NOAA determined that several proposed management plan activities and regulatory changes would not impact the environment because they are purely administrative in nature, do not require any routine field operations, would occur within existing facilities, or no construction or physical development would occur. These types of activities are not further analyzed in this draft EA. These actions include:

- Office and classroom-based activities (conducting meetings, policy development and planning, risk assessments, education and training programs, preparing research reports, and producing and maintaining online resources and databases);
- Administration of the sanctuary (performing budgeting, staffing, information technology support, and providing support to the MBNMS Advisory Council);
- Permitting administration (processing permit applications and authorizations, monitoring permit compliance, and using the sanctuary's permitting authority to reduce negative impacts from introduced species, marine debris, and wildlife disturbance); and
- Technical correction to the MBNMS regulations to correct a previous error and clarify exempted Department of Defense activities in the Davidson Seamount Management Zone.

Table 5. Summary of Actions Analyzed in Chapter 5

Action	Alternative Component	Alternatives that include this action		
		A	B	C
Operating and maintaining ONMS vessels	Field Operation	✓	✓	✓
SCUBA and snorkel operations	Field Operation	✓	✓	✓
Onshore fieldwork	Field Operation	✓	✓	✓
Operations of non-motorized craft	Field Operation	✓	✓	✓
Deployment of equipment on the seafloor	Field Operation	✓	✓	✓
Deployment of autonomous underwater vehicles, remotely operated vehicles, gliders, and drifters	Field Operation	✓	✓	✓
Aircraft operations	Field Operation	✓	✓	✓
Education and outreach activities at existing facilities, within sanctuary waters or along adjacent shorelines	Management Plan Activity	✓	✓	✓
Coordination and collaboration with local and regional partners and stakeholders on research, resource protection, and other sanctuary management topics	Management Plan Activity	✓	✓	✓
Research, sampling, and monitoring activities within the sanctuary or along adjacent shorelines	Management Plan Activity	✓	✓	✓
Resource protection and stewardship activities within the sanctuary or along adjacent shorelines	Management Plan Activity	✓	✓	✓
Maritime heritage activities to implement MBNMS' maritime heritage program	Management Plan Activity	✓	✓	✓
Beneficial use of dredged material definition (new) and clarification (proposed update)	Regulatory Change			✓
Access to motorized personal watercraft zone at Mavericks surf break (proposed update)	Regulatory Change			✓
Motorized personal watercraft zone boundary changes (proposed update)	Regulatory Change			✓

5.1.2 Approach to Impact Analysis

Analysis of the environmental consequences of alternatives A, B, and C is based on review of existing literature and studies, information provided by experts, and the best professional judgment of NOAA staff. NOAA relied in part on the analysis of impacts of routine field activities at MBNMS described in its Programmatic EA for Field Operations, as well as both the final EIS prepared for the 2008 Joint Management Plan Review, and the 2015 Condition Report. The environmental consequences of the proposed action are considered within the context of the five- to 10-year timeline for implementing the revised sanctuary management plan. Thus, when assessing the effects of an action, the action is presumed to occur for up to 10 years.

NOAA considered the following types of impacts that could result from the proposed action:

- **Direct impact:** A known or potential impact which is caused by the action and occurs at the same time or place (40 CFR § 1508.8(a)).

- **Indirect impact:** A known or potential impact which is caused by the action and is later in time or farther removed in distance, but is still reasonably foreseeable (40 CFR § 1508.8(b)).
- **Cumulative impact:** The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR § 1508.7).

The potential direct and indirect impacts associated with the proposed action and alternatives are described by their significance (negligible, less than significant, significant) and by their quality (beneficial or adverse), as described below. Cumulative impacts from other past, present, and reasonably foreseeable future actions are described in **Section 5.6**.

5.1.2.1 Significance of Potential Impacts

To determine whether an impact is significant, the Council on Environmental Quality (CEQ) regulations (40 CFR § 1508.27) and NOAA guidance (NAO 216-6A) require the consideration of context and intensity of potential impacts.

Context is the setting within which an impact is analyzed, such as the affected region or locality and the affected interests. In this draft EA, NOAA evaluated the direct and indirect impacts within a local context, primarily examining how each alternative would affect the human environment within a specified portion of the sanctuary, and whether those effects would be short-term or long-term. The geographic area of interest for cumulative impacts is a slightly broader regional context in order to consider overlapping and compound effects with other past, present, or reasonably foreseeable future actions.

Level of **intensity** refers to the severity of the impact. The various levels of impact used in this analysis are:

- **Negligible:** Impacts to a resource can barely be detected (whether beneficial or adverse) and are therefore discountable.
- **Less than significant:** Minor impacts that do not rise to the level of significant as defined below.
- **Significant:** Impacts resulting in an alteration in the state of a biological, physical, cultural and historical, or socioeconomic resource. Long-term or permanent impacts or impacts with a high intensity or frequency of alteration to a resource, whether beneficial or adverse, would be considered significant. The significance threshold is evaluated on a case-by-case basis, taking into consideration the context and intensity of each action.

5.1.2.2 Quality of Potential Impacts

Potential impacts are described as either beneficial or adverse as follows:

- **Beneficial impact:** Impacts that promote favorable conditions for the resource.
- **Adverse impact:** Adverse impacts are considered contrary to the goals, objectives, management policies, and practices of NOAA and the public interest or welfare. These impacts are likely to be damaging, harmful, or unfavorable to one or more of the resources.

5.1.3 Structure of the Environmental Consequences Analysis

Sections 5.2 to 5.6 evaluate the impacts of the alternatives on the resource areas described in **Chapter 4**. NOAA evaluated the impacts within the context of each of the following alternative components, as described in **Chapter 3**: field activities, the sanctuary management plan, and sanctuary regulations. In evaluating these impacts, NOAA considered the following questions:

- How do the activities proposed to operate MBNMS affect the resources, natural environment, and human uses in and around the sanctuary?
- How do the activities proposed to manage MBNMS affect the level of protection of the sanctuary's resources and public stewardship of these resources?
- How do the type and amount of regulations to protect sanctuary resources affect the natural environment and human uses in and around the sanctuary?

NOAA evaluated and considered the impacts specific to each alternative, as summarized below.

Impacts from Alternative A (No Action Alternative): **Section 5.2** describes the impacts from the no action alternative (Alternative A) whereby NOAA would continue to operate and manage MBNMS under the current regulations, sanctuary management plan, and routine field activities.

Impacts from Alternative B: **Section 5.3** describes the impacts from Alternative B whereby NOAA would continue to manage MBNMS under the current regulations and field activities, and revise the sanctuary management plan to respond to current threats to sanctuary resources and increase public involvement and outreach.

Impacts from Alternative C: **Section 5.4** describes the impacts from Alternative C whereby NOAA would continue to manage MBNMS by conducting routine field activities, revising and adding new regulations to protect sanctuary resources, and updating the sanctuary management plan to respond to current threats to sanctuary resources and increase public involvement and outreach.

Impacts on Protected Species and Habitats: **Section 5.5** describes the impacts of managing and operating the sanctuary on species and habitats protected under the Endangered Species Act (ESA), and Essential Fish Habitat (EFH) protected under the

Magnuson–Stevens Fishery Conservation and Management Act (MSA). These impacts are common to all alternatives considered.

Cumulative Effects Analysis: **Section 5.6** describes the cumulative effects from other past, present, and reasonably foreseeable activities on each of the alternatives.

5.2 Impacts of Alternative A (No Action Alternative)

This section describes the impacts on the resource areas and human uses in and around the sanctuary that would occur under Alternative A (no action alternative). Under the no action alternative, NOAA would continue to conduct field activities and management plan activities, and implement existing sanctuary-wide regulations to protect and manage sanctuary resources.

5.2.1 Impacts on the Physical Setting (No Action Alternative)

This section describes the impacts on the physical setting from implementing routine field activities, the 2008 sanctuary management plan, and existing sanctuary-wide regulations. The components of the no action alternative are described in detail in **Sections 3.2.1, 3.3.1, and 3.4**. An overview of the sanctuary's physical setting is provided in **Section 4.1**.

5.2.1.1 Beneficial Impacts on the Physical Setting (No Action Alternative)

Existing sanctuary-wide regulations would continue to limit discharges into the sanctuary that could compromise water quality and restrict prohibited activities. Implementing these regulations would further protection of important habitat and physical resources in MBNMS.

As part of implementing the current sanctuary management plan through routine field activities, research and monitoring programs provide sanctuary managers with information to inform decisions related to resource protection. In addition, education and outreach activities would further the public's understanding of the importance of ocean stewardship and protection of sanctuary resources. This could result in changes in behavior and decision-making of individuals, communities, organizations, and agencies in ways that could indirectly benefit physical resources within the sanctuary. Further, implementing resource protection and emergency response activities would remove hazards from the waters of MBNMS, thus avoiding seafloor disturbance or hazardous spills that could result in adverse impacts. Monitoring of potentially polluting shipwrecks would result in early notification of potential hazardous leaks. Implementation of mitigation helps to avoid potential adverse impacts to water quality. Additionally, implementing the agriculture healthy soils program supports management practices that add carbon to agricultural lands, which can benefit the soil and pasture health, landscape appearance, and working conditions on animal production ranches while simultaneously

removing carbon from the atmosphere by storing it in soil and plant structures. This carbon sequestration can diminish the negative effects of increasing levels of atmospheric carbon dioxide on MBNMS, which includes ocean warming, sea level rise, current circulation, ocean acidification, and the effects these factors have on marine ecosystems and organisms.

These **beneficial** impacts to the physical setting from the no action alternative would be **less than significant** because the scope and intensity of current sanctuary management activities are not large enough to result in significant, permanent changes to the physical setting of MBNMS.

5.2.1.2 Adverse Impacts on the Physical Setting (No Action Alternative)

Under the no action alternative, some minor adverse impacts to the physical setting would result from conducting routine field activities and other management activities. Adverse impacts from these activities are described below.

Operating and Maintaining ONMS Vessels

Routine vessel operations can have adverse effects on physical resources within MBNMS, particularly water quality, the acoustic setting, air quality, and seafloor sediment. Normal vessel operations can occasionally require anchoring which results in seafloor disturbance and temporary increases in turbidity. Very rarely, vessel accidents can result in sinkings or groundings that cause larger disturbance of the seafloor, coastal beaches, and physical habitat and risk longer-term negative impacts on water quality through leaks of hazardous substances (e.g., fuel, lubricant, sewage, and garbage). Vessel operations could also have adverse impacts on the acoustic setting within MBNMS due to movement of vessels through water, the operation of propulsion machinery, and the use of depth sounders. Vessels emit air pollutants from engines and generators on board, including carbon dioxide, which can result in reduced local air quality.

MBNMS-led vessel operations would occur infrequently (up to 90 days at sea on three vessels up to 65 feet in length). Relative to the scale of existing vessel traffic in this region, including ambient acoustics and background noise and seafloor anchoring, the additional impacts of vessels used to support sanctuary management is expected to be minor. All ONMS vessels must comply with the operational protocols and procedures in the NOAA Small Boats Policy (NAO 209-125) and ONMS best management practices as detailed in **Appendix C**. These best management practices include a requirement to limit vessel anchoring to sandy-bottom substrates to avoid damage to seagrasses and coral habitat. Further, existing state, federal, and sanctuary regulations prohibit most intentional discharges, therefore direct impacts to water quality from vessel operations are expected to be highly unlikely because they would only occur from accidental discharge.

Operating vessels requires routine vessel maintenance. Vessel maintenance could result in decreased water quality if contaminants used to maintain boats (e.g., oil and cleaning chemicals) inadvertently enter sanctuary waters. For ONMS vessels used by MBNMS staff, this routine maintenance is generally conducted by trained NOAA personnel or contractors in Monterey Harbor. Heavy maintenance is typically accomplished on land in self-contained contractor facilities which are highly regulated for industrial safety and environmental compliance by local, state, and federal entities. Where possible, bio-based lubricants and fluids (and in some cases bio-based fuels) are used, further reducing the threat to water quality resources in the unlikely event of a spill. Because most vessel maintenance activities are conducted outside MBNMS and by highly-trained staff, the risk of contaminants entering sanctuary waters is extremely low.

Overall the **adverse** impacts of vessel operations and maintenance on air quality, water quality, seafloor substrate, and the acoustic setting within MBNMS would be **less than significant** because of the low intensity and frequency of vessel operations and maintenance within MBNMS, and adherence to regulations and best management practices that would minimize seafloor disturbance and leaks from vessels.

Scuba and Snorkel Operations

Normal scuba and snorkel operations can have adverse effects on physical resources during dives due to disturbance of seafloor sediments and temporary increases in turbidity. Scuba and snorkel operations do not involve discharge therefore there is no further risk to water quality beyond increased turbidity. Overuse of specific locations may result in larger or longer-term disturbance of sediments.

NOAA conducts up to 250 dives per year to support habitat, species and oceanographic studies, natural resource damage assessments, and locating and characterizing cultural and maritime heritage resources. During these activities, dive site location often varies by project, and therefore prevents overuse of any specific location. Further, MBNMS divers and snorkelers are highly trained and avoid harming or disturbing physical resources. Compared to the effects of natural water motion and seafloor disturbances from currents, waves, and storms, the infrequent NOAA scuba and snorkel activities are minor. Overall, scuba and snorkel operations are expected to result in minor **adverse** effects on water quality and geological resources within MBNMS that are **less than significant** because of the low intensity and frequency of scuba and snorkel operations within MBNMS.

Deployment of Equipment on the Seafloor

Deployment of equipment on the seafloor can cause minor adverse impacts to physical resources in MBNMS through temporary or long-term disturbance of sediments and physical habitat. NOAA deploys buoy-based scientific equipment for research and monitoring, mooring buoys for marking zone boundaries for motorized personal

watercraft use, hydrophones, and oil spill response booms. All of these require deployment of mooring hardware on the seafloor, which can range from weighted moorings systems to screw anchors that go below the marine substrate. When conducting such deployments, MBNMS staff implement ONMS best management practices to mitigate damage to the seafloor that include: deploying instruments onto sandy substrate whenever possible; deploying instruments slowly and under constant supervision; and conducting a visual survey of the seafloor prior to deployment of equipment to avoid sensitive areas. Compared to the entire seafloor area of the sanctuary, the areas impacted by research equipment and MBNMS buoys on the seafloor is miniscule. Moreover, the equipment is retrieved when possible to download data and because these instruments are often expensive. In general, **adverse** impacts to the seafloor from these deployments would be **less than significant** because the activities are periodic, spread out in space and time, and care is taken when placing equipment to avoid sensitive areas of the seafloor.

Deployment of Autonomous Underwater Vehicles, Remotely Operated Vehicles, Gliders, and Drifters

Deployment of autonomous underwater vehicles, remotely operated vehicles, gliders, or drifters can cause adverse impacts to physical resources through unintentional collision with the seafloor or accidental groundings, and temporary disturbance of the acoustic environment due to minor engine noise and use of operational altimeters. The operations of such equipment within MBNMS would be periodic and low intensity (i.e., up to 40 ROV deployments per year⁵), and would usually support response to vessel casualties and associated assessments of resource damage, characterizing seafloor habitats and ecologically significant areas, and visual reconnaissance surveys associated with historic documentation on last reported positions of ship and aircraft wreck sites. If a vehicle were to accidentally or intentionally collide with the seafloor, the impacts would likely be the same as those described above for vessel anchoring or deployment of equipment on the seafloor. Due to the low intensity of anticipated operations of these types of vehicles, the low likelihood of a collision or grounding, and best management practices to mitigate seafloor impacts, the **adverse** impacts to the physical setting would be **negligible**.

Operations of Non-Motorized Craft

Routine operations of non-motorized craft would have **no adverse effect** on the physical setting in MBNMS. Sanctuary staff and volunteers use kayaks to conduct on water outreach to recreational and commercial operators in the sanctuary. Kayaks are small, lightweight, slow, and maneuverable, and therefore are generally not capable of inflicting damage on geological features, sediment, or altering oceanographic features. In

⁵ Some deployments would require a permit or Letter of Authorization from the sanctuary superintendent. Generally, the environmental impacts of those deployments would be evaluated at the time of the permit application.

addition, non-motorized craft do not discharge any substance or produce air emissions or engine noise, and therefore are expected to have **no adverse effect** on water quality, air quality, seafloor substrate, or the acoustic environment.

Onshore Fieldwork

Onshore fieldwork can have adverse effects on physical resources through disturbance of sediments and physical habitat in the intertidal zone and coastal watersheds, changes in water quality from accidental leaks or marine debris, and noise impacts from human activities or operation of machinery. NOAA staff and volunteers conduct onshore field work to support educational activities and citizen science efforts. These activities encourage visitation to beaches, intertidal zones, and coastal streams and can cause transient disturbance of physical habitat by increasing human presence in these areas. In addition, MBNMS-led research or response teams operate in the intertidal zone when conducting emergency removal or salvage of sunken or grounded vessels, aircraft, vehicles, and other discharged matter. Salvage or recovery activities can disturb physical habitats when debris is introduced onshore or if it is dragged along the shore or if heavy equipment is required to remove debris. For example, helicopters can occasionally be required to for airlift removal of debris in steep coastal areas of the sanctuary. If grounded vessels contain hazardous materials (e.g., fuel), salvage and recovery can rarely result in spills that compromise water quality or cause damage to onshore habitat.

MBNMS-contracted salvors must follow best practices, which includes removal of all fuel and removal of large vessel parts such as engine, tanks, and hull. These best practices reduce the risk of accidental spills or dispersal of debris into the intertidal zone or waters of the sanctuary during emergency response activities. Moreover, NOAA staff and participants in MBNMS-led stewardship, emergency response, education, and research programs are instructed on ways to minimize their impacts on physical habitats, water quality, and the seafloor when conducting onshore fieldwork activities. The **adverse** effects of onshore fieldwork activities on the physical setting would be **less than significant** because the disturbance of physical habitat, sediments, changes in water quality, and noise impacts would be temporary, conducted by small groups of well-trained people, and would occur widely distributed in space and time.

Aircraft Operations

Routine aircraft operations can have adverse effects on physical resources within MBNMS, particularly water quality, the acoustic setting, and sediment disturbance. NOAA would conduct monitoring flights using drones or other unmanned aerial systems to support compliance with sanctuary regulations, characterization of habitats and species, and to aid in creation of education and outreach materials. Normal operations of these equipment can disturb the acoustic setting because of movement through the air and the operation of propulsion machinery. Very rarely, accidents can result in sinkings or groundings that cause disturbance of the seafloor, coastal beaches, and physical

habitat, and risk negative impacts on water quality through leaks of hazardous substances (e.g., batteries) or dispersal of marine debris into the marine environment.

In general, projects that rely on aircraft operations in MBNMS are very limited in scope and time frame (up to 40 flight hours per year). In the unlikely event an unmanned aerial system requires an unintentional or emergency landing, care would be taken to ensure minimal impact to the geological environment in MBNMS. Impacts to water quality would be minimal because the systems are sealed and very unlikely to leak fluid or break apart in the case of an emergency landing on water. Similarly, impacts to air quality would be negligible because most unmanned aerial systems are battery operated and do not emit air pollutants.

To avoid the risk of emergency landings, all remote aerial system operators are highly trained and licensed to operate systems prior to use within MBNMS in compliance with Federal Aviation Administration (FAA) regulations and NOAA standing orders. Additionally, there are regulatory overflight zones in MBNMS where flights below 1,000 feet are prohibited. To avoid adverse impacts to the acoustic environment and sensitive habitats and species, NOAA would conduct aircraft operations outside of NOAA-regulated overflight zones⁶ and would avoid bird and mammal rookeries.

In sum, aircraft operations would have **negligible adverse** impacts on physical habitat, water quality, and the acoustic environment due to their small size, the infrequency of these operations, the scale of the impacts in relation to the existing soundscape in MBNMS, and compliance with training requirements, overflight zones, and standing orders by aircraft systems operators.

Regulations

Under Alternative A, NOAA would forgo the opportunity to update the sanctuary regulations to address coastal erosion issues and reduce negative impacts of deep-water buoy deployments on the seafloor. **Adverse** impacts of this would include: continued erosion of shoreline habitat and beaches resulting from shoreline construction activities, coastal armoring, sea level rise, and storm activity; and mooring failures of MBNMS buoys that create marine debris and drag along the seafloor causing disturbance of substrates and habitat. These forgone benefits would be **less than significant** in the context of the entire sanctuary because of the relatively small scale of adverse impacts currently occurring in these areas due to coastal erosion and mooring failures.

⁶ If the use of a low overflight zone for remote sensing surveying were required, this activity would be individually permitted by MBNMS after individual environmental review and consultation, as necessary, as described in Sections 1.5.3 and 1.5.4.

5.2.2 Impacts on the Biological Setting (No Action Alternative)

This section describes the impacts on the biological setting from implementing routine field activities, the 2008 sanctuary management plan, and existing sanctuary-wide regulations. The components of the no action alternative are described in detail in Sections 3.2.1, 3.3.1, and 3.4. An overview of the sanctuary's biological setting is provided in Section 4.2. Impacts on protected species and habitats are described in detail in Section 5.5.

5.2.2.1 Beneficial Impacts on the Biological Setting (No Action Alternative)

Existing sanctuary-wide regulations would continue to limit discharges into the sanctuary that could compromise water quality and restrict prohibited activities that might adversely affect biological resources in MBNMS. Implementing these regulations would further protection of important habitat and living marine resources in MBNMS.

As part of implementing the current sanctuary management plan through routine field activities, research and monitoring programs provide sanctuary managers with information to inform decisions related to protection of habitat for marine species. In addition, education and outreach activities further the public's understanding of the importance of ocean stewardship and protection of the sanctuary's biological resources. For example, interpretive programming like the Team OCEAN program educates kayakers on becoming better stewards of ocean and coastal ecosystems which beneficially influences long-term efforts to protect biological resources, particularly marine mammals, by minimizing disturbance of protected species. These actions could result in changes in behavior and decision-making of individuals, communities, organizations, and agencies in ways that could indirectly benefit biological resources within the sanctuary. Further, implementing resource protection and emergency response activities would remove hazards from the waters of MBNMS, thus avoiding disturbance of important habitats, risk of collisions with turtles or marine mammals, or hazardous spills that could result in adverse impacts to living marine species in the sanctuary. Monitoring of potentially polluting shipwrecks would result in early notification of potential hazardous leaks. Implementation of mitigation helps to avoid potential adverse impacts to water quality that could harm living marine species that could not easily find alternative suitable habitat.

The **beneficial** impacts to the biological setting from the no action alternative would be **less than significant** because the scope and intensity of sanctuary management activities are not large enough to result in significant, permanent changes to the sanctuary's biological resources.

5.2.2.2 Adverse Impacts on the Biological Setting (No Action Alternative)

Under the no action alternative, some minor adverse impacts on the biological setting would occur from conducting routine field activities and other management activities. Adverse impacts from these activities are described below.

Research, Monitoring, Resource Protection, and Stewardship Activities

Wildlife research, monitoring, and resource protection actions can have adverse impacts on biological resources, particularly biota in the water column, and benthic, intertidal, or subtidal habitats. Actions that could have adverse impacts would typically involve sampling, collection of organisms, or tagging to support collecting data on species, community, and population status, health, and trends. In some cases, actions taken to study biota or habitat, or to respond to emergencies occurring in the sanctuary, can disturb species in the water or intertidal zone and rarely result in injury or death.

MBNMS-led research and monitoring projects may have short-term impacts, such as disturbing habitats and biota while walking in intertidal areas to collect data, or disturbing wildlife while using small boats to ferry scuba divers to study sites. In addition, methods to address introduced species, such as detection, rapid response, monitoring, eradication, and restoration, can have adverse impacts on native species during removal of introduced species or modification of native habitat.

MBNMS personnel are highly-trained to avoid disturbing or otherwise damaging habitat or biota when conducting research, monitoring, and resource protection activities. They implement various best management practices when operating in the water or onshore to minimize impacts to living species and habitats, such as: using trained lookouts during vessel operations to avoid collisions with marine mammals and sea turtles, maintaining safe distances from large whales, limiting anchoring and instrument deployments to sandy substrates, and constantly supervising deployed instruments to minimize risk of collision or entanglement with marine species. Any tagging of marine mammals is conducted under a Marine Mammal Protection Act (MMPA) permit issued by the National Marine Fisheries Service (NMFS).

Due to the implementation of these best management practices by highly trained staff, and the low intensity of these types of activities, **adverse** impacts on the habitats and biota in MBNMS would be **less than significant**.

Operating and Maintaining ONMS Vessels

Routine vessel operations can have adverse effects on biological resources within MBNMS, particularly through compromised water quality, collision risk, or temporary disturbance of species and habitat. The risk of collision with a vessel is higher for sea turtles and large marine mammals because these species move at slower speeds and may not be able to adjust course to avoid a vessel. Very rarely, vessel accidents can result in

sinkings or groundings that can cause larger disturbance of benthic habitat and coastal beaches or injure marine species. These accidents can also reduce water quality through accidental leaks of hazardous substances (e.g., fuel, lubricant, sewage, and garbage) that can cause marine species to abandon habitat in these areas. In addition, noise emitted from vessels during routine operations can distract an organism from its current path or alter behavior paths in a manner that reduces access to food sources. Any such impact is expected to be short-term and would not cause harm to the individual.

MBNMS-led vessel operations would occur infrequently (up to 90 days per year on three ONMS vessels up to 65-feet in length). In addition, ONMS vessels must comply with the operational protocols and procedures in the NOAA Small Boats Policy (NAO 209-125), ONMS best management practices (**Appendix C**), and voluntary sanctuary standing orders. Specifically:

- Maintaining dedicated lookouts for marine mammals and sea turtles;
- Reducing vessel speeds to a maximum of 10 knots when marine mammals and sea turtles are visible within one nautical mile of the vessels;
- Maintaining distance from large whales and sea turtles; and
- Implementing additional mitigation measures if nighttime operations are required.

These mitigation measures are designed primarily to minimize impacts on large whales, sea turtles, and sea otters. Further, existing state, federal, and sanctuary regulations prohibit most intentional discharges from vessels in MBNMS, therefore direct impacts to water quality from vessel operations are expected to be highly unlikely because they would only occur from accidental discharge. As such, indirect adverse impacts on biological resources through compromised water quality as a result of accidental discharges are highly unlikely.

Operating vessels requires routine maintenance. Vessel maintenance could result in decreased water quality if contaminants (e.g., oil and cleaning chemicals) inadvertently enter sanctuary waters. Decreases in water quality can reduce available habitat for marine species if the level of contamination is high. For ONMS vessels used in MBNMS, routine maintenance is generally conducted by trained NOAA personnel or contractors in Monterey Harbor. Heavy maintenance is typically accomplished on land in self-contained contractor facilities which are highly regulated for industrial safety and environmental compliance by local, state, and federal entities. Where possible, bio-based lubricants and fluids (and in some cases bio-based fuels) are used, reducing the threat to water quality in the unlikely event of a spill. Because most vessel maintenance activities are conducted outside MBNMS and by highly-trained staff, the risk of contaminants entering sanctuary waters is extremely low. Therefore, it is highly unlikely that routine vessel maintenance would have any detectable effect on marine species and habitats in MBNMS.

Overall, the combination of a limited number of days at sea and small number of vessels decreases the likelihood of **adverse** impacts to biological resources in the sanctuary. The impacts of vessel operations and maintenance on habitats and biota found in MBNMS are expected to be **less than significant** because of the low intensity and frequency of vessel operations and maintenance within MBNMS and adherence to regulations, best management practices, and standing orders that would minimize risk of interactions with marine species and habitats.

Scuba and Snorkel Operations

Scuba and snorkel operations can have **adverse** effects on biological resources during dives due to temporary disturbance of benthic habitat and species present in the activity area. Scuba and snorkel operations do not involve discharge, therefore there is no risk to marine species through changes in water quality. However, overuse of specific locations can result in larger or longer-term disturbance of benthic habitat and species at these sites. NOAA divers can conduct up to 250 dives per year. Staff conducting scuba and snorkel operations may temporarily affect the behavior of marine mammals and fishes, but this impact is likely short-term and minor (Rhoades et al., 2018). The presence of people in the water attracts some animals and repels others. Minor disturbance of habitat and biota can occur when transiting through the intertidal zone with scuba or snorkel equipment, but this impact is also likely to be short-term and minor.

During these activities, dive site location varies according to different projects throughout MBNMS, therefore preventing overuse of any specific location. In addition, NOAA divers and snorkelers are highly trained and would employ ONMS best management practices to avoid harm or disturbance to biological resources. For example, NOAA personnel maintain a safe distance between themselves and any marine mammals, sea turtles, or other species present. Therefore, the impacts of scuba and snorkel operations on habitats and biota found in MBNMS are **less than significant** because of the low intensity and frequency of scuba and snorkel activities.

Deployment of Equipment on the Seafloor

Deployment of equipment on the seafloor can have minor adverse impacts on biological resources due to temporary or long-term disturbance of benthic habitat and living organisms. NOAA deploys buoy-based scientific equipment for research and monitoring, mooring buoys for marking zone boundaries for motorized personal watercraft use, hydrophones, and oil spill response booms. All of these require deployment of mooring hardware on the seafloor, which can range from weighted moorings systems to screw anchors that go below the marine substrate.

Because virtually all seafloor substrates in the sanctuary host some living organisms, disturbing the seafloor can have minor adverse effects on invertebrate species that may not quickly move away from human activity. The deployment of mooring hardware and

scientific instruments can also present a risk of collision or entanglement for marine species. To minimize and mitigate damage to benthic habitat and any biota present, staff implement ONMS best management practices during instrument or mooring hardware deployments, which include:

- maintaining a safe distance between equipment and any marine mammals, sea turtles, or other protected species present;
- deploying instruments onto sandy substrate whenever possible;
- deploying instruments slowly and under constant supervision; and
- conducting a visual survey of the seafloor prior to deployment of equipment to avoid biologically sensitive areas and biota, particularly protected species.

Compared to the entire seafloor area of the sanctuary, the areas impacted by research equipment and buoys is miniscule. Moreover, equipment is retrieved when possible to download data and because these instruments are often expensive. In general, **adverse** impacts to the seafloor and biota present in the area from these deployments would be **less than significant** because the activities are periodic, spread out in space and time, and care is taken when placing equipment to avoid biologically sensitive areas of the seafloor.

Deployment of Autonomous Underwater Vehicles, Remotely Operated Vehicles, Gliders, and Drifters

Deployment of autonomous underwater vehicles, remotely operated vehicles, gliders, or drifters can damage benthic habitat and species on the seafloor due to unintentional striking, groundings, and dropping ballast weights on the seafloor. In addition, tethers attached to ROVs can pose an entanglement risk for marine mammals and sea turtles. The operations of such equipment within MBNMS would be periodic and low intensity (i.e., up to 40 ROV deployments per year⁷), and would usually support response to vessel casualties and associated assessments of resource damage, characterizing seafloor habitats and ecologically significant areas, and visual surveys associated with historic documentation on last reported positions of ship and aircraft wreck sites.

Likelihood of entanglement is low because the duration of operations is very limited and all deployed lines would be attended by trained staff keeping lookout for species in the area. If an animal were observed in the vicinity, the deployed vehicle could be quickly retrieved to minimize the risk of a collision or entanglement. If a vehicle were to accidentally or intentionally collide with the seafloor, the impacts to benthic habitat and species on the seafloor would be the same as those described above for vessel anchoring or deployment of equipment on the seafloor. Because of the low intensity of anticipated operations of these types of vehicles, the low likelihood of an accidental collision or

⁷ Some deployments would require a permit or Letter of Authorization from the sanctuary superintendent. Generally, the environmental impacts of those deployments would be evaluated at the time of the permit application.

grounding, and best management practices to maintain a safe distance between equipment and any marine mammals, sea turtles, or other species present, the **adverse** impacts to the biological setting would be **less than significant**.

Operations of Non-Motorized Craft

Sanctuary staff and volunteers use kayaks to conduct on water outreach to recreational and commercial operators in the sanctuary. Kayaks can cause temporary disturbance to sea turtles, sea otters, and other marine mammals in the marine environment, which may result in temporary displacement or behavior change. NOAA staff and volunteers use kayaks at sea up to 50 days per year and take steps to minimize this risk by maintaining a safe distance between the craft and any marine mammals or other protected species present. Kayaks are small, lightweight, slow, and maneuverable, and therefore are generally not capable of inflicting damage on any species or habitat beyond temporary disturbance. Kayaks can be quickly maneuvered in order to avoid a direct impact with an organism in the marine environment. Due to the nature of this activity, and that kayaks are operated by trained staff and volunteers, the **adverse** impacts to the biological environment would be **negligible**.

Onshore Fieldwork

Onshore fieldwork can have minor **adverse** effects on biological resources through temporary disturbance of plants, invertebrates, algae, fish, and habitats in the intertidal zone and coastal watersheds, changes in water quality from accidental leaks or marine debris, and noise impacts from human activities or operation of machinery.

NOAA staff and volunteers conduct onshore fieldwork to support educational and citizen science efforts. These activities encourage visitation to beaches, intertidal zones, and coastal streams, and can cause transient disturbance of biota and habitat by increasing human presence in these areas. Volunteer beach and water quality surveys occur up to 1200 person days per year. In addition, MBNMS-led research or response teams operate in the intertidal zone when conducting emergency removal or salvage of sunken or grounded vessels, aircraft, vehicles, and other discharged matter. The location of these activities generally changes based on where an accident or emergency occurs, or where monitoring of the intertidal zone is required. Onshore fieldwork related to response to vessel grounding incidents can occur up to 60 person days per year.

Salvage or recovery activities can disturb biota and habitats when debris is introduced onshore or if it is dragged along the shore or if heavy equipment is required to remove debris. For example, contracted helicopters can occasionally be required for airlift removal of debris in steep coastal areas of the sanctuary. Helicopters operating at very low altitudes can cause temporary, localized disturbance of wildlife. These projects are very limited in scope and time frame. If grounded vessels contain hazardous materials (e.g., fuel), salvage and recovery can rarely result in spills that compromise water quality

or cause damage to onshore or nearshore habitat for intertidal species. Impacts to wildlife in these areas from onshore activities is generally a short-term physical or sound disturbance or small-scale trampling of sessile organisms.

NOAA-contracted salvors must follow best practices, which includes removal of all fuel, and removal of large vessel parts such as engine, tanks, and hull. These best practices reduce the risk of accidental spills or dispersal of debris into the intertidal zone or waters of the sanctuary during emergency response activities. These best practices also avoid or minimize the risk of disturbing habitat or crushing biota present in the intertidal zone during salvage. Moreover, NOAA staff and participants in stewardship, emergency response, education, and research programs are instructed on ways to minimize their impacts on intertidal habitats, living organisms, and water quality when conducting onshore fieldwork activities in order to avoid any permanent damage. For example, during the annual Snapshot Day event each spring, volunteers are trained to properly clean their shoes or boots before leaving sites where there are concerns of potentially transporting invasive species between monitoring locations in different watersheds.

Overall, the impacts of onshore fieldwork activities on habitats and biota would be **less than significant** because any disturbance or changes in water quality would be temporary, and activities would be short in duration, occur widely distributed in space and time, and would be conducted by small groups of well-trained staff and volunteers.

Aircraft Operations

Routine aircraft operations can have adverse effects on biological resources within MBNMS through temporary behavioral disturbance from aircraft noise. NOAA would conduct monitoring flights using drones or other unmanned aerial systems to support compliance with sanctuary regulations, characterization of habitats and species, and to aid in creation of education and outreach materials. Very rarely, accidents can result in sinkings or groundings that cause disturbance of seafloor habitat and coastal beaches, or reduce habitat availability through leaks of hazardous substances (e.g., batteries) or dispersal of marine debris into the marine environment.

In general, projects that rely on aircraft operations in MBNMS are very limited in scope and time frame (up to 40 flight hours per year). In the unlikely event an unmanned aerial system requires an unintentional or emergency landing, care would be taken to ensure minimal impact to habitat and living marine resources. Impacts on water quality would be minimal because the systems are sealed and very unlikely to leak fluid or break apart in the case of an emergency landing on water. Similarly, impacts to air quality would be **negligible** because most unmanned aerial systems are battery operated and do not emit air pollutants.

To avoid the risk of emergency landings, all remote aerial system operators are highly trained and licensed to operate systems prior to use within MBNMS in compliance with FAA regulations and NOAA standing orders. Aircraft operations do not generally occur below 200 feet in elevation and generally operate at elevations of 500 feet or more, thereby minimizing potential interaction with birds and other biological resources. Additionally, there are regulatory overflight zones in MBNMS where flights below 1,000 feet are prohibited. To avoid adverse impacts to the acoustic environment and sensitive habitats and species, NOAA would:

- conduct aircraft operations outside of MBNMS-regulated overflight zones⁸,
- avoid bird and mammal rookeries, and
- maintain a safe distance between the aircraft and any marine mammals or other protected species present.

In sum, aircraft operations would have **less than significant adverse** impacts to biological resources in MBNMS due to their small size, the infrequency of these operations, the scale of the impacts in relation to existing acoustic disturbances in MBNMS, and compliance with training requirements, overflight zones, and standing orders by aircraft systems operators. Impacts on protected species and habitats are described in detail in **Section 5.5**.

Regulations

Under Alternative A, NOAA would forgo the opportunity to update the sanctuary regulations to address coastal erosion issues and reduce negative impacts of deep-water buoy deployments on seafloor benthic habitat. **Adverse** impacts of this would include: continued erosion of shoreline habitat and beaches resulting from shoreline construction activities, coastal armoring, sea level rise, and storm activity; and mooring failures of NOAA buoys that create marine debris and drag along the seafloor causing disturbance of substrates and habitat. These forgone benefits would be **less than significant** in the context of the entire sanctuary because of the relatively small scale of adverse impacts currently occurring in these areas due to coastal erosion and mooring failures.

5.2.3 Impacts on the Human and Socioeconomic Setting (No Action Alternative)

This section describes the impacts on the socioeconomic setting and human uses of MBNMS from implementing routine field activities, the 2008 sanctuary management plan, and existing sanctuary regulations. The components of the no action alternative are described in detail in **Sections 3.2.1, 3.3.1, and 3.4**. An overview of the sanctuary's human and socioeconomic setting is provided in **Section 4.4**.

⁸ If the use of a low overflight zone for remote sensing surveying were required, this activity would be individually permitted by MBNMS after individual environmental review and consultation, as necessary, as described in Sections 1.5.3 and 1.5.4.

5.2.3.1 Beneficial Impacts on the Human and Socioeconomic Setting (No Action Alternative)

Existing sanctuary regulations limit discharges into the sanctuary that could compromise water quality and restrict prohibited activities that might adversely affect resources in MBNMS. Implementing these regulations would further protection of important habitat and living marine resources in MBNMS. These resources provide important benefits to recreational, tourism, and commercial users of the sanctuary and the local region. For example, recreational and commercial fishing rely on healthy marine ecosystems for their success. Additionally, existing sanctuary regulations provide for use of motorized personal watercraft by recreational users in five zones. These zones allow motorized personal watercraft to access surf zones and provide safety support to surfers in the sanctuary.

Further, as part of implementing the current sanctuary management plan through routine field activities, conducting resource protection and emergency response activities would remove hazards from the waters and coastlines of MBNMS. This would remove debris and minimize risk of hazardous spills occurring on coastal beaches, which could limit public access and recreational use of the sanctuary.

Education programs delivered through sanctuary visitor centers are designed to enhance public awareness and understanding of the sanctuary and its resources, and build stewards to help take on the responsibility of protecting these special underwater treasures. MBNMS education strategies aim to raise the public's awareness and understanding of the local and regional marine environment, while creating engagement opportunities for protecting sanctuary resources. NOAA utilizes education as a resource management tool to address specific priority ecosystem protection issues, and both complements and promotes other sanctuary programs such as research, maritime heritage, and enforcement through multiple outreach and communication strategies.

These continued **beneficial** impacts to the socioeconomic setting and human uses in MBNMS from the no action alternative would be **less than significant** because the scope and intensity of current sanctuary management activities are not large enough to result in significant, permanent changes to these resources.

5.2.3.2 Adverse Impacts on the Human and Socioeconomic Setting (No Action Alternative)

Under the no action alternative, some minor adverse impacts to the socioeconomic setting and human uses of the sanctuary would result from conducting routine field activities and other management activities. Adverse impacts from these activities are described below.

Routine Resource Protection and Stewardship Activities

Occasionally the removal of a sunken or grounded vessel from a beach requires a section of the beach to be closed for a short period of time, while salvage activities take place.

Temporary beach closures could mean that the public loses access to recreation areas in the sanctuary temporarily. The closures are usually not more than a few hours and occur close to the site of the salvage operation. Generally, salvage and emergency response activities are episodic and only require short-term activity along beaches. These activities aim to remove potentially dangerous or hazardous materials to ensure public safety and access to beaches. Due to the low frequency of emergency response and salvage activities, the **adverse** impacts to public access to beaches and recreation from these activities would be temporary and **less than significant**.

Field Operations

Conducting routine field activities can have minor adverse effects on human uses of the sanctuary through temporary operational interference with commercial, research, or recreational activities in the sanctuary. Generally, any interference between NOAA and other users of the sanctuary would be temporary and would not result in any significant effect on the operations of recreational, research, or commercial users. The current use of the sanctuary waters by MBNMS staff and other recreational, research, and commercial users has not resulted in any conflict. MBNMS staff routinely collaborate with these other users on research and outreach activities. Therefore, any **adverse** impact from field operations on human uses in the sanctuary would be **negligible**.

Regulations

Under Alternative A, NOAA would forgo the opportunity to update the sanctuary regulations to address coastal erosion issues and reduce negative impacts of deep-water buoy deployments. **Adverse** impacts of this to other users of the sanctuary would include: continued erosion of shoreline beaches that would reduce opportunities for public access to the coastline and recreation; and mooring failures of MBNMS buoys that create navigational and public safety hazards, and adverse aesthetic impacts. These forgone benefits would be **less than significant** in the context of the entire sanctuary because of the relatively small scale of adverse impacts currently occurring in these areas due to coastal erosion and mooring failures.

5.2.4 Impacts on the Historical and Cultural Setting (No Action Alternative)

This section describes the impacts on the historical and cultural setting within MBNMS from implementing routine field activities, the 2008 sanctuary management plan, and existing sanctuary-wide regulations. The components of the no action alternative are described in detail in **Sections 3.2.1, 3.3.1, and 3.4**. An overview of the sanctuary's historical and cultural setting is provided in **Section 4.5**.

5.2.4.1 Beneficial Impacts on the Historical and Cultural Setting (No Action Alternative)

Existing sanctuary regulations limit discharges into the sanctuary that could compromise water quality and restrict prohibited activities. Continuing to implement these

regulations would further protection of the important historical and cultural resources present in MBNMS.

As part of implementing the current sanctuary management plan through routine field activities, research and monitoring programs provide sanctuary managers with information to inform decisions related to resource protection. Continued research and monitoring of historical and cultural resources in MBNMS provide opportunities for improved management of these resources and increased stewardship among users of sanctuary waters. In addition, resource protection activities mitigate potential direct adverse impacts to cultural and historical resources by avoiding damage from hazardous waste leaks, groundings or strandings, and other accidental disturbance of cultural or historical resources. Education and outreach activities focused on these cultural and historical resources further the public's understanding of the importance of stewardship and protection of the region's history and culture. This could result in changes in behavior and decision-making of individuals, communities, organizations, and agencies in ways that could indirectly benefit historical and cultural resources within the sanctuary.

These **beneficial** impacts to the historical and cultural setting from the no action alternative would be **less than significant** because the scope and intensity of current sanctuary management activities are not large enough to result in significant, permanent changes to the protection of historical and cultural resources in MBNMS.

5.2.4.2 Adverse Impacts on the Historical and Cultural Setting (No Action Alternative)

Under the no action alternative, some minor adverse impacts to the historical and cultural resources within the sanctuary would result from conducting routine field activities and other management activities. Adverse impacts from these activities are described below.

Operating MBNMS Vessels Within the Sanctuary

Routine vessel operations can have less than significant adverse effects on the seafloor and water quality in MBNMS through anchoring, unintentional sinkings or groundings, or accidental leaks of hazardous substances. These potential adverse impacts are described in more detail in **Section 5.2.1.2**. If such disturbance of the seafloor were to occur, any historical shipwrecks or cultural sites present in the impacted area could be damaged by collision with a sunken or grounded vessel. Similarly, accidental leaks of hazardous substances could compromise the integrity of cultural sites or shipwrecks.

MBNMS-led vessel operations would occur infrequently (up to 90 days at sea on three ONMS vessels up to 65 feet in length), therefore making the risk of accidental leaks or groundings very low. In addition, all ONMS vessels must comply with the operational protocols and procedures in the NOAA Small Boats Policy (NAO 209-125) and ONMS

best management practices as detailed in **Appendix C** to avoid harm or disturbance to cultural and historical resources. Existing state, federal, and sanctuary regulations prohibit most intentional discharges, therefore direct impacts to water quality from vessel operations are expected to be highly unlikely because they would only occur from accidental discharge.

If NOAA were to conduct or authorize activities involving systematic, planned physical disturbance to the terrestrial or marine substrate, these activities would require a sanctuary permit and would be evaluated in advance for proximity to locations of properties listed on the National Register of Historic Places, and would not be conducted in the immediate vicinity of documented historical or cultural resources. If an undocumented resource is identified or suspected, sanctuary staff would cease operations and consult with the ONMS West Coast Regional Maritime Heritage Coordinator, State Historic Preservation Officer, and Tribal Historic Preservation Officer before additional disturbance would be allowed.

Operating vessels requires routine vessel maintenance. Maintenance could result in decreased water quality if contaminants used to maintain boats (e.g., oil and cleaning chemicals) inadvertently enter sanctuary waters. For ONMS vessels used by MBNMS staff, this routine maintenance is generally conducted by trained NOAA personnel or contractors in Monterey Harbor. Heavy maintenance is typically accomplished on land in self-contained contractor facilities which are highly regulated for industrial safety and environmental compliance by local, state, and federal entities. Where possible, bio-based lubricants and fluids (and in some cases bio-based fuels) are used further reducing the threat to water quality resources in the unlikely event of a spill. Because most vessel maintenance activities are conducted outside MBNMS and by highly-trained staff, the risk of contaminants entering sanctuary waters is extremely low. Therefore, it is highly unlikely that routine vessel maintenance would have any detectable effect on historical and cultural resources present in MBNMS.

Overall, the **adverse** impacts of vessel operations and maintenance on cultural and historical resources within MBNMS would be **less than significant** because of the low intensity and frequency of vessel operations and maintenance within MBNMS, and adherence to regulations and best management practices that would minimize seafloor disturbance and leaks from vessels that might pose a risk to historical and cultural resources.

Scuba and snorkel operations

Normal scuba and snorkel operations can cause minor **adverse** effects on historical and cultural resources during dives due to disturbance of seafloor sediments at sites where these resources might be located. Scuba and snorkel operations do not involve discharge, therefore there is no further risk to water quality beyond temporary increases in

turbidity. Overuse of specific locations may result in larger or longer-term disturbance of sediments at these sites.

NOAA may conduct up to 250 dives per year to support habitat, species, and oceanographic studies, natural resource damage assessments, and locating and characterizing cultural and maritime heritage resources. During these activities, dive site location often varies by project, and therefore prevents overuse of any specific location. Generally, cultural and historical resources are very rarely encountered at typical diving depths. Compared to the effects of natural water motion and seafloor disturbances at these sites from currents, waves, and storms, the infrequent scuba and snorkel activities are minor.

If NOAA were to conduct or authorize activities involving systematic, planned physical disturbance to the terrestrial or marine substrate, these activities would require a sanctuary permit and would be evaluated in advance for proximity to locations of properties listed on the National Register of Historic Places, and would not be conducted in the immediate vicinity of documented historical or cultural resources. If an undocumented resource is identified or suspected, sanctuary staff would cease operations and consult with the ONMS West Coast Regional Maritime Heritage Coordinator, State Historic Preservation Officer, and Tribal Historic Preservation Officer before additional disturbance would be allowed. Furthermore, MBNMS divers and snorkelers are highly trained, and would employ ONMS best management practices to avoid harm or disturbance to cultural and historical resources.

The impacts of scuba and snorkel operations on cultural and historical resources within MBNMS would be **less than significant** due to the low intensity and frequency of scuba and snorkel operations, and adherence to regulations and best management practices that would minimize seafloor disturbance that might pose a risk to historical and cultural resources.

Deployment of Equipment on the Seafloor

Deployment of equipment on the seafloor can have minor adverse impacts on cultural and historical resources in MBNMS through temporary or long-term disturbance of sediments. NOAA deploys buoy-based scientific equipment for research and monitoring, mooring buoys for marking zone boundaries for motorized personal watercraft use, hydrophones, and oil spill response booms. All of these require deployment of mooring hardware on the seafloor, which can range from weighted moorings systems to screw anchors that go below the marine substrate. Deployment of any equipment on the seafloor below the substrate can impact and damage historical and cultural resources that are fragile and non-renewable resources. Compared to the entire seafloor area of the sanctuary, the areas impacted by research equipment and MBNMS buoys on the seafloor is miniscule. Moreover, the equipment is retrieved when possible to download data and

because these instruments are often expensive. When conducting such deployments, staff implement the following ONMS best management practices to mitigate damage to the seafloor and any cultural or historical resources present:

1. First, determine if there are known or recorded archaeological sites at the site, and
2. Second, conduct a visual survey of the seafloor prior to deployment of equipment onto the seafloor.

If NOAA were to conduct or authorize activities involving systematic, planned physical disturbance to the terrestrial or marine substrate, these activities would require a sanctuary permit and would be evaluated in advance for proximity to locations of properties listed on the National Register of Historic Places, and would not be conducted in the immediate vicinity of documented historical or cultural resources. If an undocumented resource is identified or suspected, sanctuary staff would cease operations and consult with the ONMS West Coast Regional Maritime Heritage Coordinator, State Historic Preservation Officer, and Tribal Historic Preservation Officer before additional disturbance would be allowed. In general, **adverse** impacts to cultural and historical resources from these deployments would be **less than significant** because the activities are periodic, spread out in space and time, and care is taken when placing equipment to avoid sensitive areas of the seafloor or any disturbance of important sites.

Deployment of Autonomous Underwater Vehicles, Remotely Operated Vehicles, Gliders, and Drifters

Deployment of autonomous underwater vehicles, remotely operated vehicles, gliders, or drifters can cause adverse impacts to cultural and historical resources through unintentional collision with the seafloor or accidental groundings where these resources are located. The operations of such equipment within MBNMS would be periodic and low intensity (i.e., up to 40 ROV deployments per year), and would support response to vessel casualties and associated assessments of resource damage, characterizing seafloor habitats and ecologically significant areas, and visual reconnaissance surveys associated with historic documentation on last reported positions of ship and aircraft wreck sites. Shipwreck reconnaissance surveys focus on individual sites that are considered “potentially eligible” to determine if they are in fact “eligible” for inclusion for the National Register of Historic Places. Surveys frequently employed at this level of investigation include visual surveys with no excavation or physical contact with historical artifacts. If a vehicle were to accidentally or intentionally collide with the seafloor, the impacts would be the same as those described above for vessel anchoring or deployment of equipment on the seafloor. Additionally, there is a slight risk that studying and identifying historic and culturally-significant sites may lead to looters removing important historical or cultural resources from these sites. As such, NOAA takes precautions to keep location information confidential, as appropriate.

If NOAA were to conduct or authorize activities involving systematic, planned physical disturbance to the terrestrial or marine substrate, these activities would require a sanctuary permit and would be evaluated in advance for proximity to locations of properties listed on the National Register of Historic Places, and would not be conducted in the immediate vicinity of documented historical or cultural resources. If an undocumented resource is identified or suspected, sanctuary staff would cease operations and consult with the ONMS West Coast Regional Maritime Heritage Coordinator, State Historic Preservation Officer, and Tribal Historic Preservation Officer before additional disturbance would be allowed.

Overall, the **adverse** impacts of these vehicles on cultural and historical resources within MBNMS would be **less than significant** because of the low intensity and frequency of operations, and adherence to regulations and best management practices that would minimize seafloor disturbance that might pose a risk to historical and cultural resources.

Operations of Non-Motorized Craft

Routine operations of non-motorized craft would have **no adverse effect** on the cultural and historical resources in MBNMS. Sanctuary staff and volunteers use kayaks to conduct on water outreach to recreational and commercial operators in the sanctuary. Kayaks are small, lightweight, slow, and maneuverable, and therefore are generally not capable of inflicting consequential damage on geological features or sediment. In addition, non-motorized craft do not discharge any substance in the water, and therefore are expected to have **no adverse effect** on the historical and cultural resources present in MBNMS.

Onshore Fieldwork

Onshore fieldwork can have adverse effects on cultural and historical resources through disturbance of sediments in the intertidal zone, and changes in water quality from accidental leaks or marine debris. NOAA staff and volunteers conduct onshore field work to support educational and citizen science efforts. These activities encourage visitation to intertidal zones and can cause transient disturbance of resources by increasing human presence in these areas. In addition, MBNMS-led research or response teams operate in the intertidal zone when conducting emergency removal or salvage of sunken or grounded vessels, aircraft, vehicles, and other discharged matter. Salvage or recovery activities can cause disturbance when debris is introduced onshore or if it is dragged along the shore or if heavy equipment is required to remove debris. If grounded vessels contain hazardous materials (e.g., fuel), salvage and recovery can rarely result in spills that compromise water quality and cause damage to historical and cultural sites.

All research activities and incident responses onshore are designed and conducted in order to not interfere with historical artifacts that may be found in the area. NOAA-contracted salvors must follow best practices, which includes removal of all fuel and removal of large vessel parts such as engine, tanks, and hull. These best practices reduce the risk of accidental spills or dispersal of debris into the intertidal zone or waters of the sanctuary during emergency response activities. Moreover, NOAA staff and participants in MBNMS-led stewardship, emergency response, education, and research programs are highly trained and instructed on ways to minimize their impacts on sensitive areas when conducting onshore activities. Adherence to regulations and best management practices further minimize seafloor disturbance or hazardous leaks that might pose a risk to historical and cultural resources.

If NOAA were to conduct or authorize activities involving systematic, planned physical disturbance to the terrestrial or marine substrate, these activities would require a sanctuary permit and would be evaluated in advance for proximity to locations of properties listed on the National Register of Historic Places, and would not be conducted in the immediate vicinity of documented historical or cultural resources. If an undocumented resource is identified or suspected, sanctuary staff would cease operations and consult with the ONMS West Coast Regional Maritime Heritage Coordinator, State Historic Preservation Officer, and Tribal Historic Preservation Officer before additional disturbance would be allowed.

Overall, the **adverse** impacts of onshore fieldwork on cultural and historical resources within MBNMS would be **less than significant** because any disturbance of sediments and changes in water quality would be temporary, and activities would be conducted by small groups of well-trained people and would occur widely distributed in space and time. Additionally, there is a low likelihood of onshore fieldwork occurring at sites where historical and cultural resources are present because of the widely scattered nature of these resources.

Regulations

Under Alternative A, NOAA would forgo the opportunity to update the sanctuary regulations to address coastal erosion issues and reduce negative impacts of deep-water buoy deployments on the seafloor. **Adverse** impacts of this would include: continued erosion of shoreline habitat and beaches resulting from shoreline construction activities, coastal armoring, sea level rise, and storm activity; and mooring failures of MBNMS buoys that create marine debris and drag along the seafloor causing potential disturbance of cultural sites and historical shipwrecks on the seafloor. These forgone benefits would be **less than significant** in the context of the entire sanctuary because of the relatively small scale of adverse impacts currently occurring in these areas due to coastal erosion and mooring failures and the widely scattered nature of cultural and historical sites in MBNMS.

5.3 Impacts of Alternative B

This section describes the impacts on the resource areas and human uses in and around the sanctuary that would occur under Alternative B. Under Alternative B, NOAA would continue to conduct field activities and implement existing sanctuary-wide regulations to protect and manage sanctuary resources, and revise the sanctuary management plan to respond to current threats to sanctuary resources and increase public involvement and outreach.

Generally, the impacts of Alternative B are of the same type and intensity of the impacts described under the no action alternative in **Section 5.2**. However, there are some additional impacts from revisions to the sanctuary management plan. These additional impacts are described in **Sections 5.3.1** to **5.3.4** below.

5.3.1 Impacts on the Physical Setting (Alternative B)

This section describes the impacts on the physical setting from implementing routine field activities, existing sanctuary-wide regulations, and a revised sanctuary management plan. The components of Alternative B are described in detail in **Sections 3.2.2, 3.3.2, and 3.4**. An overview of the sanctuary's physical setting is provided in **Section 4.1**.

5.3.1.1 Beneficial Impacts on the Physical Setting (Alternative B)

Implementing the revised sanctuary management plan proposed would focus on addressing emergent environmental concerns in the sanctuary (e.g., climate change, coastal erosion, and marine debris) as well as expanding work in ongoing priority areas (e.g., ocean noise, outreach and education programs, and management of invasive species).

The activities proposed in the revised sanctuary management plan would provide NOAA with increased information to inform resource protection decisions and promote ocean literacy and stewardship. These activities would improve the understanding, management, and protection of sanctuary resources and therefore provide direct beneficial impacts to water quality, the acoustic environment, and geology, oceanography, and soils in MBNMS. These impacts would go beyond the scope of the impacts described under the no action alternative because the new sanctuary management plan addresses new environmental concerns and priorities related to resource protection and public involvement.

By expanding research, outreach, and education activities, NOAA has the potential to expand the knowledge base and promote ocean stewardship principles with partners, local communities, and the general public. This creates an opportunity to influence the behavior and decision-making of individuals, communities, organizations, and agencies in ways that could indirectly benefit physical resources within the sanctuary.

For example, as part of implementing the Water Quality and Marine Debris action plans, NOAA would lead and support citizen science projects. These projects can involve collecting marine debris from beaches and other coastal areas, and monitoring water quality and microplastic presence in streams or coastal areas. Microplastic monitoring within the Salinas Valley would quantify the types, amounts, and sources of plastic being transferred from agriculture fields that may ultimately end up in MBNMS. Implementing these actions would help to ameliorate the adverse impacts of marine debris and water contamination by removing debris from these zones and improving understanding of the persistence of debris and plastics in the marine environment. This knowledge would lead to outreach to growers and other users of the coastal region to encourage better decision-making related to plastic product purchasing, use, disposal, and recyclability. This can help to inform behavior and policy change that would reduce the introduction of contaminants into the physical environment in the future. These actions would also educate people on becoming better stewards of ocean and coastal ecosystems which beneficially influences long-term efforts to protect physical resources. Removing marine debris and monitoring water quality encourages removal of contamination, has a beneficial effect on water quality, and reduces risks of habitat damage from marine debris in the physical environment.

In sum, implementing new and revised action plans as part of a revised sanctuary management plan would have direct and indirect benefits to the physical resources within MBNMS. While the impacts of these management plan activities would be **beneficial**, their effects would be **less than significant** because the scope and intensity of current sanctuary management activities would be small relative to the size of the sanctuary. Therefore, the proposed action would not result in significant, permanent changes to the physical setting of MBNMS over the five to 10-year implementation period for the draft revised sanctuary management plan.

5.3.1.2 Adverse Impacts on the Physical Setting (Alternative B)

The implementation of the revised sanctuary management plan is not expected to result in any additional interaction between sanctuary management activities and the physical setting of the sanctuary beyond those described under Alternative A (no action alternative). Therefore, the **adverse** impacts of Alternative B on the physical setting in MBNMS would be the same as Alternative A, as described in **Section 5.2.1.2**, which were all **less than significant**.

5.3.2 Impacts on the Biological Setting (Alternative B)

This section describes the impacts on the biological setting from implementing routine field activities, existing sanctuary-wide regulations and a revised sanctuary management plan. The components of Alternative B are described in detail in Sections **3.2.2**, **3.3.2**, and **3.4**. An overview of the sanctuary's biological setting is provided in **Section 4.2**.

5.3.2.1 Beneficial Impacts on the Biological Setting (Alternative B)

Implementing the revised sanctuary management plan proposed would focus on addressing emergent environmental concerns in the sanctuary (e.g., marine debris, impacts to and management of Sanctuary Ecologically Significant Areas, and use of motorized personal watercraft) as well as expanding work in ongoing priority areas (e.g., wildlife entanglement and ocean noise, outreach and education programs, management of invasive species, and expanding research and monitoring at Davidson Seamount and Sur Ridge).

The activities proposed in the revised sanctuary management plan would provide NOAA with increased information to inform resource protection decisions, as well as promote ocean literacy and stewardship. These activities would improve the understanding, management, and protection of sanctuary resources and therefore provide direct beneficial impacts to the living marine resources and habitats in MBNMS. These impacts would go beyond the scope of the impacts described under the no action alternative because the new sanctuary management plan addresses new environmental concerns and priorities related to resource protection and public involvement.

Research and monitoring projects supported or conducted by sanctuary staff are designed to increase understanding of the structure, function, resilience, and status of the resources MBNMS manages. An increased knowledge of the processes, dynamics, and responses of these systems to both human-induced and natural changes improve management of these resources. In addition, detection, rapid response, monitoring, eradication, and restoration programs related to introduced species are designed to increase our understanding of the nature and the impact of introduced species on native biodiversity. An increased knowledge of ecological interactions between introduced and native species can improve our management of these resources and restore impacted habitats and communities. These research and monitoring projects would have an indirect, beneficial impact on habitats and biota within MBNMS through improved knowledge and subsequent management of these biological resources.

By expanding research, outreach, and education activities, NOAA has the potential to expand the knowledge base and promote ocean stewardship principles with partners, local communities, and the general public. This creates an opportunity to influence the behavior and decision-making of individuals, communities, organizations, and agencies in ways that could indirectly benefit species that reside in or transit through the sanctuary. For example, as part of the Water Quality and Marine Debris action plans, MBNMS would lead and support citizen science projects that collect marine debris from intertidal areas or conduct phytoplankton, water quality, or microplastic monitoring. These projects would have direct beneficial effects on biological resources in coastal areas of the sanctuary by removing potential contaminants that may harm living marine species or make habitat inhabitable. Additionally, expanding outreach programs to

produce more informative presentations, signage, media, and print materials would indirectly further decrease human disturbance of living marine resources by increasing the public knowledge of sensitive habitats and species in MBNMS.

In sum, implementing new and revised action plans as part of a revised sanctuary management plan would have direct and indirect benefits to the biological resources within MBNMS. While the impacts of these management plan activities would be **beneficial**, their effects would be **less than significant** because the scope and intensity of current sanctuary management activities would be small relative to the size of the sanctuary. Therefore, the proposed action would not result in significant, permanent changes to the biological setting of MBNMS over the five to 10-year implementation period for the draft revised sanctuary management plan.

5.3.2.2 Adverse Impacts on the Biological Setting (Alternative B)

The implementation of the revised sanctuary management plan is not expected to result in any additional interaction between sanctuary management activities and the biological setting of the sanctuary beyond those described under Alternative A (no action alternative). Therefore, the **adverse** impacts of Alternative B on the biological setting in MBNMS would be the same as Alternative A, as described in **Section 5.2.2.2**, which were all **less than significant**.

5.3.3 Impacts on the Human and Socioeconomic Setting (Alternative B)

This section describes the impacts on the socioeconomic setting and human uses of MBNMS from implementing routine field activities, existing sanctuary-wide regulations, and a revised sanctuary management plan. The components of Alternative B are described in detail in **Sections 3.2.2, 3.3.2, and 3.4**. An overview of the sanctuary's human and socioeconomic setting is provided in **Section 4.4**.

5.3.3.1 Beneficial Impacts on the Human and Socioeconomic Setting (Alternative B)

Implementing the revised sanctuary management plan proposed would focus on addressing emergent environmental concerns in the sanctuary (e.g., coastal erosion, evaluating offshore wind energy and artificial reefs, and use of motorized personal watercraft) as well as expanding work in ongoing priority areas (e.g., implementing new programs at visitor centers, wildlife entanglement and ocean noise, expanding outreach and education programs, and management of invasive species).

The activities proposed in the revised sanctuary management plan would provide NOAA with increased information to inform resource protection decisions, as well as promote ocean literacy and stewardship. These activities would improve the understanding, management, and protection of sanctuary resources and therefore provide direct beneficial impacts to the living marine resources and habitats in MBNMS. These resources provide important benefits to recreational, tourism, and commercial users of

the sanctuary and the local region. For example, recreational and commercial fishing rely on healthy marine ecosystems for their success. These impacts would go beyond the scope of the impacts described under the no action alternative because the new sanctuary management plan addresses new environmental concerns and priorities related to resource protection, recreation, human uses, and public involvement.

Implementing a revised sanctuary management plan would advance regional ocean governance through improved coordination and collaboration, support long-term research and monitoring efforts, improve opportunities for recreation and public use of the sanctuary, and increase the value of the sanctuary for educational and research activities. These activities would result in indirect, beneficial impacts to the human and socioeconomic setting within or adjacent to MBNMS. For example, improving interpretive signage in the field at strategic shoreline locations would help to increase awareness and build knowledge of MBNMS to thousands of shoreline visitors each year. This increases the exposure of sanctuary messages to wide-ranging public audiences on resource protection issues (e.g., reducing wildlife disturbance) and research and monitoring activities, as well as maritime heritage in MBNMS. Expanding outreach to kayak and whale watch businesses and collaboration on the development of best practices related to marine mammal and seabird viewing under a revised sanctuary management plan would also lead to better protection and interaction for the wildlife these businesses depend upon.

In addition, several proposed strategies and actions described in the draft revised sanctuary management plan coordinate fishery education, management, research, or resource protection programs that may directly or indirectly affect commercial fisheries. These proposed strategies and actions are not mandatory for the fishing community, instead the activities focus on coordinating and collaborating with fishery managers and fishermen on issues of concern or to characterize and monitor benthic habitats. Enhanced coordination and collaborations among fishery managers, fishermen, and MBNMS staff are expected to increase efficiencies in data collection, analysis, and communication, which are indirectly beneficial for the sanctuary ecosystem and habitats that healthy commercial fisheries depend on. Similarly, the proposed strategies and actions in the Water Quality Protection Program Action Plan describe activities that coordinate and collaborate with state and local programs and stakeholders to improve water quality in the watersheds of the sanctuary through research and monitoring, data sharing, and training. Enhanced water quality of the sanctuary is beneficial for onshore and Monterey Harbor abalone aquaculture operations to grow healthy abalone for market and for all marine fisheries.⁹

⁹ The criteria used to determine the significance of impacts on commercial fisheries 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

In sum, implementing new and revised action plans as part of a revised sanctuary management plan would have direct and indirect benefits to the socioeconomic setting and human uses within MBNMS. While the impacts of these management plan activities would be **beneficial**, their effects would be **less than significant** because the scope and intensity of current sanctuary management activities would be small relative to the size of the sanctuary. Therefore, the proposed action would not result in significant, permanent changes to the socioeconomic setting and human uses of MBNMS over the five- to 10-year implementation period for the draft revised sanctuary management plan.

5.3.3.2 Adverse Impacts on the Human and Socioeconomic Setting (Alternative B)

The implementation of the revised sanctuary management plan is not expected to result in any additional interaction between sanctuary management activities and other human uses of the sanctuary beyond those described under Alternative A (no action alternative). Therefore, the **adverse** impacts of Alternative B on the human and socioeconomic setting in MBNMS would be the same as Alternative A, as described in **Section 5.2.3.2**, which were all **less than significant**.

5.3.4 Impacts on the Historical and Cultural Setting (Alternative B)

This section describes the impacts on the historical and cultural setting within MBNMS from implementing routine field activities, existing sanctuary regulations, and a revised sanctuary management plan. The components of Alternative B are described in detail in **Sections 3.2.2, 3.3.2, and 3.4**. An overview of the sanctuary's historical and cultural setting is provided in **Section 4.5**.

5.3.4.1 Beneficial Impacts on the Historical and Cultural Setting (Alternative B)

Implementing the revised sanctuary management plan would focus on addressing emergent environmental concerns in the sanctuary (e.g., coastal erosion, marine debris, and use of motorized personal watercraft) as well as expanding work in ongoing priority areas (e.g., ocean noise, outreach and education programs, and management of invasive species).

The activities proposed in the revised sanctuary management plan would promote ocean and cultural resource literacy, improve understanding and protection of heritage resources, and improved ocean stewardship. These activities would increase opportunities for research and monitoring to better understand, manage, and protect historical and cultural resources in MBNMS. In addition, expanding, research, education and outreach activities as part of the revised Maritime Heritage action plan would

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-Stevens Act. ONMS concluded that the potential impacts on commercial fishing activity in MBNMS from the proposed action do not meet these criteria for significance.

further the public's understanding of the importance of stewardship and protection of the region's history and culture.

In sum, implementing new and revised action plans as part of a revised sanctuary management plan would have direct and indirect benefits to the historical and cultural resources within MBNMS. While the impacts of these management plan activities would be **beneficial**, their effects would be **less than significant** because the scope and intensity of current sanctuary management activities would be small relative to the size of the sanctuary. Therefore, the proposed action would not result in significant, permanent changes to the historical and cultural setting of MBNMS over the five- to 10-year implementation period for the draft revised sanctuary management plan.

5.3.4.2 Adverse Impacts on the Historical and Cultural Setting (Alternative B)

The implementation of the revised sanctuary management plan is not expected to create any additional risk of impact to historical and cultural resources beyond those anticipated impacts described under Alternative A (no action alternative). Therefore, the **adverse** impacts from Alternative B on the historical and cultural setting in MBNMS would be the same as Alternative A, as described in **Section 5.2.4.2**, which were all **less than significant**.

5.4 Impacts of Alternative C

This section describes the impacts on the resource areas and human uses in and around the sanctuary that would occur under Alternative C. Under Alternative C, NOAA would continue to conduct field activities to protect and manage sanctuary resources; revise the sanctuary management plan to respond to current threats to sanctuary resources and increase public involvement and outreach; and revise sanctuary regulations to further protect sanctuary resources.

Generally, the impacts of Alternative C would be of the same type and intensity of the impacts described under the no action alternative in **Section 5.2**, plus those additional impacts from Alternative B, described in **Section 5.3**. However, there are some additional impacts from revisions to sanctuary regulations. These impacts are described below in **Sections 5.4.1 to 5.4.4**.

5.4.1 Impacts on the Physical Setting (Alternative C)

This section describes the impacts on the physical setting from implementing routine field activities, a revised sanctuary management plan, and revised sanctuary regulations. The components of the regulatory changes proposed in Alternative C are described in detail in **Sections 3.2.3, 3.3.3, and 3.4**. An overview of the physical setting is provided in **Section 4.1**.

5.4.1.1 Beneficial Impacts on the Physical Setting (Alternative C)

Under Alternative C, some additional beneficial impacts on the physical setting would result from proposed revisions to sanctuary-wide regulations. Beneficial impacts from these regulatory changes are described below.

“Beneficial Use of Dredged Material” Definition (New)

Under Alternative C, NOAA would add a definition for the phrase “beneficial use of dredged material” to the MBNMS regulations. This regulatory action would allow the permitted placement of clean dredged material within the sanctuary for beach nourishment purposes.

Portions of the coastline adjacent to MBNMS have been permanently altered over time, resulting in the disruption of natural sediment transport patterns (California Resources Agency, 2001). A typical example of this is a harbor with a dual jetty system extending into the ocean to protect its entrance from direct wave action. Normally, sediment entering the ocean from rivers and upland erosion is transported by longshore currents down the coast through nearshore waters, where it feeds a series of beach areas. When such sediment reaches a jetty or fixed structure perpendicular to the shoreline, it often becomes trapped on the upcoast side of the structure or gets washed into the harbor entrance channel where it settles out. If not for the artificial jetty structure, that sediment would continue downcoast, feeding beaches with regular fresh sediment supplies. The result is that the entrance channel begins to fill in, becoming shallower and threatening safe navigation. Meanwhile, the beaches immediately downcoast of the harbor jetties can slowly erode due to interrupted resupply of the sediment now washing into the harbor. If the sediment artificially trapped in the harbor channel is removed and placed on an eroded beach immediately adjacent to the harbor, subsequent wave and tidal action will sort and redistribute the sediment to rebuild the beach as if the sediment had been placed there by natural ocean processes. In essence, the engineering solution attempts to compensate for the impact of the jetties to natural sediment transport processes. As long as the sediment dredged from the harbor is clean, (free of contaminants) systematic beach nourishment programs can be effective in restoring natural equilibrium of adjacent beaches impacted by the harbor’s presence. These extracted sediments would not constitute dredge waste material, but instead would be employed to restore lost ecological services. In essence, the sediments would be transferred from the harbor to the beach to continue the destined ecological function that was interrupted by artificial shoreline structures.

The proposed regulatory action would clarify NOAA’s authority to permit beneficial use projects within the sanctuary (i.e., below the mean high water line) to meet the purposes of restoration. This would allow for using clean dredged sediments for beach nourishment within MBNMS on a case-by case basis, with strict government oversight in compliance with all federal, state, and local laws. Currently, MBNMS has accommodated

requests for beneficial use of sediment for beach nourishment in locations where the bathymetry and topography allow space for beach nourishment above the mean high water line. Beach replenishment projects are currently conducted by the city of Monterey at Del Monte Beach, Moss Landing Harbor District at Salinas River and Moss Landing State beaches, and the city of Santa Cruz at Twin Lakes State Beach, as described in **Section 4.1.2.3**. Any new approved beach nourishment programs would most likely occur near urban areas where the greatest volume of engineered shoreline alterations is found. The four major urban coastal communities adjacent to MBNMS are Half Moon Bay, the Santa Cruz area, Moss Landing, and the Monterey peninsula. These areas have already been significantly altered from their original natural conditions.

Beach nourishment activities are generally expected to have long-term beneficial impacts on physical habitats by restoring beach habitat, as well as preserving public access and use of coastal beaches. Restabilizing beach sediment budgets in areas that were disrupted by engineered coastal infrastructure would help restore impaired ecological services, as well as coastal access for use and enjoyment by the public. MBNMS expects this proposed regulatory change action would have beneficial effects on the physical setting by restoring natural sediment to habitats impaired by engineered coastal infrastructure. For any given project, NOAA would measure the short-term and long-term effectiveness of beach nourishment. NOAA expects that these **beneficial** impacts would be **negligible** or **less than significant**. However, NOAA would complete a detailed analysis of the potential environmental impacts of any future projects requiring a sanctuary permit. At that time the scope of the action would be better defined for any given beach nourishment project. NOAA would follow the steps outlined in **Section 1.5.4** to determine what level of environmental review and consultation would be required at that time.

Before issuance of any sanctuary permit for use of clean dredged material for beach nourishment, completion of a project-specific environmental review under NEPA would be required, as well as permitting and review by other federal, state, and local agencies. Any proposals for beneficial use would be closely evaluated to ensure cleanliness and suitability of the sediment. Impacts of any proposed project on physical resources – particularly water quality, intertidal habitat, the soundscape, geology, and soils – would be evaluated in detail when specific projects are proposed.

Motorized Personal Watercraft Zone Boundary Changes

Under Alternative C, NOAA would modify the boundaries of four year-round motorized personal watercraft zones. The proposed modifications would reduce the total number of deployed boundary buoys from 15 to nine and reduce the risk of associated mooring failures that create marine debris, seafloor impacts, and excessive maintenance effort. The four zones are located at Monterey, Santa Cruz, Half Moon Bay, and Moss Landing.

See **Section 3.4.3.3** for maps depicting the boundaries of each current zone and the proposed new boundaries.

Current zone boundary buoys stationed off rocky points have experienced repeated mooring failures due to heavy wave diffraction/reflection, abrasive and mobile rocky substrate impacts on mooring tackle, and lack of soft sediments for secure anchor set. Deeper moorings have repeatedly failed due to suspected interactions with vessels and commercial fishing gear. Failed moorings cause deposition and dragging of chain and anchors on the seafloor. Reconfiguration of zones would achieve a 40% reduction in the overall number of deployed zone boundary buoys from a total of 15 to nine. It would eliminate six previous buoy mooring stations entirely; replace four previous mooring stations with four new shallower mooring stations; and leave five previous mooring stations unchanged. This would result in the permanent removal of anchors and chain from the seafloor at 10 sites and installation of anchors and chain at four new sites – a 40% net reduction of ongoing seafloor impacts from zone boundary buoy moorings.

The four new mooring stations would be in much shallower water than their predecessors and would be deliberately sited in mud or sand substrate to avoid rocky reef habitat and other sensitive areas of the seafloor – a measurable reduction of negative environmental impacts associated with seafloor disturbance. This would reduce the scale of potential impacts to the seafloor substrate from mooring buoy maintenance associated with implementing the motorized personal watercraft zones. It would also reduce the spatial area for potential negative impacts to habitat resulting from motorized personal watercraft casualties, such as sinking or groundings. NOAA does not expect zone reconfiguration to affect use levels in any of the zones.

Buoys and moorings would be removed and installed using a small vessel and would involve deployment of recoverable equipment on the seafloor. The general impacts to the physical environment from the routine field activities that would be necessary to implement this proposed regulatory change are evaluated in **Section 5.2.1.2**.

In sum, this proposed regulatory change would result in beneficial impacts to the physical setting by reducing the impacts to the seafloor from mooring buoy deployment and mooring station failures. Acoustic impacts would be minimal because the size and location of the modified zones are similar to the current zones and motorized personal watercraft use levels in these zones are not expected to change. These **beneficial** impacts would be **less than significant** because of the small footprint of mooring buoys, and the small total number of buoys deployed.

5.4.1.2 Adverse Impacts on the Physical Setting (Alternative C)

Under Alternative C, some additional adverse impacts on the physical setting would result from proposed revisions to sanctuary-wide regulations. Adverse impacts from these regulatory changes are described below.

“Beneficial Use of Dredged Material” Definition (New)

Temporary disturbance of the physical setting could occur during the implementation of any specific beach nourishment project. Specific adverse effects on the physical setting associated with beach nourishment activities would likely include short-term impacts to water quality (e.g., increased turbidity during and immediately after placement of clean sand in the intertidal zone); alteration of the seafloor; and increased physical activity and noise during the sand pumping/placement operation. NOAA expects that these **adverse** impacts would be **negligible** or **less than significant**. However, any future beach nourishment proposal would be subject to sanctuary permit requirements, including a detailed analysis of the potential environmental impacts and the scope of those impacts. NOAA would follow the steps outlined in **Section 1.5.4** to determine the level of environmental review and consultation required. Before issuance of a sanctuary permit for use of clean dredged material for beach nourishment, completion of a project-specific environmental review under NEPA would be required, as well as permitting and review by other federal, state, and local agencies. Any proposals for beneficial use of dredged materials would be carefully evaluated to ensure cleanliness and suitability of the sediment. Impacts of the proposed project on physical resources – particularly water quality, intertidal habitat, the acoustic environment, geology and soils – would be evaluated in detail at that time.

5.4.2 Impacts on the Biological Setting (Alternative C)

This section describes the impacts on the biological setting from implementing routine field activities, a revised sanctuary management plan, and revised sanctuary-wide regulations. The components of the regulatory changes proposed in Alternative C are described in detail in **Sections 3.2.3, 3.3.3, and 3.4**. An overview of the sanctuary’s biological setting is provided in **Section 4.2**. Impacts on protected species and habitats are described in detail in **Section 5.5**.

5.4.2.1 Beneficial Impacts on the Biological Setting (Alternative C)

Under Alternative C, some additional beneficial impacts on the biological setting would result from proposed revisions to sanctuary-wide regulations. Beneficial impacts from these regulatory changes are described below.

Motorized Personal Watercraft Zone Boundary Changes

Under Alternative C, NOAA would modify the boundaries of four year-round motorized personal watercraft zones. The proposed modifications would reduce the total number of deployed boundary buoys to from 15 to nine and reduce the risk of associated mooring

failures that create marine debris and seafloor impacts that could affect living organisms. The four zones are located at Monterey, Santa Cruz, Half Moon Bay, and Moss Landing. See **Section 3.4.3.3** for maps depicting the boundaries of each current zone and the proposed new boundaries. In addition, **Section 5.4.1.1** describes the beneficial impacts of reducing the number of buoys deployed on seafloor substrate and benthic habitat (the physical setting).

Reconfiguration of the four year-round zones would achieve a 40% reduction in the overall number of deployed special mark buoys from a total of 15 to nine. Reducing the number of buoys deployed would have a beneficial impact on benthic and intertidal organisms by shrinking the footprint of impacted areas of the seafloor and reducing potential injuries from mooring failures that may result in the dragging of steel chain across the seafloor by drifting buoys. In addition, an approximately 60% reduction in total areal coverage of generally smaller reconfigured zones would equally reduce the area subject to potential interactions between motorized personal watercraft and marine wildlife, such as whales, dolphins, sea lions, and sea otters. NOAA does not expect zone reconfiguration to affect use levels in any of the zones.

All four zones are adjacent to urbanized shorelines with historically elevated levels of human activity. Nevertheless, distribution, abundance, and sensitivity of local biological resources were expressly considered in reconfiguring each zone in order to minimize wildlife disturbance and human/wildlife interactions as much as practicable. New zone boundaries were selected that omit and avoid close proximity to kelp forest habitat, as well as state and local marine protected areas. Zone corner points were carefully sited at mud/sand locations to provide effective, resilient anchor set for zone demarcation buoys and to specifically avoid negative impacts to rocky reef habitat, flora, and fauna.

For example, a portion of the reconfigured Santa Cruz zone would extend closer to shore between Seabright State Beach and Soquel Point, but the proposed boundaries were carefully selected to remain a considerable distance from kelp forest habitat to avoid disturbance of marine wildlife that concentrate within the kelp canopy and below. The reconfigured Half Moon Bay zone would extend due south from the Pillar Point Harbor entrance. The southern edge of the zone would encompass an isolated kelp bed overlying Southeast Reef, centered approximately 1.65 miles southeast of the harbor entrance and extending between U.S. Coast Guard red bell buoy “2” and U.S. Coast Guard green gong buoy “1S”. This kelp bed would lie at the far end of the zone, is not regularly frequented by marine species, and is not part of a large contiguous kelp tract. Its position at the most distant edge of the zone would likely result in infrequent approach by motorized personal watercraft, which rarely explore the zone. Additionally, since kelp can jam waterjet impellers, causing mechanical damage/failure, motorized personal watercraft operators generally avoid maneuvering within kelp canopies.

Buoys and moorings would be removed and installed using a small vessel and would involve deployment of recoverable equipment on the seafloor. The general impacts to the biological environment from the routine field activities that would be necessary to implement this proposed regulatory change are evaluated in **Section 5.2.2.2**. Because the revised zones would generally be smaller and mostly within the bounds of their original footprints, and because NOAA does not expect zone modifications to change the use levels in any zone, the impacts on biological communities in these areas are expected to be similar to the status quo.

In sum, this proposed regulatory change would result in beneficial impacts to the biological setting by reducing the extent of seafloor habitat and biota potentially impacted by mooring buoy deployment and chain drag incidental to drifting buoys. These **beneficial** impacts would be **less than significant** because the number of zones and general zone locations would remain unchanged; the scope of impact of each individual mooring would remain unchanged; the use levels of motorized personal watercraft in these zones is expected to remain unchanged; and the total number of buoys deployed remains small.

5.4.2.2 Adverse Impacts on the Biological Setting (Alternative C)

Under Alternative C, some additional adverse impacts on the biological setting would result from proposed revisions to sanctuary-wide regulations. Adverse impacts from these regulatory changes are described below.

“Beneficial Use Of Dredged Material” Definition (New)

Temporary disturbance of the biological setting could potentially occur during the implementation of any specific beach nourishment project. Specific adverse effects on the biological setting associated with beach nourishment activities would likely include: short-term impacts to water quality (e.g., increased turbidity during and immediately after placement of clean sand in the intertidal zone); alteration of the seafloor causing disturbance of seafloor habitat and biota; and increased physical and acoustic disturbance of coastal and marine species during the sand pumping/placement operation. Habitat and associated living organisms on the seafloor and in the intertidal zone would likely be disturbed and potentially injured by human activity supporting beach nourishment projects. NOAA expects that these **adverse** impacts would be **negligible** or **less than significant**. However, any future beach nourishment proposal would be subject to sanctuary permit requirements, including a detailed analysis of potential environmental impacts and the scope of those impacts. NOAA would follow the steps outlined in **Section 1.5.4** to determine the level of environmental review and consultation required. Before issuance of a sanctuary permit for use of clean dredged material for beach nourishment, completion of a project-specific environmental review under NEPA would be required, as well as permitting and review by other federal, state, and local agencies. Any proposals for beneficial use of dredged materials would be

carefully evaluated to ensure cleanliness and suitability of the sediment. NOAA would conduct a detailed evaluation of impacts of any proposed project on biological resources – particularly water quality and intertidal habitat critical to living marine resources and any protected species and habitats.

Access to Motorized Personal Watercraft Zone at Mavericks Surf Break (Proposed Update)

Under Alternative C, NOAA would amend sanctuary regulations to change the current High Surf Warning requirement for motorized personal watercraft access to Mavericks (Zone 5) to a less stringent High Surf Advisory requirement. High Surf Advisory conditions are predicted breaking waves at the shoreline of 15 feet or greater. Allowing motorized personal watercraft access to Mavericks during High Surf Advisory conditions would allow their presence at the surf break three to five more days a year to provide safety assistance to surfers operating in a highly energized surf zone.

Since 2008, the Greater Farallones National Marine Sanctuary Beach Watch program has conducted visual marine wildlife surveys along the San Mateo County coastline. Zone 5 is directly adjacent to a Beach Watch survey site at Pillar Point/Mavericks Beach. Several important marine species have been observed in the area. Because of this, access to Mavericks by motorized personal watercraft is only permitted during the winter months (December to February) when marine mammal presence in the area is low. Beach Watch observation data collected from 2008 to present reveal that harbor seals were three times more likely to be observed in the area during non-winter months than during winter months. As shown in **Figure 11(a)**, in the winter months, harbor seals were observed in the area at an average monthly rate of five per kilometer, compared to 16 per kilometer in the non-winter months. Similarly, observation data for pinnipeds (California and Steller sea lions and unidentifiable species of otariid, phocid, and pinniped) demonstrate that these species are also infrequently observed in the area during winter months. As shown in **Figure 11(b)**, in the winter months, pinnipeds were observed in the area at an average monthly rate of seven per kilometer, compared to 23 per kilometer in the non-winter months.

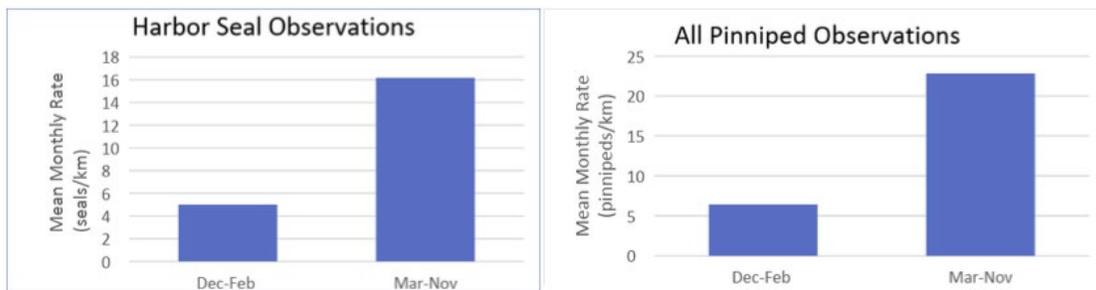


Figure 11. (a) Harbor seal mean monthly rates (harbor seals per kilometer observed in the vicinity of Zone 5 during the open months of Dec-Feb and closed months of Mar-Nov); (b) Pinniped mean

monthly rates (all pinnipeds per kilometer observed in the vicinity of Zone 5 during the open months of Dec-Feb and closed months of Mar-Nov).

Southern sea otters have also been observed in this area. Over the past four years, the U.S. Geological Survey recorded four reports of stranded sea otters between Point San Pedro and Martin's Beach during summer months (three strandings from shark bites and one from domoic acid poisoning). Beach Watch data includes one observation of a sea otter in the vicinity of Zone 5. U.S. Geological Survey and Beach Watch data do not have any documented disturbances or injuries to sea otters in this area from motorized personal watercraft. While seabirds are observed in this area year-round, they are not likely to be present in the vicinity of Zone 5 when surf conditions are large and when motorized personal watercraft would be present (e.g., during a High Surf Advisory or High Surf Warning). Because of the low expected abundance of marine species in Zone 5 during winter months and when motorized personal watercraft might be present (high surf conditions), impacts to these species from the proposed regulatory change are expected to be similar to the status quo or **negligible**.

Since motorized personal watercraft are already authorized to access Mavericks under High Surf Warning conditions, allowing access to the break under less stringent High Surf Advisory conditions would not increase the inherent risk of sinking/grounding and subsequent impacts to biological resources. These craft have operating characteristics unlike any traditional vessel. They are specifically designed to survive capsizing and even immersion, while maintaining full operational capability, and their speed and high maneuverability enable an experienced rider to effectively operate in ocean conditions that would immediately imperil a traditional vessel. The regulatory change would allow a modest increase of motorized personal watercraft presence at Mavericks. However, the potential for a motorized personal watercraft casualty and resulting environmental harm in lesser sea conditions than a High Surf Warning for no more than three to five additional days per winter presents a **negligible** additional risk of impacts to biological resources.

Given the lower presence of wildlife observed in the Pillar Point area during winter months and the lack of reported wildlife disturbances in the vicinity of Zone 5, reducing the restriction for motorized personal watercraft access to Mavericks (from High Surf Warning to High Surf Advisory) would not likely result in an increased risk of wildlife disturbance. Beach Watch observational data showing increased presence of marine wildlife in the area during non-winter months supports keeping the "seasonal" restriction in place for Zone 5 to avoid disturbing seal, sea lion, and sea otter populations during these times. Therefore, NOAA determined that allowing motorized personal watercraft access to Mavericks during a High Surf Advisory (predicted breaking waves at the shoreline of 15 feet or greater) would benefit surfer safety, while posing a **negligible** additional risk of disturbance to wildlife and habitat in the area due to the low likelihood

of marine wildlife (particularly seals, sea lions, and sea otters) presence in Zone 5 during winter extreme high-surf events.

5.4.3 Impacts on the Human and Socioeconomic Setting (Alternative C)

This section describes the impacts on the socioeconomic setting and human uses of MBNMS from implementing routine field activities, a revised sanctuary management plan, and revised sanctuary-wide regulations. The components of the regulatory changes proposed in Alternative C are described in detail in **Sections 3.2.3, 3.3.3, and 3.4**. An overview of the sanctuary’s human and socioeconomic setting is provided in **Section 4.4**.

5.4.3.1 Beneficial Impacts on the Human and Socioeconomic Setting (Alternative C)

Under Alternative C, some additional beneficial impacts on the socioeconomic resources and human uses of MBNMS would result from proposed revisions to sanctuary regulations. Beneficial impacts from these regulatory changes are described below.

“Beneficial Use of Dredged Material” Definition (New)

Under Alternative C, NOAA would add a definition for the phrase “beneficial use of dredged material” to the MBNMS regulations. Generally, beach nourishment can benefit recreation, public access to beaches, and coastal areas by widening beaches for the purposes of recreation, reducing threats to onshore infrastructure, and mitigating against future coastal erosion and sea level rise that could harm local communities, residents, and businesses. NOAA expects that these **beneficial** impacts would be **negligible** or **less than significant**. However, any future beach nourishment proposal would be subject to sanctuary permit requirements, including a detailed analysis of potential environmental impacts and the scope of those impacts. NOAA would follow the steps outlined in **Section 1.5.4** to determine the level of environmental review and consultation required. Before issuance of a sanctuary permit for use of clean dredged material for beach nourishment, completion of a project-specific environmental review under NEPA would be required, as well as permitting and review by other federal, state, and local agencies. NOAA would conduct a detailed evaluation of the impacts of any proposed project on the socioeconomic setting and human uses of MBNMS – particularly recreation, residential and business uses, and public shoreline access.

Access to Motorized Personal Watercraft Zone at Mavericks Surf Break (Proposed Update)

Under Alternative C, NOAA would amend the sanctuary regulations to change the current High Surf Warning requirement for motorized personal watercraft access to Mavericks (Zone 5) to a less stringent High Surf Advisory requirement. High Surf Advisory conditions are predicted breaking waves at the shoreline of 15 feet or greater. Allowing motorized personal watercraft access to Mavericks during High Surf Advisory

conditions would allow their presence at the surf break three to five more days per year to provide safety assistance to surfers operating in a highly energized surf zone.

From 1993 to 2009, MBNMS regulations prohibited motorized personal watercraft from operating at the Mavericks surf break and elsewhere to protect marine wildlife from high-speed vessel operations. During this time, the MBNMS definition for motorized personal watercraft pertained only to small, 1-2 person capacity motorized personal watercraft. During this same period, surfers began using 3-4 person motorized personal watercraft to tow into waves at Mavericks without restriction, since these larger craft did not, by definition, qualify as motorized personal watercraft. In 2006, NOAA formally proposed a regulatory change to the MBNMS motorized personal watercraft definition that would include 3-4 person motorized personal watercraft. NOAA determined that, since marine wildlife activity in the area decreases to minimal annual levels during winter months, and especially during winter high surf events, allowing motorized personal watercraft access to Mavericks under such conditions would likely pose no additional threat to sanctuary resources. Based on input from a NOAA-hosted working group representing many interested parties (including paddle and tow surfers), NOAA incorporated a High Surf Warning (20 feet or higher) requirement into its regulation for access to Zone 5. These regulations for the revised motorized personal watercraft definition and establishment of a seasonal-conditional zone for Mavericks (Zone 5) took effect in March 2009.

As tow surfers accessed waves previously considered out of reach, paddle surfers developed techniques for paddling into such waves, and some tow surfers began to join them. Consequently, paddle surfers began routinely surfing 20+ foot waves at Mavericks. Unique bathymetric features at Mavericks can amplify waves to 20 feet well before a High Surf Warning is for San Mateo County shorelines – a regulatory prerequisite for motorized personal watercraft operation at the break. Since Mavericks wave heights can easily reach 20 feet, while waves elsewhere in the county are breaking at only 15 feet, some big-wave surfers requested that NOAA allow motorized personal watercraft at Mavericks during winter High Surf Advisory conditions to provide a measure of safety for paddle surfers now operating in more extreme surf conditions. In February 2017, an MBNMS Advisory Council subcommittee recommended lowering the current conditional threshold for motorized personal watercraft access to Mavericks from a High Surf Warning to a High Surf Advisory during winter months. The MBNMS Advisory Council voted unanimously to support the subcommittee recommendation on February 17, 2017. NOAA subsequently determined that allowing motorized personal watercraft access to Mavericks during a High Surf Advisory would benefit surfer safety, while posing no added threat to protected wildlife due to minimal wildlife activity in the area during extreme winter high-surf events.

Allowing motorized personal watercraft access to Mavericks during a High Surf Advisory (predicted breaking waves at the shoreline of 15 feet or greater) would allow motorized personal watercraft presence at the surf break approximately three to five more days per year to provide additional safety assistance to surfers operating in a highly energized surf zone. Implementing the proposed regulatory change would provide a modest expansion of recreational activity at Mavericks without negatively impacting other recreational pursuits in the area. It would improve public safety by allowing private motorized personal watercraft to be immediately present during high surf conditions to render aid to surfers as needed. During extreme wave conditions associated with a High Surf Advisory, small craft are advised not to go to sea, therefore no negative interactions between motorized personal watercraft and marine traffic are likely. By the same token, any visual or audible esthetic concerns would be negated by harsh weather and/or sea conditions that would likely limit public access to the shoreline and mask any sound emissions from motorized personal watercraft. Therefore, the proposed regulatory change would allow a modest increase of motorized personal watercraft presence at Mavericks, resulting in **less than significant, beneficial** effects on the socioeconomic setting and human uses in MBNMS.

Motorized Personal Watercraft Zone Boundary Changes

Under Alternative C, NOAA would modify the boundaries of four year-round motorized personal watercraft zones. The modification would reduce the total number of deployed boundary buoys to from 15 to nine and reduce associated navigational hazards, aesthetic impacts, and mooring failures that create public safety hazards, marine debris, seafloor impacts, and excessive maintenance effort. The four zones are located at Monterey, Santa Cruz, Half Moon Bay, and Moss Landing. See **Section 3.4.3.3** for maps depicting the boundaries of each current zone and the proposed new boundaries. In addition, **Sections 5.4.1.1** and **5.4.2.1** describe the beneficial impacts to habitat and biota of reducing the number of deployed buoys.

Current zone boundary buoys stationed off rocky points have experienced repeated mooring failures due to heavy wave diffraction/reflection, abrasive and mobile rocky substrate impacts on mooring tackle, and lack of soft sediments for secure anchor set. Deeper moorings have repeatedly failed due to suspected interactions with vessels and commercial fishing gear. Failed moorings cause deposition of chain and anchors on the seafloor and pose a hazard to mariners and the public from drifting buoys. Even when buoys hold station, they can present navigation obstacles and affect visual aesthetics. Therefore, reducing the number of boundary buoys from 15 to nine by reconfiguring zones to use less regulatory buoys and more existing marks and features (e.g., U.S. Coast Guard navigational buoys and points of land) would reduce mooring failures, navigational and public hazards, marine debris, and esthetic impacts. In addition, reconfiguring zones to be smaller and closer to shore (within shallower mooring depths) would improve resilience, inspection and maintenance of remaining regulatory buoys

and would aid zone enforcement and zone use surveys. This, in turn, would reduce navigational hazards to boaters, as well as obstructions to the natural seascape viewed by the general public.

The proposed modification would reduce the overall area available for motorized personal watercraft recreation within MBNMS. However, current information indicates that current use of these zones is infrequent and of very low volume (on average, less than 10 trips per-year, per-zone). Therefore, the number of individuals affected by the change would be low, while the number of individuals benefiting (boaters and the general public) from the removal of navigational hazards (zone marker buoys) and the resulting esthetic improvements to the natural seascape would be high. Also, the removal of zone marker buoys at deeper stations would reduce the potential for negative interactions between the moored buoys and commercial fishery operations and other marine traffic.

Specifically, the proposed zone reconfigurations would shorten the length of the motorized personal watercraft access corridors to the Santa Cruz and Monterey zones by 66% and 23% respectively, allowing operators easier and quicker access to both riding areas. In addition, the reconfigured zone boundaries at Santa Cruz would shift the zone closer to shore, improving safety for operators should they need emergency assistance. These specific zone modifications at Santa Cruz have been requested by users in the past. Since the prescribed 100-yard wide transit corridor for accessing the Santa Cruz zone from the small craft harbor would be two-thirds shorter, users would be in the transit corridor for less time, resulting in a shorter period of restricted maneuverability and lower potential for negative interaction with marine traffic approaching or departing the harbor entrance. These same benefits would apply to the shortened transit corridor at Monterey.

Optimizing the use of U.S. Coast Guard navigational aids as zone markers can substantially improve on-water visual (and even audible) identification of zone boundaries. Standard U.S. Coast Guard navigational buoys extend 12 feet above the waterline compared to the 4-foot high standard zone marker buoys deployed by MBNMS. Therefore, the U.S. Coast Guard buoys are much easier to see from the vantage point of a motorized personal watercraft operator, providing greater situational awareness. In addition, U.S. Coast Guard buoys are equipped with lights and/or bells/gongs for enhanced detection during low-visibility conditions. Buoys and moorings would be removed and installed using a small vessel and would involve deployment of recoverable equipment on the seafloor. The general impacts to the socioeconomic setting from the routine field activities that would be necessary to implement this proposed regulatory change are evaluated in **Section 5.2.3.2**.

In sum, this proposed regulatory change would result in beneficial impacts to the human and socioeconomic setting by reducing the number of buoys deployed and the associated risk of navigational hazards and interactions with ongoing human uses in or adjacent to the zones. These **beneficial** impacts would be **less than significant** because of the small footprint of mooring buoys used in MBNMS and the small total number of buoys deployed.

5.4.3.2 Adverse Impacts on the Human and Socioeconomic Setting (Alternative C)

The regulatory changes proposed under Alternative C would not result in adverse impacts to the socioeconomic setting or human uses of MBNMS. These proposed regulatory changes are designed to improve opportunities for safe use of motorized personal watercraft in the sanctuary and allow for restoration of beaches and other coastal areas to provide benefits to coastal residents and businesses.

5.4.4 Impacts on the Historical and Cultural Setting (Alternative C)

This section describes the impacts on the historical and cultural setting within MBNMS from implementing routine field activities, a revised sanctuary management plan, and revised sanctuary-wide regulations. The components of the regulatory changes proposed in Alternative C are described in detail in **Sections 3.2.3, 3.3.3, and 3.4**. An overview of the sanctuary's historical and cultural setting is provided in **Section 4.5**.

5.4.4.1 Beneficial Impacts on the Historical and Cultural Setting (Alternative C)

Under Alternative C, some additional beneficial impacts on the historical and cultural setting would result from proposed revisions to sanctuary regulations. Beneficial impacts from these regulatory changes are described below.

Motorized Personal Watercraft Zone Boundary Changes

Under Alternative C, NOAA proposes to modify the boundaries of four year-round motorized personal watercraft zones. The proposed modifications would reduce the total number of deployed boundary buoys to from 15 to nine and reduce the risk of associated mooring failures that create marine debris, and seafloor impacts that could cause damage to cultural sites and historical shipwrecks on the seafloor. The four zones are located at Monterey, Santa Cruz, Half Moon Bay, and Moss Landing. See **Section 3.4.3.3** for maps depicting the boundaries of each current zone and the proposed new boundaries.

Current zone boundary buoys stationed off rocky points have experienced repeated mooring failures due to heavy wave diffraction/reflection, abrasive and mobile rocky substrate impacts on mooring tackle, and lack of soft sediments for secure anchor set. Deeper moorings have repeatedly failed due to suspected interactions with vessels and commercial fishing gear. Failed moorings cause deposition and dragging of chain and anchors on the seafloor. Reconfiguration of zones would achieve a 40% reduction in the

overall number of deployed zone boundary buoys from a total of 15 to nine. It would eliminate six previous buoy mooring stations entirely; replace four previous mooring stations with four new shallower mooring stations; and leave five previous mooring stations unchanged. This would result in the permanent removal of anchors and chain from the seafloor at 10 sites and installation of anchors and chain at four new sites - a 40% net reduction of ongoing seafloor impacts from zone boundary buoy moorings, thereby reducing potential harm to cultural sites and historical shipwrecks. The four new mooring stations would be in much shallower water than their predecessors and would be deliberately sited in mud or sand substrate, away from known cultural sites and historical shipwrecks.

Buoys and moorings would be removed and installed using a small vessel and would involve deployment of recoverable equipment on the seafloor. The general impacts to the historical and cultural environment from the routine field activities that would be necessary to implement this proposed regulatory change are evaluated in **Section 5.2.4.2**.

In sum, this proposed regulatory change would result in beneficial impacts to the historical and cultural setting by reducing the volume and severity of impacts to the seafloor from mooring buoy deployment and incidental damage from mooring station failures. These **beneficial** impacts would be **less than significant** because of the small footprint of mooring buoys used in MBNMS and the small total number of buoys deployed.

5.4.4.2 Adverse Impacts on the Historical and Cultural Setting (Alternative C)

Under Alternative C, some additional adverse impacts on the historical and cultural setting would result from proposed revisions to sanctuary-wide regulations. Adverse impacts from these regulatory changes are described below.

“Beneficial Use of Dredged Material” Definition (New)

Temporary disturbance of the seafloor could potentially occur during the implementation of any specific beach nourishment project. This seafloor disturbance could create the potential for damage to important cultural and historic sites in those areas during the duration of the sand pumping/placement operation. NOAA expects that these **adverse** impacts would be **negligible** or **less than significant**. However, any future beach nourishment proposal would be subject to sanctuary permit requirements, including a detailed analysis of potential environmental impacts and the scope of those impacts. NOAA would follow the steps outlined in **Section 1.5.4** to determine the level of environmental review and consultation required.

Before issuance of a sanctuary permit for use of clean dredged material for beach nourishment, completion of a project-specific environmental review under NEPA would

be required, as well as permitting and review by other federal, state, and local agencies. NOAA would evaluate the impacts of any proposed project on historical and cultural resources in detail upon submission of specific project proposals. Specifically, if NOAA were to conduct or authorize activities involving systematic, planned physical disturbance of the seafloor, these activities would require a sanctuary permit and would be evaluated in advance for proximity to locations of properties listed on the National Register of Historic Places. MBNMS would not authorize the conduct of activities within the immediate vicinity of documented historical or cultural resources. If an undocumented historical or cultural resource were discovered during authorized activities, sanctuary staff would instruct the project leader to cease operations. MBNMS staff would consult with the ONMS West Coast Regional Maritime Heritage Coordinator, State Historic Preservation Officer, and Tribal Historic Preservation Officer to determine whether project operations could resume and whether additional terms and conditions would be required.

5.5 Impacts on Protected Species and Habitats (Common to All Alternatives)

Managing and operating the sanctuary could impact species and habitats protected under the Endangered Species Act (ESA) and Essential Fish Habitat (EFH) protected under the Magnuson–Stevens Fishery Conservation and Management Act (MSA). NOAA analyzed the potential environmental consequences to protected species and habitats within the regulatory framework of the relevant statute. See **Section 4.3.1** for a description of protected species and habitats most commonly occurring in the action area and designated critical habitat that overlaps with the action area. A complete species list is included in **Appendix D**.

For ESA-listed species, effect determinations include the following:

- **No effect:** When the proposed action will not affect a listed species or designated critical habitat.
- **May affect, but not likely to adversely affect:** When effects on listed species are expected to be discountable, insignificant, or completely beneficial.
 - Beneficial effects: Contemporaneous positive effects without any adverse effects on the species.
 - Insignificant effects: Relate to the size of the impact and should never reach the scale where take occurs.
 - Discountable effects: Those extremely unlikely to occur.
- **May affect, and is likely to adversely affect:** If any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial.

For designated critical habitat, the effect determination must discuss whether the proposed action may result in a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of an ESA-listed species.

5.5.1 Impacts on species Under USFWS Jurisdiction

As described in **Section 4.3.1** and **Appendix D**, NOAA ONMS determined that nine ESA-listed species under USFWS jurisdiction may occur within the action area and could be affected by the proposed action: southern sea otter, green sea turtle, tidewater goby, California red-legged frog, California condor, California least tern, short-tailed albatross, marbled murrelet, and western snowy plover. ONMS analyzed the potential beneficial and adverse impacts to these species due to human disturbance and habitat loss or degradation as a result of the proposed action.

5.5.1.1 Impacts on Birds

ONMS determined that five species of listed bird may occur within the action area and may be affected by the proposed action: California condor, California least tern, short-tailed albatross, marbled murrelet, and western snowy plover. Potential impacts to all of the listed birds include human disturbances and potential adverse impacts to water quality resulting from sanctuary management activities, including routine field activities. Beneficial impacts would be due to sanctuary management activities, including resource protection and stewardship activities aimed at protecting foraging habitats, and making improvements to water quality in MBNMS.

The action area provides potential foraging and nesting habitat for western snowy plover which forage in the receding surf on sand-dwelling crustaceans. The marbled murrelet occasionally feeds along coastal bluffs and in the surf zone at MBNMS and are most likely to be present during summer months. California condor fly over MBNMS in the Big Sur area and may feed on dead marine mammals on coastal beaches. California least tern and short-tailed albatross are rarely observed in the MBNMS action area. They are known to migrate through MBNMS, but nest outside of the action area. The California clapper rail is not expected to occur in the action area. Until the 1980s they were observed in Elkhorn Slough, but are now only known to occur in the salt marshes of San Francisco Bay, outside of the MBNMS action area.

Human Disturbances

Intense human disturbance may disrupt nesting or foraging activities of birds and reduce their ability to maintain adequate weights or provide sufficient care to eggs or chicks. Within MBNMS, human disturbance likely to affect listed birds is limited to vessel traffic and noise from recreational activities, removal of marine debris, or vessel and aircraft traffic to support operations of the sanctuary, such as research, monitoring, resource protection, or educational activities. Noise from these activities could disturb or displace listed birds, or cause minor trampling of habitat or invertebrate and fish species that provide food for bird species. However, this noise would be of short duration and limited to small portions of the shoreline adjacent to MBNMS. ONMS does not expect that implementing the proposed action would result in an increase in vessel operations conducted by NOAA in the sanctuary.

As part of the proposed action, MBNMS would operate aerial drones to map habitats and monitor species distribution and abundance. These activities are generally permitted individually by the MBNMS superintendent, and would be conducted to avoid interactions with listed bird species and to avoid known bird rookeries. The western snowy plover may be subject to slightly more disturbance from normal sanctuary management activities such as debris removal from beaches and other onshore fieldwork, as this shorebird species may be more likely found on coastal beaches and intertidal areas of MBNMS. Noise and other human activity levels during the next five to 10 years are expected to remain similar to current levels. Human activities, including deployment of aerial drones, vessel transit, and onshore fieldwork, that take place in areas where birds are feeding could cause these species to leave or avoid the area causing minor behavioral disturbance. However, this disturbance is not expected to harm or harass listed bird species in the action area. Therefore, because these activities are infrequent and low intensity, ONMS expects the impacts of human disturbance on listed bird species present in MBNMS to be **insignificant**.

Water Quality

As discussed above in **Sections 5.2.1, 5.3.1, and 5.4.1**, NOAA determined that impacts to water quality would be minor and mostly beneficial through management plan activities designed to improve water quality by removing and avoiding deposition of marine debris. During vessel operations, MBNMS minimizes potential water quality degradation through implementation of its environmental compliance procedures, best management practices, and spill prevention control and countermeasures plan. ONMS does not expect that implementing the proposed action would result in an increase in vessel operations conducted by MBNMS in the sanctuary. As a result, adverse effects on water quality in the action area resulting from the proposed action are expected to be highly unlikely. Therefore, impacts to listed birds associated with changes in water quality that might affect their foraging habitat would be **discountable**.

5.5.1.2 Impacts on Marine Mammals and Sea Turtles

ONMS determined that one species of marine mammal (southern sea otters) and one species of reptile (green sea turtle) under USFWS jurisdiction occur within the action area and may be affected by the proposed action. Potential impacts to southern sea otters and sea turtles include disturbance resulting from human activities, entanglement, vessel strike, and potential adverse impacts to water quality resulting from routine field activities. Beneficial impacts would result from sanctuary management activities, including resource protection and stewardship activities, aimed at protecting foraging habitats and improving water quality in MBNMS.

The southern sea otter is a year-round resident of MBNMS. It is a top carnivore in its coastal range and a keystone species of the nearshore coastal zone, often found foraging and resting in kelp forests. Southern sea otters are commonly found in the nearshore waters of Monterey Bay, along the Big Sur coastline and in Elkhorn Slough. Southern sea otter is listed as threatened under the ESA and is also protected under the MMPA. The East Pacific DPS of green sea turtles is listed as threatened under the ESA. They are infrequently observed in the action area, most commonly occurring around San Diego, California and further south to Baja California, and other tropical regions. When they do occur in MBNMS it is during periods of warm water in the offshore pelagic environment or occasionally in nearshore environments. No listed sea turtle species are known to nest on shorelines adjacent to MBNMS.

Human Disturbances

Within MBNMS, human disturbance likely to affect southern sea otter and sea turtles is limited to routine field activities to support management of the sanctuary that may pose a risk of entanglement, vessel strike, or disturbance. These specific activities are: vessel operations, deployment of AUVs or ROVs, scuba and snorkel operations, non-motorized craft, and other resource protection or sampling activities occurring in the water or onshore.

If any listed species were to be in close proximity of vessels transiting the sanctuary, there is the possibility that the interaction could result in a range of reactions ranging from no reaction to a startled reaction, such as a rapid fleeing from the area. This reaction could also occur in response to divers operating in the sanctuary, and deployment of ROVs or other underwater or surface vehicles or instrumentation in close proximity to listed species. When conducting these types of routine field activities, staff are highly trained to implement NOAA policies and ONMS best management practices, and minimize risks to listed species by maintaining a safe distance between themselves and any marine mammals or sea turtles present. In addition, MBNMS activities are expected to be of low intensity and frequency. ONMS does not expect that implementing the proposed action would result in an increase in field activities conducted by MBNMS staff in the sanctuary. Therefore, ONMS determined the chances of disturbance of

southern sea otters or sea turtles resulting from vessel operations or other routine field activities is **discountable**. Additionally, because no species of listed sea turtles are expected to nest or forage on shorelines adjacent to MBNMS, routine onshore fieldwork, including removal of grounded vessels and other marine debris, and onshore water monitoring or sampling are expected to have **no effect** on listed sea turtles.

Vessel anchoring and tethers used by ROVs or other instrumentation can pose an entanglement risk for listed marine mammals and sea turtles. If they occur, entanglements can cause physical damage to an animal through constriction which can partially sever limbs or flippers, create penetrating injuries, and can potentially immobilize an animal (Andersen et al., 2008; Parga, 2012). If an entanglement is severe enough, it may also result in drowning. MBNMS staff follow best management practices for working in the vicinity of marine animals during fieldwork, including maintaining a watch for listed species around the vessel and terminating some operations if animals are spotted. Based on these practices and on the wide range of species distribution and abundance patterns, the chance that an individual from a listed species would come in contact with a vessel or other MBNMS gear is highly unlikely. Therefore, ONMS determined that the likelihood of an entanglement of a listed marine mammal or sea turtle species under USFWS jurisdiction would be **discountable**.

Similarly, operations of vessels by MBNMS could result in injury to an individual if the MBNMS vessel collided with a listed marine mammal or sea turtle. To minimize the risk of these potential adverse impacts, MBNMS vessels follow ONMS standing orders within the sanctuary and while transiting between sites or from/to shore, which include keeping a sharp lookout, staying at the helm, and maintaining a cautious distance from protected species. Due to the implementation of these best management practices, the potential for the proposed action to result in vessel strikes of listed marine mammal and sea turtle species is **discountable**.

Changes to Water Quality

As discussed above in **Sections 5.2.1, 5.3.1, and 5.4.1**, ONMS determined that impacts to water quality would be minor and mostly beneficial through management plan activities designed to improve water quality by removing and avoiding deposition of marine debris. During vessel operations, MBNMS minimizes potential water quality degradation through implementation of its environmental compliance procedures, best management practices, and spill prevention control and countermeasures plan. ONMS does not expect that implementing the proposed action would result in an increase in vessel operations conducted by MBNMS in the sanctuary. As a result, adverse effects on water quality in the action area resulting from the proposed action are expected to be highly unlikely. Therefore, impacts to listed marine mammals or sea turtles associated with changes in water quality that might affect their foraging habitat would be **discountable**.

5.5.1.3 Impacts on Amphibians

ONMS determined that one species of amphibian (California red-legged frog) under USFWS jurisdiction occurs within the action area and could be affected by the proposed action. Potential impacts to California red-legged frog include disturbance resulting from water sampling activities in streams draining to MBNMS during the annual Snapshot Day water sampling event led by MBNMS. This activity is led by highly-trained staff who guide trained volunteers in collecting water samples at a variety of upstream locations in San Mateo, Monterey, Santa Cruz, and San Luis Obispo counties. California red-legged frogs are occasionally observed in these upstream environments. However, the likelihood of occurrence of the threatened California red-legged frog in the action area during the annual Snapshot Day activities in May each year is low. If the species were to be present, sampling activity in the stream or transiting adjacent habitat could cause disturbance or injury to the species. To avoid such impacts, staff and volunteers would take all possible steps to avoid disturbing any California red-legged frogs if they were observed in the area of activity. In addition, the annual event takes place in May, which is outside the critical breeding season for the California red-legged frog (November through April). Therefore, the proposed action is expected to have **discountable** impacts on California red-legged frog.

5.5.1.4 Effects Determination for Species Under USFWS Jurisdiction

NOAA ONMS determined that nine listed species under the jurisdiction of USFWS may occur within the action area and impacts on these species from the implementation of a new MBNMS management plan and proposed regulations would be beneficial, insignificant, or discountable for the following reasons:

1. Noise and disturbances from sanctuary operational activity would be of limited duration, management activities would strive to reduce disturbance, and implementation of best management practices would minimize potential impacts.
2. The revisions to the MBNMS management plan would have a beneficial impact on listed species because they would continue to protect important foraging and breeding grounds within coastal and shoreline habitats and contribute to improvements in water quality.

Based on the above information, ONMS finds that the proposed action **may affect, but is not likely to adversely affect** listed species under USFWS jurisdiction.

5.5.2 Impacts on Critical Habitat Under USFWS Jurisdiction

As described in **Section 4.3.1** and **Appendix D**, NOAA ONMS determined that designated critical habitat for four species under USFWS jurisdiction may occur within the action area that may be affected by the proposed action (marbled murrelet, western snowy plover, California red-legged frog, tidewater goby). ONMS analyzed the potential

beneficial and adverse impacts to these designated critical habitats due to human disturbance and habitat loss or degradation as a result of the proposed action.

Impacts on Designated Critical Habitat for Marbled Murrelet

The likelihood of the marbled murrelet being present in MBNMS is low, and when they do occur it is in small flocks on coastal waters when diving underwater to feed on fish. Essential features of the designated critical habitat for the ESA-threatened marbled murrelet are forested areas containing characteristics of older growth forests (81 FR 51348). This type of habitat occurs along the shorelines adjacent to the sanctuary. MBNMS does not conduct any activities in forests that contain these essential features, therefore ONMS determined that the proposed action would have **no effect** on the essential features of designated critical habitat for marbled murrelet.

Impacts on Designated Critical Habitat for Western Snowy Plover

The ESA-threatened western snowy plover may be found on shorelines within the action area. Designated critical habitat for the western snowy plover is found along the entire coastline adjacent to the sanctuary. Essential features provided by this critical habitat include: sparsely vegetated areas above daily high tides, such as salt pans, artificial salt ponds, and adjoining levees, for nesting and foraging; sandy beach above and below the high tide line for nesting and foraging; and surf-cast debris to attract small invertebrates (77 FR 36727). Nesting occurs from March to September. Onshore fieldwork activities conducted by staff may occur along coastal beaches that provide nesting and foraging habitat for the western snowy plover. However, ONMS expects that marine debris monitoring and collection, response to vessel groundings, and citizen science activities would be short in duration, occur infrequently, and cause only minor impacts to the essential features of critical habitat for the western snowy plover. Therefore, the proposed action **would not adversely modify** western snowy plover designated critical habitat.

Impacts on Designated Critical Habitat for the California Red-Legged Frog

Snapshot Day water sampling occasionally occurs in streams where designated critical habitat for the California red-legged frog is present. The PCEs for designated critical habitat for the California red-legged frog are aquatic breeding habitat, aquatic non-breeding habitat, upland habitat, and dispersal habitat (75 FR 12816). These essential features are present in the MBNMS action area. However, because the activities that would occur in areas of critical habitat for the California red-legged frog are highly infrequent (one day per year, less than four hours in duration), ONMS expects that impacts to critical habitat for the California red-legged frog would be temporary and minor. Therefore, the proposed action **would not adversely modify** California red-legged frog designated critical habitat.

Impacts on Designated Critical Habitat for Tidewater Goby

Designated critical habitat for the endangered tidewater goby overlaps with rivers in the action area where MBNMS conducts annual water sampling as part of Snapshot Day. The PCEs for designated critical habitat for tidewater goby are: persistent, shallow, still-to-slow moving lagoons, estuaries, and coastal streams that contain substrates suitable for the construction of burrows for reproduction, submerged and emerged aquatic vegetation that provides protection from predation and high flow events, or presence of a sandbar across the mouth of a lagoon or estuary during the late spring, summer, and fall providing relatively stable water levels and salinity (78 FR 8745). These essential features are present in the portions of the action area where Snapshot Day activities are conducted, however, ONMS does not expect that these activities would have any effect on these essential features. Any sampling conducted by volunteers would be limited in duration and would not impact water quality or quantity or substrate. Furthermore, because the activities that would occur in areas of critical habitat for the tidewater goby are highly infrequent (one day per year, less than four hours in duration), ONMS expects that that impacts to critical habitat for these species would be temporary and minor. Therefore, the proposed action **would not adversely modify** tidewater goby designated critical habitat.

5.5.3 Impacts on Species Under NMFS Jurisdiction

As described in **Section 4.3.1** and **Appendix D**, ONMS determined that the following 22 ESA-listed or candidate species under NMFS jurisdiction may occur within the action area and may be affected by the proposed action: black abalone, Sacramento River Winter-Run Chinook salmon, Central Valley Spring-Run Chinook salmon, California Coastal Chinook salmon, Central California Coast coho salmon, Central California Coast steelhead, South Central California Coast steelhead, North American green sturgeon Southern DPS, longfin smelt, eulachon, leatherback sea turtle, green sea turtle, loggerhead sea turtle, olive ridley sea turtle, Guadalupe fur seal, blue whale, humpback whale, fin whale, sperm whale, killer whale, North Pacific right whale, and sei whale. ONMS analyzed the potential beneficial and adverse impacts to these species due to human disturbance, habitat loss, or degradation associated with the proposed action.

5.5.3.1 Impacts on Marine Mammals and Sea Turtles

ONMS determined that four species of ESA-listed sea turtles and eight species of ESA-listed marine mammals may occur within the action area and may be affected by the proposed action: leatherback sea turtle, green sea turtle, loggerhead sea turtle, olive ridley sea turtle, Guadalupe fur seal, blue whale, humpback whale, fin whale, sperm whale, killer whale, North Pacific right whale, and sei whale. Potential impacts to marine mammals and sea turtles include disturbance resulting from human activities, entanglement, vessel strike, and potential adverse impacts to water quality resulting from routine field activities. Beneficial impacts would result from sanctuary management plan activities, including resource protection and stewardship activities,

aimed at protecting foraging habitats, minimizing wildlife disturbance, and improving water quality in MBNMS.

The East Pacific DPS of green sea turtle is listed as threatened under the ESA. They are infrequently observed in the action area, most commonly occurring around San Diego, California and further south to Baja California, and other tropical regions. When they do occur in MBNMS, it is during periods of warm water in the offshore pelagic environment or occasionally in nearshore environments. Leatherback and loggerhead sea turtles are listed as endangered under the ESA and are occasionally found in the action area. They are most often associated with the offshore pelagic environment in tropical regions, but can occasionally be found quite close to shore in California. Leatherback sea turtle is most common in MBNMS between July and October, when surface waters are warmer and large jellyfish are abundant offshore. Olive ridley sea turtle is not expected to be found in the action area. They are a highly migratory species and their range in the eastern Pacific Ocean extends from southern California to northern Chile.

Humpback whale is common in MBNMS, occurring in the action area from late April to early December to feed in coastal California waters. The central California humpback whale stock primarily includes whales from the endangered Central American DPS and the threatened Mexico DPS. The ESA-threatened Guadalupe fur seal is not known to regularly haul out or breed in MBNMS, but it is occasionally observed foraging and swimming in the waters of Monterey Bay. They breed along the eastern coast of Guadalupe Island, approximately 200km west of Baja California. The ESA-endangered North Pacific right whale and sei whale have been observed very rarely in the action area. Sei whale is typically sighted in offshore waters, generally in deep water habitats along the edge of the continental shelf or in the open ocean, seaward of the western boundary of MBNMS. North Pacific right whale is seasonally migratory and not known to breed or calve in the action area. The ESA-endangered sperm whale rarely occurs in the action area, spending most of its time in deeper offshore waters. The ESA-endangered blue whale, fin whale, and killer whale have a moderate likelihood of occurrence in the action area. Blue whale occurs in the action area between June and October, typically near the edges of the submarine canyon and shelf-break edges where high abundance of krill are found. Fin whale is occasionally encountered during the summer and fall in Monterey Bay, but are typically observed farther offshore in deep waters during their migration from Arctic and Antarctic feeding areas in the summer to tropical breeding and calving areas in the winter. Killer whale is most common in MBNMS during April to June when they feed on northbound migrating gray whale. They are generally a transient species observed throughout coastal California. The Southern Resident DPS occurs mainly in Washington state and southern British Columbia, but occasionally also in coastal waters from Southeast Alaska to California.

Human Disturbances

Within MBNMS, human disturbance likely to affect listed marine mammals and sea turtles is limited to field activities to support management of the sanctuary that may pose a risk of entanglement, vessel strike, or disturbance. These specific activities are: vessel operations, aircraft operations, deployment of AUVs or ROVs, scuba and snorkel operations, non-motorized craft, and other resource protection or sampling activities occurring in MBNMS.

If any listed marine mammals or sea turtles were to occur in close proximity to vessels transiting the sanctuary, there is the possibility that the interaction could result in a range of reactions ranging from no reaction to a startled reaction, which could result in a rapid fleeing from the area. This reaction could also occur in response to divers operating in the sanctuary and deployment of ROVs, or other underwater or surface vehicles or instrumentation (e.g., buoys and hydrophones), in close proximity to listed species. When conducting these types of routine field activities, staff are highly trained to implement NOAA policies and ONMS best management practices and standing orders, and minimize risks of disturbance by maintaining a safe distance between themselves and any marine mammals or sea turtles present. In addition, MBNMS field activities are expected to be of low intensity and frequency. ONMS does not expect that implementing the proposed action would result in an increase in field activities conducted by MBNMS. Therefore, ONMS determined the chances of disturbance of marine mammals or sea turtles resulting from vessel operations or other routine field activities is **discountable**.

Vessel anchoring and tethers used by ROVs or other instrumentation can pose an entanglement risk for listed marine mammals and sea turtles. If they occur, entanglements can create physical damage to an animal through constriction which can partially sever limbs or flippers, create penetrating injuries, and can potentially immobilize an animal (Andersen et al., 2008; Parga, 2012). If an entanglement is severe enough, it may also result in drowning. Based on the wide range of species distribution and abundance patterns, adherence to best management practices by staff during fieldwork, including maintaining a watch for listed species around the vessel and termination of some operations if animals are spotted, the chance that an individual from a listed species would come in contact with a vessel or other MBNMS gear would be highly unlikely. Therefore, NOAA determined that the likelihood of an entanglement of a listed marine mammal or sea turtle species under NMFS jurisdiction would be **discountable**.

Similarly, operations of vessels by MBNMS could result in injury to an individual if the vessel collided with a listed marine mammal or sea turtle. Vessel captains operate with sensitivity to avoid disturbance or injury to marine life. Vessel captains are trained to watch for marine mammals and sea turtles and take appropriate steps to avoid disturbance or collision. Best management practices, including maintaining lookouts for

protected species, interacting with other vessel operators, receiving real time survey information on the locations and concentration of marine mammals in particular, reducing speeds, and maintaining safe distances would be exercised. Due to the implementation of these best management practices, the potential for the vessel operations to impact listed marine mammal and sea turtle species is **discountable**.

Occasionally, vessels are deployed to respond to and rescue whales entangled in fishing gear or buoy lines. This requires a rib to be launched and brought proximate to the entangled animal in order to cut and release the lines. This activity is allowed under NMFS Marine Mammal Stranding Network permits for highly trained personnel to approach and disentangle whales, including humpback, blue, fin, and gray whales. In addition, activities conducted by MBNMS that would involve the use of acoustic equipment or aircraft operations would be permitted individually by the MBNMS superintendent and evaluated at that time for potential impacts to listed marine mammals and other protected species.

Additionally, MBNMS proposes to implement regulatory changes that would reconfigure zones for motorized personal watercraft operations as well as management plan activities to minimize wildlife disturbance that would have **beneficial** effects on listed marine mammals and sea turtles.

Changes to Water Quality

As discussed above in **Sections 5.2.1, 5.3.1, and 5.4.1**, NOAA determined that impacts to water quality from the proposed action would be minor and mostly **beneficial** through management plan activities designed to improve water quality by removing and avoiding deposition of marine debris. During vessel operations, MBNMS minimizes potential water quality degradation by implementing environmental compliance procedures, best management practices, and spill prevention control and countermeasures plan. ONMS does not expect that implementing the proposed action would result in an increase in vessel operations. As a result, adverse effects on water quality in the action area resulting from the proposed action are expected to be highly unlikely. Therefore, impacts to listed marine mammals or sea turtles associated with changes in water quality that might affect their foraging habitat would be **discountable**.

5.5.3.2 Impacts on Fish

ONMS determined the following ESA-listed or candidate fish species, DPS, or ESU under NMFS jurisdiction may occur within the action area and could be affected by the proposed action: Sacramento River Winter-Run Chinook salmon, Central Valley Spring-Run Chinook salmon, California Coastal Chinook salmon, Central California Coast coho salmon, Central California Coast steelhead, South Central California Coast steelhead, North American green sturgeon Southern DPS, longfin smelt, and eulachon. Potential impacts to listed fish include disturbance resulting from human activities and potential

adverse impacts to water quality resulting from routine field activities. Beneficial impacts would be due to sanctuary management plan and regulatory actions, including resource protection and stewardship actions to protect foraging habitats, minimize wildlife disturbance, and improve water quality in MBNMS.

Three ESUs of Chinook salmon occasionally transit through and forage in the waters of Monterey Bay during migration periods to the Sacramento River. These are the endangered Sacramento River Winter-Run ESU, the threatened Central Valley Spring-Run ESU, and the threatened California Coastal ESU. Chinook salmon typically enter the Sacramento River from November to June and inhabit nearshore coastal waters to central California throughout the year.

One ESU of coho salmon may occur in the waters adjacent to the action area during annual migration. The endangered Central California Coast ESU rears and feeds in streams and small freshwater tributaries, before spending the remainder of their life cycle foraging in estuarine and marine waters off California. Runs were common in the Pajaro and Salinas rivers, but have not been observed since in 1990s. Two small runs exist in the Carmel and Big Sur rivers.

Two ESUs of steelhead occasionally use the waters of MBNMS and nearby streams or estuarine environments. These are the threatened Central California Coast ESU and the threatened South Central California Coast ESU. The South Central California Coast ESU occupies rivers from the Pajaro River in Santa Cruz County up to, but not including, the Santa Maria River in Santa Barbara County.

The likelihood of occurrence of the threatened Southern DPS of green sturgeon in the action area is moderate. The Southern DPS typically occupies coastal bays and estuaries from Monterey Bay, California to Puget Sound in Washington and occasionally enter coastal estuaries to forage. Subadult and adult green sturgeon use Monterey Bay as a feeding ground.

The likelihood of occurrence of ESA-threatened eulachon and ESA-candidate longfin smelt in the action area is low. Monterey Bay is the southernmost limit of the species distribution for eulachon, which tend to spawn and rear in estuarine river habitat, and then migrate to saltwater where they spend three years. Longfin smelt is an anadromous estuarine species occupying the middle or bottom of the water column. The San Francisco Bay-Delta DPS of longfin smelt is an ESA candidate species. This DPS is considered to be the southernmost population for the species, and they are very rarely observed in the action area.

Impacts of Annual Upstream Water Sampling Activities

MBNMS staff and volunteers conduct water sampling activities in streams draining to MBNMS during the annual Snapshot Day water sampling event. This activity is led by highly-trained staff who guide trained volunteers in collecting water samples at a variety of upstream locations in San Mateo, Monterey, Santa Cruz, and San Luis Obispo counties. Listed fish species are occasionally observed in these upstream environments. However, the likelihood of their occurrence in the action area during the annual Snapshot Day activities in May each year is low. If the species were to be present, sampling activity in streams could cause disturbance or injury to the species and minor disturbance of stream habitat. To avoid such impacts, staff and volunteers would take all possible steps to avoid disturbing listed species observed in the area of activity. Therefore, the proposed action is expected to have **discountable** impacts on listed fish species.

Human Disturbance

If any listed fish species were to occur in proximity to vessels transiting the sanctuary or humans conducting sampling or monitoring in the action area, there is the possibility that the interaction could result in a range of reactions ranging from no reaction to a startled reaction, such as a rapid fleeing from the area. This reaction could also occur in response to divers operating in the sanctuary and deployment of ROVs, or other underwater or surface vehicles or instrumentation (e.g., buoys and hydrophones), in close proximity to listed species. When conducting these types of routine field activities, staff are highly trained to implement NOAA policies and ONMS best management practices and standing orders, and minimize risks to listed species. Field activities are expected to be of low intensity and frequency. ONMS does not expect that implementing the proposed action would result in an increase in field activities conducted in the sanctuary. In addition, due to their movements and size, the risk of collision and entanglement for fish is much smaller than it is for marine mammals or sea turtles. Therefore, ONMS determined the impacts of human disturbance on listed fish resulting from vessel operations or other routine field activities would be **discountable**.

Changes to Water Quality

As discussed above in **Sections 5.2.1, 5.3.1, and 5.4.1**, NOAA determined that impacts to water quality from the proposed action would be minor and mostly **beneficial** through updated regulations and management plan activities designed to improve water quality by removing and avoiding deposition of marine debris. During vessel operations, ONMS minimizes potential water quality degradation through implementation of environmental compliance procedures, best management practices, and spill prevention control and countermeasures plan. ONMS does not expect that implementing the proposed action would result in an increase in vessel operations. As a result, adverse effects on water quality in the action area resulting from the proposed

action are expected to be highly unlikely. Therefore, impacts to listed fish associated with changes in water quality that might affect their foraging habitat would be **discountable**.

5.5.3.3 Impacts on Marine Invertebrates

ONMS determined that one species of marine invertebrate (black abalone) under NMFS jurisdiction occurs within the action area and may be affected by the proposed action. Potential impacts to black abalone from the proposed action include onshore fieldwork or other routine field activities that might disturb rocky substrate or have adverse impacts on water quality. Additionally, management plan activities to restore black abalone habitat may have beneficial effects on the endangered species.

Black abalone could be present on hard substrate areas of the nearshore or intertidal environments in the action area. Bedrock along exposed rocky shores provide deep, protective crevices for shelter for black abalone. Black abalone may be minimally affected by sanctuary management activities, such as onshore field activities in the intertidal zone to respond to vessel groundings, conduct research and monitoring, and citizen science activities, as well as other activities that may temporarily disturb rocky substrate in the coastal environment or affect water quality. Grounded vessel removal may also have a temporary adverse impact on a small area of black abalone because there is the potential for chemical seepage and habitat disturbance during the removal and, if needed, remediation processes, and there could be a slight, temporary localized increase in turbidity. NOAA staff are highly trained to implement BMPs and avoid protected species and sensitive habitat during emergency response and salvage operations. Installation of zone marker buoys proposed as part of the proposed action would occur offshore and therefore outside of black abalone habitat. Additionally, any deployment of equipment on the seafloor may cause localized and temporary increase in water turbidity during the installation process.

During vessel operations, ONMS minimizes potential water quality degradation through implementation of environmental compliance procedures, best management practices, and spill prevention control and countermeasures plan. ONMS does not expect that implementing the proposed action would result in an increase in vessel operations conducted in the sanctuary. As a result, adverse effects on water quality resulting from the proposed action are expected to be highly unlikely. Additionally, the impacts on black abalone from field activities in the intertidal zone along coastal beaches of MBNMS are expected to be **discountable** because of the infrequent occurrence of these activities and the implementation of best management practices.

5.5.3.4 Effects Determination for Species Under NMFS Jurisdiction

NOAA ONMS determined that 22 federally listed species under the jurisdiction of NMFS may occur within the action area and that any impacts on these species from the

implementation of a new MBNMS management plan and proposed regulations would be beneficial, insignificant, or discountable for the following reasons:

1. Noise and disturbances from sanctuary operational activity would be of limited duration, management activities would strive to reduce disturbance, and implementation of best management practices would minimize potential impacts.
2. The revisions to the MBNMS management plan and MBNMS regulations would have a beneficial impact on listed species because they would continue to protect important foraging and breeding grounds within coastal and shoreline habitats and contribute to improvements in water quality.

Based on the above information, ONMS finds that the proposed action **may affect, but is not likely to adversely affect** listed species under NMFS jurisdiction.

Based on this analysis of impacts to ESA-listed species, NOAA ONMS determined the proposed action would not cause the take of any marine mammal protected under the MMPA. Should ONMS conduct, permit, or authorize any future activities that would cause the take of any marine mammal protected under the MMPA, NOAA ONMS would evaluate the environmental impacts from such activities on a case-by-case basis.

5.5.4 Impacts on Critical Habitat Under NMFS Jurisdiction

As described in **Section 4.3.1** and **Appendix D**, ONMS determined that designated critical habitat for four species under NMFS jurisdiction may occur within the action area and may be affected by the proposed action (green sturgeon Southern DPS, three DPS of salmon and steelhead, black abalone, leatherback sea turtle). In addition, proposed revisions to designated critical habitat for two species (southern resident killer whale and humpback whale) occur within the action area and could be affected by the proposed action. ONMS analyzed the potential beneficial and adverse impacts to these designated critical habitats due to human disturbance and habitat loss or degradation associated with the proposed action.

Impacts on Designated Critical Habitat for Leatherback Sea Turtle

ESA-endangered leatherback turtle is occasionally observed in the MBNMS action area, most commonly between July and October when large jellyfish, the primary prey of the species, are seasonally abundant offshore. Designated critical habitat for the leatherback sea turtle is found along the entire coastline adjacent to MBNMS, extending from Point Arena in the north to Point Arguello in the south. The one PCE essential for the conservation of leatherback in marine waters off the U.S. West Coast is the occurrence of prey species, primarily jellyfish of the order Semaestomeae, of sufficient condition, distribution, diversity, abundance, and density necessary to support individual as well as population growth, reproduction, and development of leatherback (77 FR 4169). This essential feature is present in the action area. However, the activities that MBNMS proposes to conduct (routine field activities and revisions to management plan activities

and regulations) would not result in any change in the condition, distribution, diversity, abundance, or density of jellyfish occurring in the action area as prey for leatherbacks. Therefore, the proposed action would have **no effect** on designated critical habitat for leatherback sea turtles.

Impacts on Designated Critical Habitat for Salmon and Steelhead

Designated critical habitat for the endangered California Coastal ESU of coho salmon and threatened Central California Coast and South Central California Coast DPS of steelhead overlaps with rivers in the action area where MBNMS conducts annual water sampling as part of Snapshot Day. Essential habitat types for the ESUs of salmon and steelhead can be generally described to include the following: (1) juvenile rearing areas; (2) juvenile migration corridors; (3) areas for growth and development to adulthood; (4) adult migration corridors; and (5) spawning areas. Within these areas, essential features of critical habitat include adequate: (1) substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food, (8) riparian vegetation, (9) space, and (10) safe passage conditions (65 FR 7764).

These essential features are present in the portions of the action area where Snapshot Day activities are conducted, however, ONMS does not expect that these activities would have any effect on these essential features. Any sampling conducted by MBNMS volunteers would be limited in duration and would not impact water quality or quantity or substrate. Furthermore, because the activities that would occur in areas of critical habitat for the California Coastal ESU of coho salmon, Central California Coast DPS of steelhead and South Central California Coast DPS of steelhead are highly infrequent (one day per year, less than four hours in duration), ONMS expects that that impacts to critical habitat for these species would be temporary and minor. Therefore, the proposed action **would not adversely modify** designated critical habitat for these three DPS of salmon and steelhead.

Impacts on Designated Critical Habitat for Green Sturgeon Southern DPS

Designated critical habitat for the Southern DPS of North American green sturgeon overlaps with the action area, encompassing all marine waters within 60 fathoms depth from Monterey Bay, California. The PCEs essential for the conservation of the Southern DPS in coastal marine areas include: a migratory pathway for the safe and timely passage of fish within marine and between estuarine and marine habitats; coastal marine waters with adequate dissolved oxygen levels and acceptably low levels of contaminants; and abundant prey items for subadults and adults, which may include benthic invertebrates and fish (74 FR 52299). These essential features are present in the MBNMS action area. However, the activities that MBNMS proposes to conduct (routine field activities and revisions to management plan activities and regulations) would not result in any change in these essential features. Therefore, the proposed action would have **no effect** on designated critical habitat for the Southern DPS of North American green sturgeon.

Impacts on Designated Critical Habitat for Black Abalone

Designated critical habitat for black abalone along the California coast includes approximately 360 square km of rocky intertidal and subtidal habitat within five segments of the California coast between the Del Mar Landing Ecological Reserve to the Palos Verdes Peninsula, as well as on the Farallon Islands, Año Nuevo Island, San Miguel Island, Santa Rosa Island, Santa Cruz Island, Anacapa Island, Santa Barbara Island, and Santa Catalina Island. This designation includes rocky intertidal and subtidal habitats from the mean higher high water (MHHW) line to a depth of –6 meters (m) (relative to the mean lower low water (MLLW) line), as well as the coastal marine waters encompassed by these areas (76 FR 66805). This critical habitat encompasses the coastline of MBNMS except for Monterey Bay. The PCEs essential for the conservation of black abalone are: suitable rocky substrate occurring from MHHW to a depth of -6m relative to MLLW; abundant food resources, including bacterial and diatom films, crustose coralline algae, and a source of detrital macroalgae, for growth and survival of all stages of black abalone; juvenile settlement habitat in rocky intertidal and subtidal habitat containing crustose coralline algae and crevices or cryptic biogenic structures (e.g., urchins, mussels, chiton holes, conspecifics, and anemones); suitable water quality; and suitable nearshore circulation patterns. These essential features are present in the action area.

These PCEs may be minimally affected by some sanctuary management activities, such as onshore field activities in the intertidal zone to respond to vessel groundings, conduct research and monitoring, and citizen science activities, as well as other activities that may temporarily disturb rocky substrate in the coastal environment or adversely affect water quality. Grounded vessel removal may have a temporary adverse impact on water quality because there is the potential for chemical seepage and habitat disturbance during the removal and, if needed, remediation processes, and there could be a slight, temporary localized increase in turbidity. NOAA staff are highly trained to implement best management practices and avoid protected species and sensitive habitat during emergency response and salvage operations.

ONMS expects that management activities, including marine debris monitoring and collection, response to vessel groundings, and citizen science activities in the intertidal zone contributing to seafloor disturbance or changes in water quality would be short in duration, occurring infrequently, and cause only minor impacts to the essential features of rocky substrate and water quality for the black abalone. Therefore, the proposed action **would not adversely modify** designated critical habitat for black abalone.

Impacts on Proposed Revised Designated Critical Habitat for the Humpback Whale

Both the Central America and Mexico DPSs feed off the West Coast of the United States from California to Alaska. Proposed critical habitat for these DPSs of highly-migratory

species include the waters of MBNMS (84 FR 54354). NMFS identified prey essential habitat features for these DPSs including migratory corridors and ambient soundscape conditions that do not hinder access to prey. Prey availability is specifically defined as primarily euphausiids and small pelagic schooling fishes of sufficient quality, abundance, and accessibility within humpback whale feeding areas to support feeding and population growth. In addition, NMFS identified ocean noise, climate change, direct harvest of the prey by fisheries, and marine pollution as having the potential to negatively impact the essential prey feature and the ability of feeding areas to support the conservation of listed humpback whales in the North Pacific. These essential features are present in the action area. However, the activities that MBNMS proposes to conduct (routine field activities and revisions to management plan activities and regulations) are low in intensity and frequency and would not result in any change in these essential features. Therefore, the proposed action would have **no effect** on proposed designated critical habitat for the humpback whale.

Impacts on Proposed Revisions to Designated Critical Habitat for the Southern Resident Killer Whale

NMFS proposes to revise the critical habitat designation for the southern resident killer whale (*Orcinus orca*) DPS by expanding it to include six new areas along the U.S. West Coast, while maintaining the whales' currently designated critical habitat in inland waters of Washington (84 FR 42914). Specific new areas proposed along the U.S. West Coast include roughly 15,626 square miles of marine waters between the 6.1-meter depth contour and the 200-meter depth contour from the U.S. international border with Canada south to Point Sur, California. NMFS identified essential habitat features as: (1) water quality to support growth and development; (2) prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth; and (3) passage conditions to allow for migration, resting, and foraging. These essential features are present in the action area. However, the activities that MBNMS proposes to conduct (routine field activities and revisions to management plan activities and regulations) are low in intensity and frequency and would not result in any change in these essential features. Therefore, the proposed action would have **no effect** on proposed designated critical habitat for the southern resident killer whale.

5.5.5 Impacts on Essential Fish Habitat Present in MBNMS

EFH for various life stages of fish species managed under the Pacific Coast Salmon, Pacific Coast Groundfish, Coastal Pelagic Species, and Highly Migratory Species Fishery management plans is located throughout the West Coast, and may be affected by ONMS field activities in MBNMS. More details on list of EFH present in MBNMS is in **Section 4.3.2**. An adverse effect on EFH is any direct or indirect effect that reduces the quality and/or quantity of habitat. As part of the ONMS Programmatic EA for Field Operations, ONMS prepared an EFH Assessment that analyzed the impacts of routine operational

activities on EFH in the West Coast national marine sanctuaries. As part of its coordination and consultation with NMFS for the Programmatic EA for Field Operations, ONMS determined that two categories of field operations may adversely affect designated EFH (response to vessel groundings and deployment of equipment on the seafloor). ONMS requested NMFS General Concurrence that these adverse impacts to EFH would be minor because of the relatively small number of days at sea, equipment deployments conducted annually, and the best management practices and training protocols in place for staff and contractors.

By letter dated July 26, 2016, NMFS concurred with ONMS's determination that field operations would have minimal adverse impacts on designated EFH and provided General Concurrence for all field operations, except for removal or relocation of grounded vessels and removal of large marine debris. NMFS agreed that deployment of equipment on the seafloor would meet the criteria for general concurrence under 50 CFR § 600.920(g)(2) provided that the minimization measure of limiting deployment to sandy substrate were followed for all deployments. NMFS stated that the activity of removal or relocation of grounded vessels and removal of large marine debris do not meet the criteria stated in 50 CFR § 600.920(g)(2) and should be consulted on individually as necessary.

This section provides an analysis of the potential impacts of removal of grounded vessels that could occur as part of the proposed action. No other proposed changes to the management plan or regulatory updates would result in activities that would adversely impact EFH. Grounded vessel removal may have a temporary adverse impact on a small area of EFH because there is the potential for chemical seepage and habitat disturbance during the removal and, if needed, remediation processes. Derelict or deserted vessels can release toxic paint, chemicals, and petroleum products among other contaminants from the vessel and matter left aboard the vessel. If disturbed or deteriorating, they can disturb the surrounding benthic habitats, potentially creating plumes of sediment. During vessel removal activities, disturbance to habitat would be minimized, through use of mechanical operations (e.g., boom and skimmer system) so that plumes would be contained and limited in size and dissipate quickly, therefore not resulting in adverse impacts to EFH. If species associated with EFH were intolerant to the temporary decline in water quality, mobile organisms such as fish could swim to nearby waters that would not be affected by a localized decline in water quality. Any areas with temporarily diminished water quality would likely recover quickly so that nearby habitat and any associated EFH species would not be affected. NOAA would work with the towing and salvage industry to develop a suite of guidelines and best management practices, incorporating relevant U.S. Coast Guard regulations and best management practices (e.g., emergency lightering or subsurface product removal using mechanical operations) and apply the current sanctuary general permit to certain towing and salvage operations.

Therefore, the proposed action would result in minimal adverse effects on designated EFH based on: the temporary increase in turbidity that could occur during removal activities, best management practices developed for certain towing and salvage operations, and the limited number of removal activities occurring annually.

5.6 Cumulative Effects Analysis

The CEQ regulations for implementing the provisions of NEPA define cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 C.F.R. § 1508.7). The regulations further define cumulative impacts as those that can result from individually minor but collectively significant actions that take place over a period of time. The CEQ 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, lists projects that may have cumulative effects when combined with the impacts from the proposed action or alternatives discussed in this draft EA, and describes the potential cumulative impacts of the proposed action.

5.6.1 Cumulative Impact Assessment Methods

CEQ’s cumulative effects guidance sets out several different methods for assessment such as checklists, modeling, forecasting, and economic impact assessment, where changes in employment, income, and population are evaluated (CEQ, 1997). In general, past, present, and future foreseeable projects are assessed by topic area. Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects. Interactive effects may be countervailing, where the adverse cumulative effect is less than the sum of the individual effects, or synergistic, where the net adverse effect is greater than the sum of the individual effects (CEQ, 1997). For the purposes of this analysis, NOAA considered cumulative effects to be significant if they exceed the capacity of a resource (physical, biological, socioeconomic, historic, and/or cultural) to sustain itself and remain productive. The geographic scope and time frame for the cumulative effects analysis are the same as for the management plan review; the existing boundaries of MBNMS and a five to 10 year time frame for implementation. In conducting this analysis, NOAA used the findings from the 2015 update to the MBNMS Condition Report as a baseline (NOAA ONMS, 2015).

The projects in Table 6 are currently occurring or are anticipated to occur in the reasonably foreseeable future within the study area. NOAA 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 Chapter 4.

5.6.2 Past, Present, and Reasonably Foreseeable Future Projects

Table 6. Other Federal and Non-Federal Projects with Potential to Contribute to Cumulative Impacts

Project	Project Location	Project Sponsor	Project Description	Completion Date
General NPDES Permits for Discharges with Low Threat to Water Quality	Throughout MBNMS	Regional Water Quality Control Boards	Multiple permits for 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, flow-through seawater systems (such as aquariums and aquaculture operations), and wastewater treatment facilities.	Ongoing
Advanced Cabled Observatory in the Monterey Bay Canyon	Monterey Bay	Monterey Bay Aquarium Research Institute	Installation of a 31.7-mile long 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.	Ongoing; through 2030 (MBNMS-2002-039 & MBNMS-2002-039-A1)
Monterey Bay Aquarium Pipeline Support Retrofit Project	Monterey Bay	Monterey Bay Aquarium	The project objective is to retrofit and maintain the aquarium's intake pipelines and their support structures in order to provide a more stable, permanent support, and to minimize maintenance and the overall footprint on the seafloor. The project would involve revisions to the structural system supporting the intake pipelines by two methods: 1) retrofit of existing concrete blocks, and 2) removal of concrete blocks and replacement with socketed pipes and cross-beams.	Ongoing (pending issuance of MBNMS permit for this project)

Project	Project Location	Project Sponsor	Project Description	Completion Date
Desalination Facilities	Marina and Moss Landing	California American Water Company; Deep Water Desal LLC	Two active project permit applications are ongoing with extensive work required prior to project initiation.	Ongoing
Seawall and Shore Armoring Projects	Shorelines adjacent to MBNMS	Individuals or Municipalities	Coastal armoring projects may include simple installation or riprap, construction of cribwalls, or large-scale construction to protect erosion-prone areas of the coastline. Permitting agencies are the counties with jurisdiction for the shorelines and the California Coastal Commission.	Various
Implementation of County General Plans and Local Coastal Plans	Monterey County, San Mateo County, Marin County, San Francisco County	Monterey County, San Mateo County, Marin County, San Francisco County	Counties adjacent or near to MBNMS are in various stages of implementing or updating general plans and local coastal programs. These can include elements on land use, recreation, and infrastructure that are relevant to the sanctuary.	Ongoing
Implementation of Management Activities at Greater Farallones and Cordell Bank National Marine Sanctuaries	Waters adjacent and near to MBNMS	NOAA	NOAA implements regulations and management plan activities at Cordell Bank and Greater Farallones national marine sanctuaries to protect the natural resources in these areas. Management activities generally include conducting research, enforcing regulations, and monitoring sanctuary resources.	Ongoing

Project	Project Location	Project Sponsor	Project Description	Completion Date
Various Harbor Dredge and Disposal Activities	Moss Landing Harbor, Moss Landing Beach, Santa Cruz Harbor, Twin Lakes State Beach, Monterey Harbor	Local cities, municipalities, and harbor districts adjacent to the sanctuary	There are various ongoing dredge disposal activities at designated sites in MBNMS. Specifics of ongoing activities are described in detail in Section 4.1.2.3 and Table 4. Santa Cruz, Monterey, and Moss Landing harbors conduct regular dredging of the bottom of their harbors and dispose of the bulk of their dredge sediments within MBNMS at four designated dredge disposal sites: SF-12 and SF-14 (offshore sites) and Twin Lakes State Beach and Monterey Harbor (onshore sites).	Ongoing
Beach Renourishment Projects	Various locations on beaches adjacent to MBNMS	Individuals, local cities, municipalities, and harbor districts adjacent to the sanctuary	Some dredged sediment is used for beach nourishment along shorelines adjacent to MBNMS. Nourishment projects have been implemented and are proposed in a number of coastal towns, mainly for the purposes of beach restoration, enhancement, and/or maintenance. Beach replenishment projects currently occur at Del Monte Beach in Monterey, Salinas River, and Moss Landing State beaches at Moss Landing, and Twin Lakes State Beach in Santa Cruz. Summaries of these activities are found in Section 4.1.2.3 and Table 4. Placement of clean dredged material on these beaches has helped stabilize beach profiles at these sites.	Ongoing

Project	Project Location	Project Sponsor	Project Description	Completion Date
Placement and Maintenance of Moorings	Monterey Harbor and additional harbors in or adjacent to the sanctuary	Harbor Masters or Yacht Clubs	Local harbors or yacht clubs adjacent to the sanctuary deploy and maintain moorings for boat operators that may result in minimal disturbance of the seafloor within the sanctuary.	Ongoing
Research Activities of Local and Regional Research Institutes and Organizations	Throughout MBNMS and along shorelines adjacent to the sanctuary	Various, including: NOAA Southwest Fisheries Science Center; National Weather Service; Monterey Bay Aquarium Research Institute; U.S. Geological Survey; University of California, Santa Cruz; Scripps Institution of Oceanography; Naval Postgraduate School; California Department of Fish and Wildlife; Moss Landing Marine Laboratories; Elkhorn Slough National Estuarine Research Reserve	Research and monitoring activities would generally include the following types of projects occurring throughout the sanctuary: vessel operations; deployment of research equipment (ROVs, AUVs, UAS, hydrophones, gliders, subsurface moorings, and weather buoys); active acoustic equipment; collection of seafloor substrate and other specimens; bottom trawl surveys by NMFS fisheries science centers; aerial photographic surveys; and marine debris removal. These types of activities are generally permitted under the sanctuary's permit authorities with specific terms and conditions applied to minimize any impact on animal and plant life and other sanctuary resources.	Ongoing
Implementation of the Soquel Creek Lagoon Management & Enhancement Plan	Soquel Creek Lagoon	City of Capitola	Five-year permit to continue implementation of the Soquel Creek Lagoon Management & Enhancement Plan. This project continues implementation of the Soquel Creek Lagoon and Enhancement Plan and continues to be premised on protecting marine/creek resources while simultaneously enhancing beach	Ongoing; through May 13, 2022 (MBNMS-2017-014)

Project	Project Location	Project Sponsor	Project Description	Completion Date
			access during the summer months at Capitola Beach. Alteration of the submerged lands of the sanctuary to operate machinery and move sand to implement the Soquel Creek Lagoon and Enhancement Plan (SCLEP) as permitted by Coastal Development Permit Amendment 3-90-041-A9	
Search and Rescue Training Activities	Throughout MBNMS	Local municipalities and departments of parks and recreation	Operation of motorized personal watercraft (as defined at 15 CFR 922.131) outside of established sanctuary MPWC operating zones for the purposes of emergency response proficiency training, area familiarization, and agency-mandated standby (safety patrols) at scheduled aquatic events.	Ongoing

Table 6 lists the other federal and non-federal actions that could contribute to cumulative impacts. This list was compiled based on the active and pending permits issued by MBNMS, and NOAA staff knowledge of other existing activities occurring in and around the sanctuary. The projects listed in **Table 6** are generally similar in scope and type to the proposed action. These other federal and non-federal actions relate to management and research activities in coastal and offshore environments. The projects expected to contribute to cumulative impacts are likely to have similar types of impacts on the resources within the study area, would affect similar resources to those that are affected by the proposed action, or are large enough to have far-reaching effects on a resource.

As the proposed action for MBNMS is related to management of the sanctuary rather than a specific coastal or offshore development action, the cumulative effects described are related primarily to local and regional management of the environment and resources in and adjacent to the sanctuary. For the purposes of this cumulative effects analysis, NOAA assumed that any of the actions in **Table 6** that have not already been implemented would be approved and implemented within the time period for this analysis.

As described in more detail in the subsections below, NOAA found that the combination of implementation of the alternatives with the actions in **Table 6** would result in cumulative beneficial impacts to the physical, biological, historical and cultural, and socioeconomic settings, as well as to existing human uses of the sanctuary. The proposed action's contribution to any adverse cumulative impacts would be minor.

5.6.3 Cumulative Impacts on the Physical and Biological Setting

The proposed action would not contribute to any significant adverse impacts on habitats, wildlife, protected species, climate, air, or water. NOAA implementation of the proposed action is not expected to result in increased levels of activity occurring within the sanctuary. Other federal and non-federal activities that could contribute to cumulative impacts include commercial shipping, climate change, the increase in invasive species, and other activities described in **Table 6**. Several thousand large commercial vessels (e.g., container vessels, tankers, dry bulk vessels, car carriers, and cruise ships) pass through MBNMS each year en route to California ports. Vessels larger than 300 gross tons typically transit through the sanctuary within one of four recommended tracks established by the International Maritime Organization (IMO) in 2000. The transit of large commercial vessels through the sanctuary creates a risk of injury for marine species through vessel collisions, potential declines in water quality through accidental leaks or discharges, and introduces vessel noise into the marine environment which could disturb marine species. Compared to the large-scale, chronic effects of commercial shipping, the incremental impacts from the proposed action (including sanctuary-led vessel operations) on the biological and physical setting would be negligible. Climate change

and the rise in invasive species could also impact biological and physical resources within the sanctuary due to changes in sea level, ocean acidification, and changes in the population for certain species that either increase or decrease depending on changes to their habitat, prey, or other conditions.

Several other organizations, including federal, state, and local government entities, are involved in the protection of marine resources in MBNMS and the entire Pacific Ocean and coastal region. These organizations, including USFWS and NMFS, conduct research activities aimed at resource protection and regulate activities occurring in this region. For example, NMFS designates Habitat Areas of Particular Concern overlapping with MBNMS boundaries and prohibits certain types of activities in these areas. MBNMS participated in a collaborative process with NMFS to inform modifications to Essential Fish Habitat in this region that were finalized in November 2019. Existing regulation and future management efforts in the region, such as fisheries management plans and associated regulations implemented by the Pacific Fishery Management Council, NMFS, and the California Department of Fish and Game would continue to benefit and protect biological resources in the sanctuary. Similarly, implementation of regulations and management plans at Greater Farallones and Cordell Bank national marine sanctuaries provide additional protection to biological resources in MBNMS. Given that these marine resource protection activities are intended to improve the health of species and ecosystems through improved understanding and knowledge, and that these activities are conducted in a precautionary manner by highly trained professionals, it is highly unlikely that the cumulative effect of these activities would be adverse.

5.6.4 Cumulative Impacts on the Human and Socioeconomic Setting

Table 6 includes several projects that are designed to further research and monitoring in the sanctuary, encourage tourism and recreational opportunities in the region, and support sustainable management of coastal and offshore resources, including fisheries. These projects, in conjunction with the proposed action, would have overlapping beneficial impacts on the tourism industry, commercial fishing and aquaculture, and the research community in the coastal communities adjacent to the sanctuary. Although the actions listed in **Table 6**, in combination with the proposed action, would have positive, beneficial impacts, the incremental impact from the proposed action on human uses or socioeconomic resources in or adjacent to the sanctuary would be less than significant.

5.6.5 Cumulative Impacts on the Historical and Cultural Setting

The proposed action would cause no significant adverse effects on historical and cultural resources. Cumulative effects that could impact historical and cultural resources may include disturbance and physical impacts from research and monitoring activities, including dive or ROV surveys of historic shipwrecks. Ongoing management of the sanctuary and implementation of a revised management plan and regulations would mitigate the intensity of these human use effects through regulatory prohibitions and

public outreach, which would lower the risk of damage to the sanctuary's historical and cultural resources. Commercial and recreational fishing in the area may damage cultural and historical resources by entangling fishing gear on a resource. However, as part of implementing the Maritime Heritage Action Plan, the sanctuary would identify resources and share locations with fishers to avoid or minimize the risk of future entanglements.

5.7 Comparison of Alternatives

In this draft EA, NOAA analyzed the effects on the physical, biological, human/socioeconomic, and historical/cultural settings from three alternatives under consideration. Effects were classified as beneficial or adverse, direct or indirect, and significant or less than significant (as defined in **Section 5.1.2**). Additionally, in **Section 5.6**, NOAA analyzed the cumulative effects of the actions proposed under all three alternatives within the context of other federal and non-federal activities occurring in the sanctuary. In all cases, the effects of all three alternatives were found to be less than significant, as summarized in **Table 7** below. This section briefly summarizes the anticipated effects of the actions that would take place under each of the three alternatives on each setting in MBNMS.

Many routine research and monitoring, education and outreach, and resource protection and stewardship activities would continue under all three alternatives. Under alternatives B and C, NOAA would conduct new outreach, education, and collaboration activities with new and existing partners in new topic areas with the goal of addressing new management areas of concern. The scope of proposed activities that would take place under alternatives B and C with the adoption of a revised management plan is summarized in **Section 3.3**.

Alternative A (*Continuing to manage the sanctuary by conducting routine field activities and implementing the 2008 sanctuary management plan and existing sanctuary-wide regulations*) would have overall beneficial effects on the environment as NOAA would gain more information and take actions to better protect resources in MBNMS. In addition, the public would become more informed about the importance of stewardship of sanctuary resources, and damaged resources would be restored, as needed. While there are some adverse effects expected with this alternative, mostly associated with routine field activities, these effects are not expected to be significant and should be short-term or minor in the context of ongoing activities in the sanctuary. Categories of activities identified to have some potential to contribute to cumulative effects include those that could result in seafloor disturbance and noise pollution, as well as vessel operations and routine resource protection activities.

Alternative B (*Continuing to manage the sanctuary by conducting routine field activities, implementing existing sanctuary-wide regulations, and adopting a revised sanctuary management plan*) would have similar types and intensity of beneficial and

adverse effects as Alternative A, but would allow NOAA to conduct research, monitoring, and resource protection activities in new focus areas in collaboration with partners and to implement some new types of field operations. The revised management plan would address the absence of climate change considerations in the 2008 sanctuary management plan, outline implementation of coastal erosion and sediment management plans, propose action on marine debris and explore potential needs and impacts related to Sanctuary Ecologically Significant Areas, assessment of motorized personal watercraft zone use, offshore wind energy, and artificial reefs. These new activities would provide additional beneficial impacts not gained under Alternative A to further inform the management and protection of MBNMS resources.

In comparison, **Alternative C** (*Continuing to manage the sanctuary by conducting routine field activities, adopting a revised sanctuary management plan and associated action plans, and revising sanctuary-wide regulations*) would have similar types and intensity of beneficial and adverse effects as Alternative B. In addition, implementing the proposed regulatory changes would provide further benefits to MBNMS resources by strengthening existing regulations to protect physical, biological, and cultural resources from damage associated with zone marker buoy failure and motorized personal watercraft interactions; as well as providing recreational opportunities and minimizing interactions of these activities with other human uses of MBNMS. Alternative C would also provide additional benefits to users of coastal areas adjacent to the sanctuary by allowing for permitting of beach nourishment activities to address coastal erosion and maintain public access. Permitting of beach nourishment could result in temporary disturbance to the physical and biological setting during project implementation. However, these projects would be evaluated in detail at the time of a permit application.

In summary, the alternatives are sequentially more protective of the resources in MBNMS, while also providing opportunities for improved recreation and public access to the sanctuary and adjacent shorelines. As demonstrated in the analysis of environmental consequences, the continued operation and management of MBNMS (under alternatives A, B, and C), the revision of the sanctuary management plan (under alternatives B and C), and adoption of revised regulations (under Alternative C) would have an overall beneficial effect on resources within the sanctuary. Because the management plan is a broad guidance document, many of these anticipated beneficial effects would be indirect, resulting from MBNMS efforts to 1) improve public understanding of ocean stewardship issues; 2) further scientific understanding of sanctuary ecosystems and cultural and historical resources; 3) implement resource protection and maritime heritage programs; and 4) implement regulations to limit stressors on marine resources. These beneficial effects would be less than significant because they are relatively small in scope and intensity, and therefore are not likely to result in a substantial, measurable improvement in resource health and protection over the five to 10 year life of the proposed management plan.

In addition to these beneficial effects, some actions proposed under all alternatives would have adverse effects on resources. These adverse effects include: disturbance of the seafloor and benthic habitat from marker buoy deployment and sampling activities and disturbance of wildlife through research and monitoring of species. In all cases, adverse effects were found to be less than significant because NOAA conducts these activities on a small scale and in a manner that implements best practices to substantially minimize the risks of impacts to resources.

NOAA also found that the cumulative effects of the actions proposed under all three alternatives would be less than significant because the effects of MBNMS actions (both beneficial and adverse) are small in scale and localized. Thus, the addition of these minor effects to those of other similar activities occurring in the sanctuary would not significantly alter the cumulative effects of these activities overall.

Table 7. Summary of Effects by Setting and Alternative

	Alternative A <i>No action</i>	Alternative B <i>Adopt revised management plan</i>	Alternative C <i>Adopt revised management plan and regulatory changes</i>
Physical Setting			
	<p>Several categories of management plan activities would have less than significant beneficial impacts (education and outreach, coordination and collaboration, research and monitoring, and resource protection and stewardship).</p> <p>Six categories of field operations would have less than significant adverse impacts (vessel operations, scuba and snorkel operations, onshore fieldwork, deployment of equipment on the seafloor, deployment of remote sensing equipment, and deployment of AUVs/ROVs/gliders/drifters).</p> <p>Four activities would have negligible impacts (routine maritime heritage activities, vessel maintenance, operations of non-motorized craft, and aircraft operations).</p>	<p>Same intensity of impacts from field operations and existing management plan activities as Alternative A (no action). Additional beneficial impacts would be gained from activities and action plans in new priority areas adopted as part of the revised management plan to further inform the management and protection of MBNMS resources.</p>	<p>Same intensity of impacts from field activities as alternatives A and B. Same impacts from new management plan activities as Alternative B.</p> <p>One proposed regulatory change would have less than significant beneficial impacts (implementing motorized personal watercraft zone boundary changes).</p> <p>One proposed regulatory change would have both less than significant beneficial impacts and less than significant adverse impacts (adding a definition for “beneficial use of dredged material”).</p>
Biological Setting			
	<p>Two categories of management plan activities would have less than significant beneficial impacts (education and outreach, and coordination and collaboration).</p> <p>Two additional categories of management plan activities would have both less than significant beneficial and less than significant</p>	<p>Same impacts from field operations and existing management plan activities as Alternative A (no action). Additional beneficial impacts would be gained from activities and action plans in new priority areas adopted as part of the revised management plan to further inform the management and protection of MBNMS resources.</p>	<p>Same impacts from field activities as alternatives A and B. Same impacts from new management plan activities as Alternative B.</p> <p>One proposed regulatory change would have less than significant beneficial impacts (implementing motorized personal watercraft zone boundary changes).</p>

<p>Alternative A No action</p>	<p>Alternative B Adopt revised management plan</p>	<p>Alternative C Adopt revised management plan and regulatory changes</p>
<p>adverse impacts (research and monitoring, and resource protection and stewardship).</p> <p>Eight categories of field operations would have less than significant adverse impacts (vessel operations, scuba and snorkel operations, onshore fieldwork, deployment of equipment on the seafloor, deployment of remote sensing equipment, operations of non-motorized craft, deployment of AUVs/ROVs/gliders/drifters, and aircraft operations).</p> <p>One field operation activity would have negligible impacts (maintenance of MBNMS vessels).</p>		<p>One proposed regulatory change would have less than significant adverse impacts (adding a definition for “beneficial use of dredged material”).</p> <p>One proposed regulatory change would have negligible impacts (allowing access to Zone 5 during High Surf Advisories).</p>
<p>Human and Socioeconomic Setting</p>		
<p>Four categories of management plan activities would have less than significant beneficial impacts (education and outreach, coordination and collaboration, research and monitoring, and maritime heritage program activities).</p> <p>One additional category of management plan activities would have both less than significant beneficial and less than significant adverse impacts (resource protection and stewardship).</p> <p>Nine categories of field operations would have negligible impacts (vessel operations, vessel maintenance, scuba and snorkel</p>	<p>Same impacts from field operations and existing management plan activities as Alternative A (no action). Additional beneficial impacts would be gained from activities and action plans in new priority areas adopted as part of the revised management plan to further inform the management and protection of MBNMS resources.</p>	<p>Same impacts from field activities as alternatives A and B. Same impacts from new management plan activities as Alternative B.</p> <p>Three proposed regulatory changes would have less than significant beneficial impacts (allowing access to Zone 5 during High Surf Advisories, adding a definition for “beneficial use of dredged material,” and implementing motorized personal watercraft zone boundary changes).</p>

<p>Alternative A <i>No action</i></p>	<p>Alternative B <i>Adopt revised management plan</i></p>	<p>Alternative C <i>Adopt revised management plan and regulatory changes</i></p>
<p>operations, onshore fieldwork, deployment of equipment on the seafloor, deployment of remote sensing equipment, operations of non-motorized craft, deployment of AUVs/ROVs/gliders/drifters, and aircraft operations).</p>		
<p>Historical and Cultural Setting</p>		
<p>Four categories of management plan activities would have less than significant beneficial impacts (education and outreach, research and monitoring, maritime heritage programs, and resource protection and stewardship).</p> <p>Five categories of field operations would have less than significant adverse impacts (vessel operations, scuba and snorkel operations, onshore fieldwork, deployment of equipment on the seafloor, deployment of remote sensing equipment, and deployment of AUVs/ROVs/gliders/drifters).</p> <p>Two categories of field operations would have negligible impacts (onshore fieldwork, and maintenance of MBNMS vessels).</p>	<p>Same impacts from field operations and existing management plan activities as Alternative A (no action). Additional beneficial impacts would be gained from activities and action plans in new priority areas adopted as part of the revised management plan to further inform the management and protection of MBNMS resources.</p>	<p>Same impacts from field activities as alternatives A and B. Same impacts from new management plan activities as Alternative B.</p> <p>One proposed regulatory change would have less than significant beneficial impacts (implementing motorized personal watercraft zone boundary changes).</p> <p>One proposed regulatory change would have less than significant adverse impacts (adding a definition for “beneficial use of dredged material”).</p>

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APPENDIX A

SUMMARY OF SCOPING COMMENTS

Monterey Bay National Marine Sanctuary

Summary of Scoping Comments

December 11, 2015

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Introduction

In August of 2015, Monterey Bay National Marine Sanctuary (MBNMS) initiated an update of its management plan, a collaborative document, broad in scope, providing important guidance for sanctuary programs and operations. It is time to refresh the 2008 document and update its contents to ensure the sanctuary's natural and cultural resources are better understood and continue to be protected through management informed by current knowledge of this special place and the threats and pressures placed upon it.

A sanctuary management plan is a site-specific planning and management document describing the objectives, policies and activities for a sanctuary, and guides management actions. Management plans summarize existing programs and regulations, articulate visions, goals, objectives, and priorities of the sanctuary, guide management decision-making, guide development of annual operating plans, guide future planning, ensure public involvement in management processes, and contribute to the attainment of national marine sanctuary goals and objectives.

Over time, all management plans should be reviewed and updated to account for changing conditions and needs. At MBNMS, we recognize since our 2008 management plan was implemented, new partners, new issues and new opportunities have emerged. Moreover, much has been implemented and accomplished and no longer needs to be in the plan. Revising the management plan allows the sanctuary superintendent and staff to reflect state-of-the-art marine management approaches and ensures limited resources are focused on priorities. The review examines and potentially changes sanctuary programs and operations, action plans, regulations and boundaries. Management Plan Review (MPR) is the process by which all national marine sanctuaries review and revise their sanctuary management plans and is required under the National Marine Sanctuaries Act. Monterey Bay National Marine Sanctuary's MPR will be conducted in phases over the next few years.

This process involves proactively reaching out to members of the community to gather input, weighing collected information against the best available science and the agency's management expertise, and developing a plan that drives the sanctuary to meet the goals and objectives of the review. The MPR process and Sanctuary Advisory Council will provide guidance and direction for this review. The council is a community-based advisory group established to provide advice and recommendations to the sanctuary superintendent. The council members serve as liaisons between their constituents in the community and the sanctuary and provide expertise on both the local community and sanctuary resources, strengthen connections with the community and help build increased stewardship for sanctuary resources. MBNMS Advisory Council members represent agriculture, business and industry, conservation, diving, education, fishing (commercial and recreational), recreation, research, tourism, local governments, state and federal agencies and the community at large.

This review formally began in August 2015, when a public notice of intent to review the management plan was issued requesting public comments during the scoping period. Scoping comments were received from September 10 through October 30th. Comments on the direction the sanctuary should take to best protect and conserve the living marine resources and submerged

cultural resources of MBNMS were accepted electronically at www.regulations.gov under docket number NOAA-NOS-2015-0099, letters to the Sanctuary Superintendent and at four public meetings held in communities adjacent to the sanctuary. 220 comments were submitted and encompassed a range of topics. Comments may be viewed in their entirety at www.regulations.gov under docket number NOAA-NOS-2015-0099. This document summarizes and groups the variety of comments submitted during the scoping period.

Next Steps

Monterey Bay National Marine Sanctuary and the Sanctuary Advisory Council will use the public comments for guidance to best determine the high priority resource management issues to address in this review and evaluate management alternatives. In the coming year, MBNMS staff and the Advisory Council will develop recommendations, using the input from the scoping meetings, for NOAA to consider, and staff will assess the environmental impacts of these recommendations, which may include modifications or additions to sanctuary regulations. A draft management plan, along with an environmental analysis and possible regulatory changes, will be presented to the public. NOAA will gather public comment on the proposal. Finally, a final management plan and associated documents will be adopted and implemented.

Contact Information

Monterey Bay National Marine Sanctuary
99 Pacific Street, Bldg. 455A
Monterey, California 93940
(831) 647-4201
montereybay@noaa.gov

Comment statistics

Scoping comments on the MBNMS management plan review and regulations were submitted at the public scoping meetings, either as facilitated verbal comments or via comment cards; as letters via the mail; or electronically on line via the e-Rulemaking Portal at www.regulations.gov/#!docketDetail:D=NOAA-NOS-2015-0099. Comments not received electronically were posted to the e-Rulemaking Portal, thereby assembling all the scoping comments into the electronic docket for public viewing.

Comments submitted during the scoping period can be characterized as follows:

- The four scoping meetings produced four scoping summary reports that are posted online.
- 220 comments were submitted. A comment or comment letter may raise several issues and provide more than one suggestion on how to revise the MBNMS management plan.
- Of the 220 comments submitted, 51 comments were either clear duplicates (100%) or near duplicates (80%), rendering the total amount of individual comments as 169 comments.
- The overwhelming majority of comments were submitted by public citizens.
- Government partners submitted six comment letters.
- Educational partners submitted three comment letters.
- User groups submitted seven comment letters.
- Conservation groups submitted six comment letters.

Comments categorized by topic

When summarizing the public comments, MBNMS staff started with no pre-conceived list of topics or categories. For each comment, staff assessed the issue being discussed and either created a topic heading to describe the issue or binned the comment under a topic heading that had already been created based on an earlier comment. Some comments belong under more than one topic, but not many. Eventually a list 26 topic categories was created, which can be divided into three overarching themes: Collaborative Research and Management; Education, Outreach and Citizen Science; and Regulatory Changes and Clarifications.

COLLABORATIVE RESEARCH AND MANAGEMENT

- Artificial reef
- Beach nourishment
- Birds
- Boundary changes
- Climate change
- Coastal armoring
- Desalination
- Fisheries:
 - anchovy fisheries
 - fishing
- Management plan update/action plans
- Marine debris
- Mooring buoys
- Motorized personal watercraft (MPWC)/jet-ski
- Sanctuary advisory council (AC)
- Science and monitoring
- Sanctuary Ecological Significant Areas (SESAs)
- Water quality protection:
 - miscellaneous
 - regional monitoring
 - run-off of contaminants
- Wildlife disturbance:
 - entanglement
 - harassment
 - soundscape
 - unmanned aircraft systems

EDUCATION, OUTREACH AND CITIZEN SCIENCE

- Citizen science
- Education

REGULATORY CHANGES AND CLARIFICATIONS

- Regulations

Categorized topics

Comments were divided into 26 topic categories (in bold). The topic categories are grouped according to three overarching themes: Collaborative Research and Management; Education, Outreach and Citizen Science; and Regulatory Changes and Clarifications. Under each topic category comments were paraphrased and entered as either “issue or concern”, or “suggested strategies and tools” (to address the issue or concern).

COLLABORATIVE RESEARCH AND MANAGEMENT

Artificial reef

Issue or concern

- Dive community requests an artificial reef (boat, plane, other)
- Artificial reef would contribute to local economy
- Wildlife would attach to and congregate at artificial structure
- Reefs would serve as seed (production) sites for surrounding area
- Divers would come from elsewhere to dive on a wreck
- Sanctuary is not pristine: artificial reefs reverse/restore damage done by human uses
- Less pressure on existing reefs/dive sites
- Artificial reefs are also a draw for recreational fishermen

Suggested strategies and tools

- Raise funds for establishing artificial reef through Kickstarter/Indiegogo campaign.
- Divers or dive boats would pay a fee to the county to fund establishment of artificial reef.
- Divers would be very willing to help with this endeavor, whether financially or by volunteering.
- MBNMS needs to do the necessary research (e.g cost benefit analysis) and research possible beneficial locations for an artificial reef.
- Site an artificial reef that does not impact commercial fishing.
- Ensure hyperbaric chamber operations continue.
- Support the placement of artificial reefs within the MBNMS management framework.
- Permit an artificial reef to include enhanced multiple use opportunities.

Beach nourishment

Issue or concern

- Severe erosion at Surfer’s Beach (Half Moon Bay)

Suggested strategies and tools

- Continue to coordinate with local entities to find a solution.
- Restore sediment transport - need permanent location to place sand.
- Use other sources of clean sand if sand inside breakwater cannot be used.
- Conduct a pilot study on beach erosion - need enough sediment to have effect on curbing erosion.
- Review historic photos to understand severity of beach erosion.
- Consult the Regional Sediment Management Plan for the Santa Cruz Littoral Cell.

- Revise management plan to include beneficial reuse of clean dredged materials to mitigate coastal erosion.
- Amend sanctuary regulations/designation document to allow for the dredge and disposal of clean, compatible sediments from Pillar Point Harbor.

Birds

Issue or concern

- Miscellaneous
- Chumming to attract birds for offshore/pelagic bird observations

Suggested strategies and tools

- Use Sea Bird Company database for Ashy Storm Petrel - species of concern.
- Monitor persistence of dichlorodiphenyltrichloroethane (DDT) to study effects on California Condors.
- Create guidelines for chumming to attract birds.
- Permit chumming to attract birds for educational purposes.
- Change regulation to allow chumming to attract sea birds.

Boundary changes

Issue or concern

- San Francisco - Pacifica Exclusion area near San Mateo
- Chumash Heritage National Marine Sanctuary (CHNMS)

Suggested strategies and tools

- Consider impacts to partners/agencies if any boundaries are changed.
- Evaluate marine renewable energy potential and prepare a “Statement of Energy Effects” for any expanded areas.
- Include the San Francisco - Pacifica exclusion area to MBNMS or Greater Farallones National Marine Sanctuary (GFNMS).
- Expand MBNMS south if NOAA does not move forward with CHNMS designation.

Climate change

Issue or concern

- Climate change
- Ocean acidification
- Sea level rise

Suggested strategies and tools

- Increase coordination and cooperation among science and resource management agencies to improve planning, monitoring, and adaptive management.
- Adopt “Greening the Sanctuary” / reduce carbon footprint.
- Create a climate action plan in the MBNMS management plan with
 - measurable objectives
 - emphasis on outreach/education.
- Assess other action plans for MBNMS and include climate-related measures.

- Prepare better for climate-related coastal hazards (e.g. sea level rise, erosion, etc.).
- Build resilience into coastal communities.
- Expand monitoring of ocean acidification.

Coastal armoring

Issue or concern

- Climate-related sea level rise, increased erosion, shoreline loss
- Coastal erosion of hiking trails from increased tourism

Suggested strategies and tools

- Prioritize and use planned (or managed) retreat as a response measure to climate change.
- Develop an action plan with specific measures in support of the Coastal Regional Sediment Management Plan.
- Increase coordination with other local entities.
- Mitigate impacts from increased tourism through outreach/education and coordination with partners.

Desalination

Issue or concern

- Drought/water shortage
- Three desalination projects proposed within the sanctuary
- Brine discharge is toxic to marine life
- One or more regional desalination projects are of critical importance to our economy and the well-being of our citizens.

Suggested strategies and tools

- Update existing action plan
 - by improving desalination guidance
 - to reflect progress
 - by adding emphasis on monitoring and enforcement.
- Update desalination webpage.
- Educate public on environmental impacts to sanctuary.
- Do not permit brine discharge or allow a desalination plant within the sanctuary
- Permit desalination.
- Issue guidelines, regulations, or permit conditions that balance ocean environmental concerns with the needs of the humans.

Fisheries: anchovy fisheries

Issue or concern

- 99% collapse of anchovy population
- Overfishing of anchovy
- Anchovy filled with domoic acid – not fit for consumption
- Anchovy are the basis of food chain and needed for whales and other marine mammals
- Anchovy are important for the sanctuary ecosystem
- Anchovy are ground up for aquaculture

- Lax regulations
- Waste of dead anchovy found floating in the ocean waters
- Use of ‘seal bombs’ to scare sea lions away from the nets

Suggested strategies and tools

- Conduct a new stock assessment.
- Update catch limits.
- Encourage sustainable harvest.
- Enforce stricter limitations.
- Protect the ecosystem rather than commercial or sport fishing interests.
- Make Monterey Bay a true marine protected area.
- Monitor the harvest of anchovy.
- Consider how anchovy harvest is regulated within MBNMS.
- Establish a closer relationship with NMFS.
- Pursue the restriction of anchovy harvest by presenting an ecosystem-based perspective to fishery managers.
- Halt anchovy fishery.

Fisheries: fishing

Issue or concern

- Overfishing is a problem
- Reckless overfishing in Monterey Bay must be checked
- Fishermen view MBNMS in negative manner and feel alienated from process

Suggested strategies and tools

- Inform the public of the situation.
- Only create fishing regulations (or fishing zones) with support from recreational and commercial fishing leaders. If there is support, advise fishery managers.
- Oppose fishermen’s request to have approval (veto power) of any fishing rules.
- Have Alliance for Communities of Sustainable Fisheries (ACSF) represent fishing interests to MBNMS.
- Halt fishing in the sanctuary.

Management plan update/action plans

Issue or concern

- Revisions are needed
- Limited funding

Suggested strategies and tools

- Update fishing practices in management plan.
- Update action plan on bottom trawling.
- Renew “Fishermen in the Classroom”.
- Prioritize number of action plans
 - consider key ecosystem components and key stressors.

- create a category of action plans that are addressed only when funding is available.
- Collaborate with partners to implement action plans.
- Use best available science when developing action plans.
- Use peer review or consensus process if conflicts arise about science.
- Use community needs to guide revisions of management plan
- Leverage funding and resources with like-minded groups/agencies.

Marine debris

Issue or concern

- Lost fishing gear (fishing line, lead weights, traps, nets)
- Plastics

Suggested strategies and tools

- Support and expand existing discarded or lost fishing gear retrieval programs.
- Reduce sources of plastics entering the sanctuary.
- Expand beach clean-up efforts.
- Maintain and increase education.
- Develop a sign for restaurants “straws upon request.”

Mooring buoys

Issue or concern

- Dive community requests placement of moorings at popular dive sites
- Preserves benthic habitat/no hook-ups on kelp or other living organisms
- Less disturbance to wildlife
- Better dive safety (no slipped anchors)

Suggested strategies and tools

- Add a "mooring due" to all boat charters to pay for installation/maintenance of moorings.
- Allow dive community (e.g., dive clubs, diver charter boats) to fund, set and maintain moorings.
- Permit the placement of mooring buoys in the sanctuary.

Motorized Personal Watercraft (MPWC)/jet-ski

Issue or concern

- Modern MPWC are largely used as personal lifeguards for big wave surfers
- Legal use of MPWCs at Mavericks is unrealistic (27 conditions): mostly a two buddy system
- MPWC use at other high surf locations
- Need areas and opportunity to practice surfer rescue
- MPWC's are a multiple-use (National Marine Sanctuaries Act mandates ONMS to facilitate multiple use) and should therefore be allowed

Suggested strategies and tools

- Conduct an independent peer-review of science justification to ban all vessels (instead of go-slow areas).
- Prioritize training of public safety personnel using MPWC.
- Have official on site to monitor activity during all conditions.
- Study current MPWC use and the wave conditions in which they are used.
- Increase utility and effectiveness of the existing MPWC use zones
- Expand recreational opportunities of MPWC to other locations to allow for practice of rescue methods.
- Allow MPWC use at other selected big wave areas under “large surf warning” conditions.
- Allow for MPWC use as a safety tool, and for increased recreational opportunity.
- Amend the MBNMS rule on MPWC use to allow their use at Maverick’s in “high surf advisory” condition.
- Review and amend the existing sanctuary rule which prohibits the use of MPWC in most of the sanctuary.
- Prohibit MPWC use in the sanctuary, except under special circumstances.

Sanctuary advisory council (AC)

Issue or concern

- Sanctuary AC operations
- Business has little representation on Sanctuary AC

Suggested strategies and tools

- Explore establishing the Sanctuary AC under a local joint-powers authority.
- Add a renewable energy industry representative to Sanctuary AC
- Add a tribal representative to Sanctuary AC

Science and monitoring

Issue or concern

- Miscellaneous

Suggested strategies and tools

- Study contribution of Marine Life Protection Act sites to ecosystem health.
- Conduct more research to inform policy.
- Conduct more characterization, research and monitoring to understand sanctuary ecosystem.
- Provide to science collaborators funding, ship time, dive services, etc.
- Distribute and stress research on the natural cycles of MBNMS ecosystem.
- Study effects of sea lion population on ecosystem.

Sanctuary ecological significant areas (SESAs)

Issue or concern

- Need more information

Suggested strategies and tools

- Conduct more research in SESAs.
- Continue following the EFH review process.
- Continue collaborative research and pilot management activities with fishermen in SESAs.

Water quality protection: miscellaneous

Issue or concern

- Beach Closure and Contamination Action Plan
- Water quality concerns at San Simeon creek
- Habitat degradation due to pumping (e.g., steelhead)
- Drought
- Fukushima radiation
- USS Independence radiation
- Nuclear dump site by Farallon Islands
- Chemical use to eradicate non-natives
- Industrial ags use of GMOs and toxins

Suggested strategies and tools

- Identify focus areas toward which to direct more sanctuary resources.
- Include Surfrider's volunteer Blue Water Task Force labs into the on-line portal.
- Collaborate with local municipalities and focus on identifying and fixing the sources of pollution at beaches.
- Collaborate with other agencies to maintain water quality in local watersheds.
- Maintain whole lifecycle of fish.
- Balance and control amount of tourism.
- Monitor radiation impacts from 2011 Fukushima accident in Japan and educate public of findings.
- Monitor radioactive impacts from USS Independence and nuclear dump site off of Farallons and educate public of findings.
- Support multi-benefit water supply and conservation projects in local communities, such as "Ocean Friendly" gardens.
- Increase public education and outreach with like-minded organizations.
- Limit impairment to watersheds from collection of watershed waters.

Water quality protection: regional monitoring

Issue or concern

- Coordinated regional monitoring program
- Marine species as sentinels for water quality

Suggested strategies and tools

- Establish a coordinated regional monitoring network, building on successful models elsewhere.
- Participate in the Central Coast Regional Water Quality Control Board's efforts to list and remedy Clean Water Act Section 303(d) water bodies.

- Incorporate marine species mortalities into regional monitoring reports.

Water quality protection: run-off of contaminants

Issue or concern

- Reduce non-point sources of pollution from landscapes
- Harmful algal blooms (HABs) in the ocean
- HABs that occur within watersheds that feed into the sanctuary

Suggested strategies and tools

- Include training and outreach to the professional and amateur landscaping/gardening communities.
- Conduct trainings around retrofitting public landscapes that could be used as demonstration projects for implementation of best management practices.
- Eliminate fires on beaches.
- Encourage beach clean ups after holidays.
- Conduct more monitoring of HABs.
- Develop better regulations on “Roundup” discharge.

Wildlife disturbance: entanglement

Issue or concern

- Whale and turtle entanglement

Suggested strategies and tools

- Focus on prevention, response, data collection, and collaborative working group.
- Increase effectiveness of entanglement response.
- Develop best fishing practices to reduce entanglements – ACSF will participate.
- Oppose Navy’s plan for increasing sonar buoys, which are an entanglement risk.
- Continue with Pacific leatherback sea turtle as a focal species.
- Explore a sister sanctuary program with Indonesia (for leatherbacks).

Wildlife disturbance: harassment

Issue or concern

- Harassment of sea otters, whales, seals, and marine birds by
 - kayakers
 - paddle boarders
 - drones (see Wildlife disturbance: unmanned aircraft system)
 - increased tourism
 - fishermen using bombs and other noise making devices
 - MPWC
 - low overflights
 - Radio-frequency radiation (RF)

Suggested strategies and tools

- Add more enforcement.
- Support funding for enforcement.

- Cross deputize enforcement officers.
- Initiate a wide-spread public education program, using the public media.
- Support more on-site trained Bay Net and Team OCEAN docents/volunteers.
- Support funding for Bay Net and Team OCEAN.
- Adopt a kayak company by Bay Net/Team OCEAN volunteers.
- Install effective signage.
- Develop training videos for kayak/paddle board rental shops
- Identify key areas for nesting, hauling out, mating, and feeding for key species and outline methods for reducing disturbance.
- Consider alternative and/or additional measures to reduce disturbances while seeking to continue to allow responsible recreational access.
- Study impacts from RF on wildlife, including RF tagging, webcams, cell towers, and Wi-Fi.
- Add Devil's Slide rock to overflight restricted zones.
- Add Ano Nuevo Island to overflight zones or enforce existing 1000' overflight restriction.
- Explore setting a spectator or approach distance from marine mammals.
- Raise the approach distance to at least 100 feet (10 kayak lengths).
- Regulate, not just recommend, the distance for approaching marine mammals.
- Ban the use of seal bombs by fishermen.
- Regulate kayak companies to display their name and identifying number on each kayak.

Wildlife disturbance: soundscape

Issue or concern

- Acoustic impacts to wildlife
- Sonar and electromagnetic field (EMF) testing by Navy and research institutions

Suggested strategies and tools

- Coordinate research to better understand the sanctuary soundscape.
- Define dangerous levels of high-energy seismic testing.
- Participate in the NOAA-level effort to understand soundscapes.
- Study the range of acoustic impacts on MBNMS resources.
- Ban all sonar and EMF testing in sanctuary.

Wildlife disturbance: unmanned aircraft systems

Issue or concern

- Drones used in Elkhorn Slough
- Disturbances of seabird colony and marine mammal haul out areas
- Drones are useful for some research projects

Suggested strategies and tools

- Educate user group of regulations and impacts to wildlife.
- Implement geo-fencing
- Continue use of drones for some research programs.
- Ban drones from the sanctuary.

EDUCATION, OUTREACH AND CITIZEN SCIENCE

Citizen science

Issue or concern

- Citizen science needs to be a priority
- Creating more ocean stewardship needs to be a priority
- Invest in future generations of ocean stewards
- Missed opportunities for additional public outreach, involvement, and education in the most direct and relevant manner by not having sufficient Bay Net and Team OCEAN volunteers.

Suggested strategies and tools

- Expand partnerships and other external support to help ensure continuation of the Bay Net, Team OCEAN, and BeachCOMBER programs.
- Standardize and merge programs with GFNMS, e.g., Beach COMBERS and Beach Watch.
- Expand Bay Net, Team OCEAN with more funding.
- Hire a full-time volunteer coordinator.
- Develop citizen science programs.
- Support LiMPETS in the Cambria area of MBNMS.
- Expand NOAA Ocean Guardian School.

Education

Issue or concern

- Need improvements to education and outreach

Suggested strategies and tools

- Develop NOAA branding for Coastal Discovery Center, San Simeon Cove Beach and throughout Cambria and San Simeon.
- Implement live webcams at San Simeon Cove and audio on Friends of the Elephant Seal webcam.
- Improve readability of SIMon website.
- Purchase Sanctuary Exploration Center (SEC) as access for divers.
- Provide more support for SEC.
- Collaborate with schools to create learning opportunities for elementary thru high school.
- Communicate cause and effect of sea star wasting disease.

REGULATORY CHANGES AND CLARIFICATIONS

Regulations

Issue or concern

- Miscellaneous
- Beach nourishment
- Birds
- Boundary change

- Desalination
- Fisheries: anchovy fisheries
- Fisheries: fishing
- Motorized Personal Watercraft (MPWC)/jet-ski
- Water quality protection: run-off of contaminant
- Wildlife disturbance: harassment
- Wildlife disturbance: soundscape

Suggested strategies and tools

- Clarify the application of MBNMS' regulations on "abandoned" vessels.
- Enforcement officers shouldn't be allowed to speed through kelp.
- Require boats are cleaned before they are moved to prevent spread of invasive species.
- Amend sanctuary regulations/designation document to allow for the dredge and disposal of clean, compatible sediments from Pillar Point Harbor.
- Change regulation to allow chumming to attract sea birds.
- Include the San Francisco - Pacifica exclusion area to MBNMS or Greater Farallones National Marine Sanctuary (GFNMS).
- Expand MBNMS south if NOAA does not move forward with CHNMS designation.
- Issue desalination guidelines, regulations, or permit conditions that balance ocean environmental concerns with the needs of the humans.
- Halt anchovy fishery.
- Halt fishing in the sanctuary.
- Expand recreational opportunities of MPWC to other locations to allow for practice of rescue methods.
- Allow MPWC use at other selected big wave areas under "large surf warning" conditions.
- Allow for MPWC use as a safety tool, and for increased recreational opportunity.
- Amend the MBNMS rule on MPWC use to allow their use at Maverick's in "high surf advisory" condition.
- Review and amend the existing sanctuary rule which prohibits the use of MPWC in most of the sanctuary.
- Develop better regulations on "Roundup" discharge.
- Add Devil's Slide rock to overflight restricted zone.
- Add Ano Nuevo Island to overflight zone or enforce existing 1000' overflight restriction.
- Explore setting a spectator or approach distance from marine mammals.
- Raise the approach distance to at least 100 feet (10 kayak lengths).
- Require, not just recommend, the distance for approaching marine mammals with regulations.
- Ban the use of seal bombs by fishermen.
- Regulate kayak companies to display their name and identifying number on each kayak.
- Ban all sonar and EMF testing in sanctuary.
- Ban drones from the sanctuary.

Advisory Circular No. 11–2A, Notice of Proposed Rulemaking Distribution System, which describes the application procedure.

Availability and Summary of Documents Proposed for Incorporation by Reference

This document proposes to amend FAA Order 7400.9Y, Airspace Designations and Reporting Points, dated August 6, 2014, and effective September 15, 2014. FAA Order 7400.9Y is publicly available as listed in the ADDRESSES section of this proposed rule. FAA Order 7400.9Y lists Class A, B, C, D, and E airspace areas, air traffic service routes, and reporting points.

The Proposal

This action proposes to amend Title 14, Code of Federal Regulations (14 CFR), Part 71 by establishing Class E en route domestic airspace extending upward from 1,200 feet above the surface in the International Falls, MN area. This action would contain aircraft while in IFR conditions under control of Minneapolis ARTCC by safely vectoring aircraft from en route airspace to terminal areas.

Class E airspace areas are published in Paragraph 6006 of FAA Order 7400.9Y, August 6, 2014, and effective September 15, 2014, which is incorporated by reference in 14 CFR 71.1. The Class E airspace designation listed in this document would be published subsequently in the Order.

Regulatory Notices and Analyses

The FAA has determined that this proposed regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore, (1) is not a “significant regulatory action” under Executive Order 12866; (2) is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a Regulatory Evaluation as the anticipated impact is so minimal. Since this is a routine matter that will only affect air traffic procedures and air navigation, it is certified that this rule, when promulgated, will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

Environmental Review

This proposal will be subject to an environmental analysis in accordance with FAA Order 1050.1E, “Environmental Impacts: Policies and

Procedures” prior to any FAA final regulatory action.

List of Subjects in 14 CFR Part 71

Airspace, Incorporation by reference, Navigation (air).

The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend 14 CFR part 71 as follows:

PART 71—DESIGNATION OF CLASS A, B, C, D, AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS

- 1. The authority citation for part 71 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g); 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389.

§ 71.1 [Amended]

- 2. The incorporation by reference in 14 CFR 71.1 of FAA Order 7400.9Y, Airspace Designations and Reporting Points, dated August 6, 2014, and effective September 15, 2014, is amended as follows:

Paragraph 6006 En Route Domestic Airspace Areas

* * * * *

AGL MN E6 International Falls, MN [New]

That airspace extending upward from 1,200 feet above the surface within an area bounded by lat. 49°00′00″ N., long. 095°00′00″ W.; to lat. 49°00′00″ N., long. 093°30′00″ W.; to lat. 48°06′30″ N., long. 090°06′00″ W.; to lat. 47°53′00″ N., long. 090°55′00″ W.; to lat. 48°34′00″ N., long. 094°00′00″ W.; to lat. 48°40′00″ N., long. 095°00′00″ W., thence to the point of beginning, excluding that airspace within Federal airways.

Issued in Fort Worth, TX, on August 13, 2015.

Robert W. Beck,

Manager, Operations Support Group, ATO Central Service Center.

[FR Doc. 2015–21087 Filed 8–26–15; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

15 CFR Part 922

Initiation of Review of Management Plan and Regulations of the Monterey Bay National Marine Sanctuary; Intent To Conduct Scoping and Prepare Draft Environmental Impact Statement and Management Plan

AGENCY: Office of National Marine Sanctuaries (ONMS), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (DOC).

ACTION: Initiation of review of management plan and regulations; intent to conduct scoping and prepare environmental impact statement.

SUMMARY: Monterey Bay National Marine Sanctuary (MBNMS or sanctuary) was designated in September 1992. It spans 4,601 square nautical miles (6,094 square miles) of marine waters off the central California coast, encompassing several large, nearshore submarine canyons, an offshore seamount and numerous marine habitats representative of the central California coastal and marine ecosystem. The present management plan was written and published in 2008 along with a final environmental impact statement in accordance with the National Environmental Policy Act (NEPA). In accordance with Section 304(e) of the National Marine Sanctuaries Act, as amended, (NMSA), the Office of National Marine Sanctuaries (ONMS) of the National Oceanic and Atmospheric Administration (NOAA) is initiating a review of the MBNMS management plan, to evaluate substantive progress toward implementing the goals for the sanctuary, and to make revisions to the plan and regulations as necessary to fulfill the purposes and policies of the NMSA. NOAA anticipates regulatory and management plan changes will require preparation of an environmental analysis under the National Environmental Policy Act (NEPA). NOAA will conduct public scoping meetings to gather information and other comments from individuals, organizations, tribes, and government agencies on the scope, types and significance of issues related to the MBNMS management plan and regulations and the proper scope of environmental review for the project. The scoping meetings are scheduled as detailed below.

DATES: Written comments should be received on or before October 30, 2015.

Scoping meetings will be held on:

(1) September 10, 6–8 p.m., Monterey Conference Center, Monterey, CA.

(2) September 23, 6–8 p.m., Loudon Nelson Center, Santa Cruz, CA.

(3) October 23, 6–8 p.m., Veteran's Memorial Hall, Cambria, CA.

ADDRESSES: You may submit comments on this document, identified by NOAA–NOS–2015–0999, by any of the following methods:

- *Electronic Submission:* Submit all electronic public comments via the Federal e-Rulemaking Portal. Go to www.regulations.gov/

#!docketDetail;D=NOAA-NOS-2015-0999, click the “Comment Now!” icon, complete the required fields, and enter or attach your comments.

- *Mail:* 99 Pacific Street, Bldg. 455A, Monterey, California 93940, Attn: Paul Michel, Superintendent.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NOAA. All comments received are a part of the public record and will generally be posted for public viewing on www.regulations.gov without change. All personal identifying information (e.g., name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NOAA will accept anonymous comments (enter “N/A” in the required fields if you wish to remain anonymous).

FOR FURTHER INFORMATION CONTACT:

Dawn Hayes, 831.647.4256, mbnmsmanagementplan@noaa.gov.

SUPPLEMENTARY INFORMATION: Reviewing the MBNMS management plan may result in proposed changes to existing plans and policies to address contemporary issues and challenges, and better protect and manage the sanctuary's resources and qualities. The review process is composed of four major stages: (1) Information collection and characterization; (2) preparation and release of a draft management plan and environmental impact statement, and any proposed amendments to the regulations; (3) public review and comment; (4) preparation and release of a final management plan and environmental document, and any final amendments to the regulations. NOAA will also address other statutory and regulatory requirements that may be required pursuant to the Endangered Species Act, Marine Mammal Protection Act, Essential Fish Habitat provisions of

the Magnuson-Stevens Act, and the National Historic Preservation Act.

Preliminary Priority Topics

NOAA has prepared a preliminary list of priority topics to consider during the MBNMS management plan review process. We are interested in public comment on these topics, as well as any other topics of interest to the public or other agencies in the context of the MBNMS management plan review. This list does not preclude or in any way limit the consideration of additional topics raised through public comment, government-to-government and interagency consultations, and discussions with partner agencies.

Collaborative Research and Management

There is a continuing need for characterization, research and monitoring to understand baseline conditions of marine resources within the sanctuary, ecosystem functions, and status and trends of biological and socioeconomic resources. NOAA relies on the continued support of multiple partners and volunteers, and strives to address critical resource protection through collaborative multi-stakeholder management efforts. In addition to updating existing action plans in the management plan, NOAA is considering adding strategies and activities to address the following issues:

Climate Change—Climate change is widely acknowledged, yet there is considerable uncertainty about current and future consequences at local, ecosystem and oceanic scales. Increased coordination and cooperation among science and resource management agencies are required to improve planning, monitoring and adaptive management to address this phenomenon as it pertains to the protection of MBNMS resources.

Wildlife Disturbance—MBNMS is an active area with abundant human use, offering some of the most significant marine wildlife viewing in the world. NOAA is concerned about a variety of human activities that have the ability to disturb marine wildlife. The harassment of wildlife, in particular marine mammals, has increased in recent years due to increased numbers (and proximity) of certain whale species and humans involved in on-the-water activities. Impacts to the MBNMS soundscape are also a concern, as the cumulative effects of underwater noise generated by a variety of human activities have grown over the past half century. Expanded use of unmanned aircraft systems over the sanctuary may also require additional analysis to

determine the degree to which these aircraft may, or may not, be causing harm to wildlife.

Water Quality Protection—Water quality is key to ensuring protection for all sanctuary resources. Given the level of coastal development along MBNMS's extensive coastline, runoff of contaminants such as sediments, nutrients, fecal bacteria, pesticides, oil, grease, metals, and detergents from the approximately 7,000 square miles of coastal watershed areas makes the sanctuary vulnerable to coastal water pollution problems. Although MBNMS has an award-winning water quality protection program, NOAA believes that more focused attention on specific water quality issues is needed, as well as a coordinated regional monitoring program to provide meaningful information on conditions, trends, and contaminant loads.

Marine Debris—Coastal marine debris is a persistent and poorly diagnosed problem within the sanctuary that negatively impacts natural and socioeconomic resources and qualities, including marine mammals, turtles and seabirds. NOAA is seeking input on innovative source controls and cleanups could help minimize impacts to sanctuary waters and habitats.

Regulatory Changes and Clarifications

NOAA is considering several modifications to MBNMS regulations and definitions to facilitate resource protection, clarify legal intent, and enhance public understanding. These include: Clarifying the extent of the shoreward sanctuary boundary line and the means by which some of the zones within MBNMS are delineated; clarifying the intent of the prohibition on the take of historical resources; and prohibiting tampering with MBNMS signage and buoys. Other regulatory changes may be considered based on public scoping comments and staff work to adjust various action plans within the management plan.

Other potential regulatory modifications on which NOAA is seeking public input include:

(1) Reducing the required High Surf Warning (HSW) condition for Motorized Personal Watercraft operations at Mavericks to a High Surf Advisory (HSA) condition.

(2) Minimizing disturbance from low overflights in the area of the Common Murre colony at Devil's Slide, a restoration site just beyond the MBNMS boundary line at Point San Pedro (San Mateo County).

(3) Designating of specific zones where fireworks may be permitted within MBNMS.

(4) Updating regulations to clarify the extent of the shoreward sanctuary boundary line.

(5) Ensuring that salvers operating within MBNMS meet minimum industry standards for safety, liability, capacity, and environmentally sensitive salvage techniques during both emergency and non-emergency operations.

(6) Clarifying the definition of “cruise ship” to include not only ships with berths for hire as is currently defined, but also ships with condominiums under private ownership.

(7) Clarifying the intent and applicability of the existing prohibition on deserting a vessel in MBNMS.

Education, Outreach and Citizen Science

Enhancing the public’s awareness and appreciation of sanctuary resources is a cornerstone of MBNMS’s mission. Recent initiatives, such as visitor centers, video media production, and partnering with recreation and tourism industry offer opportunities for NOAA and other entities to expand educational and outreach contributions and reach larger audiences. NOAA is seeking the public’s view on developing and enhancing programs designed to enhance public awareness, including opportunities to participate in environmental research and monitoring.

Condition Report

To inform the MBNMS management plan review, NOAA is updating the Monterey Bay National Marine Sanctuary Condition Report, which was first published in 2009. The 2009 report provided a summary of resources in MBNMS, pressures on those resources, current conditions and recent trends within the Sanctuary, and management responses to mitigate negative impacts. The 2015 Condition Report will update current conditions and recent changes for water quality, habitat, living resources and maritime archaeological resources in the sanctuary. It will also include an assessment of the Davidson Seamount Management Zone which NOAA added to MBNMS in 2009.

A summary of the 2015 Condition Report will be available to the general public during the public scoping period and on the Internet at: <http://sanctuaries.noaa.gov/science/condition/welcome.html>. The final report will be made available in late December 2015 on the same Web site.

Public Comments

NOAA is interested in hearing the public’s view on:

- The potential impacts of the proposed actions discussed above and ways to mitigate these impacts.

- The topics discussed above for the next five to ten years and whether these are the right topics, the priority topics, or if there are additional topics NOAA should consider.

- The effectiveness of the existing management plan in meeting both the mandates of the NMSA and MBNMS goals and objectives.

- The public’s view on the effectiveness of the MBNMS programs, including programs focused on: Resource protection; research and monitoring; education; volunteer; and outreach.

- NOAA’s implementation of MBNMS regulations and permits.

- Adequacy of existing boundaries to protect sanctuary resources.

- Assessment of the existing operational and administrative framework (staffing, offices, vessels, etc.).

Federal Consultations

This document also advises the public that NOAA will coordinate its consultation responsibilities under section 7 of the Endangered Species Act (ESA), Essential Fish Habitat (EFH) under the Magnuson Stevens Fishery Conservation and Management Act (MSA), section 106 of the National Historic Preservation Act (NHPA, 16 U.S.C. 470), and Federal Consistency review under the Coastal Zone Management Act (CZMA), along with its ongoing NEPA process including the use of NEPA documents and public and stakeholder meetings to also meet the requirements of other federal laws.

In fulfilling its responsibility under the NHPA and NEPA, NOAA intends to identify consulting parties; identify historic properties and assess the effects of the undertaking on such properties; initiate formal consultation with the State Historic Preservation Officer, the Advisory Council of Historic Preservation, and other consulting parties; involve the public in accordance with NOAA’s NEPA procedures, and develop in consultation with identified consulting parties alternatives and proposed measures that might avoid, minimize or mitigate any adverse effects on historic properties and describe them in any environmental assessment or draft environmental impact statement.

Authority: 16 U.S.C. 1431 *et seq.*

Dated: August 20, 2015.

John Armor,

Acting Director, Office of National Marine Sanctuaries.

[FR Doc. 2015–21132 Filed 8–26–15; 8:45 am]

BILLING CODE 3510–NK–P

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

[REG–109813–11]

RIN 1545–BK18

Residence Rules Involving U.S. Possessions

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Notice of proposed rulemaking.

SUMMARY: This document contains proposed amendments to the regulations for determining whether an individual is a bona fide resident of a U.S. territory. These proposed amendments affect individuals establishing bona fide residency in a U.S. territory by allowing additional days of constructive presence in a U.S. territory.

DATES: Written or electronic comments and requests for a public hearing must be received by November 25, 2015.

ADDRESSES: Send submissions to: CC:PA:LPD:PR (REG–109813–11), room 5203, Internal Revenue Service, P.O. Box 7604, Ben Franklin Station, Washington, DC 20044. Submissions may be hand-delivered Monday through Friday between the hours of 8 a.m. and 4 p.m. to CC:PA:LPD:PR (REG–109813–11), Courier’s Desk, Internal Revenue Service, 1111 Constitution Avenue NW., Washington, DC, or sent electronically, via the Federal eRulemaking Portal at www.regulations.gov (IRS REG–109813–11).

FOR FURTHER INFORMATION CONTACT: Concerning the proposed regulations, Stephen Huggs, (202) 317–6941; concerning submission of comments and/or requests for a hearing, Oluwafunmilayo (Funmi) Taylor, (202) 317–6901 (not toll-free numbers).

SUPPLEMENTARY INFORMATION:

Background

This document contains proposed amendments to the Income Tax Regulations (26 CFR part 1) under section 937 of the Internal Revenue Code (Code). Section 937 was added to the Code by the American Jobs Creation Act of 2004 (Public Law 108–357, 118

APPENDIX B

OUTLINE OF DRAFT MANAGEMENT PLAN

Issue Based Action Plans

Climate Change Strategies

- Strategy CC-1: Address coastal resilience and adaptation planning
- Strategy CC-2: Reduce greenhouse gas emissions
- Strategy CC-3: Communicate ocean-climate impacts and solutions
- Strategy CC-4: Implement Coastal Regional Sediment Management Plans (CRSMP)
- Strategy CC-5: Track and share ocean acidification research

Coastal Erosion and Sediment Management Strategies

- Strategy CESM-1: Support progress on Coastal Regional Sediment Management Plans (CRSMPs) for MBNMS
- Strategy CESM-2: Collaborate on land management plan for CEMEX site
- Strategy CESM-3: Reduce the loss of Elkhorn Slough habitat
- Strategy CESM-4: Implement site-specific beach nourishment programs
- Strategy CESM-5: Coordinate with regulatory agencies to determine appropriate disposal of dredge material
- Strategy CESM-6: Track and reduce coastal armoring
- Strategy CESM-7: Reduce impacts to sanctuary resources due to landslides and subsequent emergency responses
- Strategy CESM-8: Reduce impacts to sanctuary resources due to anthropogenic coastal changes to river mouths

Davidson Seamount Strategies

- Strategy DS-1: Conduct site characterizations
- Strategy DS-2: Conduct ecological processes investigations
- Strategy DS-3: Conduct seamount education and outreach initiatives

Emerging Issues Strategies

- Strategy EI-1: Identify and track emerging issues
- Strategy EI-2: Develop process to address emerging issues

Introduced Species Strategies

- Strategy IS-1: Manage pathways and promote prevention
 - Strategy IS-2: Promote early detection and rapid response
 - Strategy IS-3: Implement eradication or control
 - Strategy IS-4: Sustain research and monitoring
 - Strategy IS-5: Implement restoration
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- Strategy IS-6: Implementation in Elkhorn Slough

Marine Debris Strategies

- Strategy MD-1: Assess scope and scale of marine debris
- Strategy MD-2: Foster public participation and support policies leading to reduced marine debris (focus on plastic pollution)
- Strategy MD-3: Reduce marine debris threats by removing the debris and preventing point source inputs

Water Quality Protection Program Strategies

- Strategy WQ-1: Facilitate and coordinate regional efforts to improve water quality through the Water Quality Protection Program Committee (and MOA), Agriculture Water Quality Alliance (AWQA), stormwater programs and Integrated Regional Water Management programs
- Strategy WQ-2: Understand the land-sea connection
- Strategy WQ-3: Quantify effectiveness of management practices
- Strategy WQ-4: Monitor and reduce pollutant loads flowing into MBNMS
- Strategy WQ-5: Promote public engagement and stewardship through citizen science monitoring programs and other WQPP efforts
- Strategy WQ-6: Communicate findings of projects and monitoring conducted by the WQPP

Wildlife Disturbance Strategies

- Strategy WD-1: Mitigate wildlife disturbance from marine vessels and shore-based activities
- Strategy WD-2: Mitigate wildlife disturbance from aircraft
- Strategy WD-3: Develop acoustic baseline profiles within MBNMS
- Strategy WD-4: Reduce underwater low-frequency mechanical sound emissions
- Strategy WD-5: Use administrative methods to reduce wildlife disturbance
- Strategy WD-6: Use law enforcement resources to reduce wildlife disturbance
- Strategy WD-7: Reduce the risk of wildlife entanglement in fishing gear
- Strategy WD-8: Respond to wildlife entangled in fishing gear

Program Based Action Plans

Education, Outreach, and Communication Strategies

- Strategy EO-1: Coordinate education programs through sanctuary visitor centers
 - Strategy EO-2: Enhance sanctuary interpretation and outreach programs
 - Strategy EO-3: Promote public engagement and stewardship through citizen science monitoring programs
 - Strategy EO-4: Maintain and develop sanctuary-wide exhibits and interpretive signage
 - Strategy EO-5: Foster and promote government and community relations
 - Strategy EO-6: Increase awareness of the sanctuary through effective media and communication tools
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- Strategy EO-7: Engage in local, regional and national collaborations to leverage education and outreach opportunities
- Strategy EO-8: Evaluate effectiveness of sanctuary education and outreach efforts

Marine Spatial Planning Strategies

- Strategy MSP-1: Implement sanctuary ecologically significant areas (SESAs)
- Strategy MSP-2: Track and monitor vessel traffic compliance
- Strategy MSP-3: Collaborate on fishery management issues
- Strategy MSP-4: Assess motorized personal water craft (MPWC) zones
- Strategy MSP-5: Coordinate regionally, nationally and internationally on marine protected areas
- Strategy MSP-6: Maintain aircraft overflight zones
- Strategy MSP-7: Track and respond to offshore wind and wave energy proposals
- Strategy MSP-8: Initiate assessment for the use of artificial reefs for recreation, restoration, or other uses in MBNMS
- Strategy MSP-9: Monitor and assess golf ball deposition and remediation efforts associated with errant golf ball deposition to the sanctuary from area golf courses

Maritime Heritage Strategies

- Strategy MH-1: Inventory and assess submerged sites
- Strategy MH-2: Threat assessment for shipwrecks and submerged structures
- Strategy MH-3: Protect and manage submerged archaeological resources
- Strategy MH-4: Develop maritime cultural landscape-focused education and outreach programs

Operations and Administration Strategies

- Strategy OA-1: Management of MBNMS budget
- Strategy OA-2: Support management plan priorities
- Strategy OA-3: Coordinate and support Sanctuary Advisory Council
- Strategy OA-4: Support technical requirements of MBNMS staff and facilities
- Strategy OA-5: Oversee MBNMS facilities
- Strategy OA-6: Facilitate field operations
- Strategy OA-7: Provide general administrative support
- Strategy OA-8: Administer human resources

Research and Monitoring Strategies

- Strategy RM-1: Characterize biological and physical features in MBNMS
 - Strategy RM-2: Maintain and expand the Sanctuary Integrated Monitoring Network (SIMoN)
 - Strategy RM-3: Support science focused on priority sanctuary needs
 - Strategy RM-4: Facilitate the flow of science information among academic institutions, government agencies, and other institutions
 - Strategy RM-5: Coordinate with and participate in implementing research components of the Office of National Marine Sanctuaries West Coast Regional Office
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- Strategy RM-6: Coordinate with and participate in implementing policies of the Office of National Marine Sanctuaries Conservation Science Program
- Strategy RM-7: Interpret select technical science information

Resource Protection Strategies

- Strategy RP-1: Continue to build partnerships and leverage opportunities for protecting sanctuary wildlife, habitats, qualities, and cultural resources through collaborative planning and management
 - Strategy RP-2: Enhance socioeconomic program through collaboration with ONMS Headquarters socioeconomic team.
 - Strategy RP-3: Maintain and enhance permitting and environmental review program
 - Strategy RP-4: Review projects, plans, and permits of other agencies
 - Strategy RP-5: Implement enforcement programs
 - Strategy RP-6: Interpret and distribute resource protection information
 - Strategy RP-7: Coordinate resource protection programs including interpretive enforcement and citizen science programs
 - Strategy RP-8: Coordinate with and participate in implementing resource protection components of the Office of National Marine Sanctuaries West Coast Regional Office
 - Strategy RP-9: Coordinate with and participate in implementing policies and programs of the Office of National Marine Sanctuaries
 - Strategy RP-10: Review and revise the sanctuary's spill response plan and emergency response information
 - Strategy RP-11: Develop and implement restoration and recovery plans to address habitat damages and endangered species
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APPENDIX C

ONMS BEST MANAGEMENT PRACTICES FOR FIELD ACTIVITIES

All ONMS vessels must comply with the operational protocols and procedures in the NOAA Small Boats Policy (NAO 209-125). In addition, the following best management practices are used as applicable during ONMS-related field activities:

Lookouts/Staying at the Helm

- While underway, vessel operators should always stay alert for marine mammals, sea turtles, and other collision hazards.
- While transiting in areas where marine mammals and sea turtles are likely to occur, vessel operators should post a minimum of one dedicated lookout and operators should remain vigilant at the helm controls (keeping hands on the wheel and throttle at all times) and be ready to take action immediately to avoid an animal in their path.
- When operating in areas where marine mammals and sea turtles are present, a dedicated lookout is required in addition to the operator. A second lookout may be posted in circumstances where visibility is restricted.
- When marine mammals are riding the bow wake, or porpoising nearby, operators should exercise caution and take actions that avoid possible contact or collisions.
- When operating within visual range of whales, vessel operators should follow NOAA National Marine Fisheries Service (NMFS) Whale Watching guidelines unless otherwise covered by a NMFS permit, and only then with extreme caution.

Vessel Speed

- All vessels must reduce to prudent speed when marine mammals and sea turtles are visible within 1 nautical mile (nm) of the vessel and should not exceed 10 knots.

Maintaining Distance

- Once large whales are sighted, vessel operators should stay at least 100 yards away, 200 yards away from killer whales and 50 yards away from sea turtles.
- If large whales surface within 100 yards, vessel operators should stop immediately and use prudent seamanship to decide to either move away slowly or wait for the animal to move away on its own.
- In the case of northern right whales, a distance of at least 500 yards should be maintained per NMFS regulations.

Towing Divers

- Divers will be towed at approximately 3 knots.
-

Operation of Vessels during Daylight Hours

- Due to the increased risk of collision at night, vessel operations, whenever possible, should be planned for daylight hours (i.e., between ½ hour before sunrise and ½ hour after sunset when possible).
- Restricted visibility can hinder an operator's ability to see and respond to a marine mammals and sea turtles. Prudent seamanship should be applied, including posting an additional lookout when there is the potential for marine animals in the vicinity.

Operation of Vessels during Night Hours

- Standing Order for Nighttime Operations – If night time operations are essential and integral to the mission, the principal investigator must discuss mitigations for avoiding whales and other objects within the vessel operation corridor and incorporate them into the cruise plan. Mitigation measures could include: speed restrictions, additional lookouts, use of navigation lights, and use of sound signals, etc.

Standing Order for Operations around Marine Mammals

- This order requires several precautionary measures such as: incorporating whale sighting information in cruise planning, slowing to 10 knots. in a Seasonal or Dynamic Management Area, following the Whale Watching Guidelines, maintaining a constant lookout for whales, and following specific procedures if a whale is struck.

Anchoring and Deployment of Instruments

- In the West Coast region, anchoring will be limited to sandy-bottom substrates to avoid damage to seagrasses and coral habitat.
- In the West Coast region, sargassum interaction is limited, as much as is reasonable feasible, to prevent impact on sea turtle hatchling habitat.
- In general, instruments are deployed and lowered onto sandy substrate whenever possible; deployment of instruments occurs slowly and under constant supervision to minimize risk and mitigate impacts if a collision or entanglement occurs; and while vehicles or personnel are deployed, spotters monitor the activities at all times.

Safety

- Safety Briefings: All ONMS vessel captains include safety information during pre-cruise briefings for staff and volunteers.
 - All divers working on ONMS vessels are diver-certified.
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APPENDIX D

CONSULTATION DOCUMENTS AND PROTECTED SPECIES LIST

For the purposes of this analysis, protected species include:

- Marine and terrestrial species believed to be present in the action area that are listed or proposed or are candidate species for listing as Threatened or Endangered by the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS) pursuant to the Endangered Species Act (ESA);
- Marine species believed to be present in the action area that are listed as Rare, Threatened, or Endangered by California Department of Fish and Wildlife (CDFW) pursuant to the California Endangered Species Act (CESA) that are protected by MBNMS regulations (i.e. White Shark);
- Marine species believed to be present in the action area that area protected under the Marine Mammal Protection Act (MMPA).

ESA-Listed Species under USFWS Jurisdiction

ONMS identified 9 ESA-listed species under USFWS jurisdiction that are found in the project action area and could be affected by the proposed action. These species are: southern sea otter, green sea turtle, California red-legged frog, California condor, California least tern, short-tailed albatross, California clapper rail, marbled murrelet, and western snowy plover.

ONMS does not believe the following ESA-listed species or designated critical habitat occur in the action area or that MBNMS activities would affect these species because the majority of MBNMS activities would occur in marine environments or at a few onshore locations outside of the habitat and range of these terrestrial species: giant kangaroo rat, salt marsh harvest mouse, San Joaquin kit fox, Least Bell's vireo, northern spotted owl, southwestern willow flycatcher, yellow-billed cuckoo, blunt-nosed leopard lizard, San Francisco garter snake, California tiger salamander, Santa Cruz long-toed salamander, delta smelt, Kern primrose sphinx moth, mission blue butterfly, Myrtle's silverspot butterfly, ohlone tiger beetle, San Bruno elfin butterfly, Smith's blue butterfly, Zayante band-winged grasshopper, vernal pool fairy shrimp, beach layia, Ben Lomond spineflower, Ben Lomond wallflower, California jewelflower, Chorro Creek bog thistle, clover lupine, coastal dunes milk-vetch, Contra Costa goldfields, Hickman's potentilla, Marin dwarf-flax, marsh sandwort, Menzies' wallflower, Monterey clover, Monterey gilia, Monterey spineflower, salt marsh bird's-beak, San Mateo woolly sunflower, Santa Cruz tarplant, Scotts Valley polygonum, Scotts Valley spineflower, showy indian clover, spreading navarretia, white-rayed pentachaeta, Yadon's piperia, Gowen cypress, Santa Cruz cypress.

The species lists obtained through the USFWS IPaC website from the Sacramento and Ventura Fish and Wildlife Offices are provided below.

ESA-Listed Species under NMFS Jurisdiction

ONMS identified 23 ESA-listed species (or distinct population segment (DPS)/evolutionarily significant unit (ESU)) under NMFS jurisdiction that are found in the project action area and could be affected by the proposed action. These species are: black abalone, Sacramento River winter-run chinook salmon, Central Valley spring-run chinook salmon, California coastal chinook salmon, Central California coast coho salmon, Central California coast steelhead, South Central California coast steelhead, North American green sturgeon southern DPS, longfin smelt, tidewater goby, eulachon, leatherback sea turtle, green sea turtle, loggerhead sea turtle, olive ridley sea turtle, Guadalupe fur seal, blue whale, humpback whale, fin whale, sperm whale, killer whale, North Pacific right whale, and sei whale.

ONMS does not believe the following species or DPS/ESU occur in the action area or that MBNMS activities would affect these species: western North Pacific gray whales, white abalone, Puget Sound DPSs of bocaccio and yelloweye rockfish, Eastern Pacific DPS of scalloped hammerhead shark, and Gulf grouper. In addition, ONMS determined that the following DPSs or ESUs of West Coast salmon and steelhead do not occur in the action area: Hood Canal summer-run chum salmon, Ozette Lake sockeye salmon, Puget Sound chinook salmon, Puget Sound steelhead, Middle Columbia River steelhead, Snake River fall-run chinook salmon, Snake River spring / summer-run chinook salmon, Snake River sockeye salmon, Snake River steelhead, Upper Columbia River spring-run chinook salmon, Upper Columbia River steelhead, Columbia River chum salmon, Lower Columbia River chinook salmon, Lower Columbia River coho salmon, Lower Columbia River steelhead, Upper Willamette River chinook salmon, Upper Willamette River steelhead, Oregon Coast coho salmon, Southern OR / Northern CA Coasts coho salmon, Northern California steelhead, California Central Valley steelhead, and Southern California steelhead.

Protected Species Table

Table D1 provides a list of the protected species known or likely to occur in the action area, the species listing status, habitat requirements, regional occurrence and potential to occur in the MBNMS action area.

Table D1. List of Protected Species in the Action Area

Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
Southern sea otter	ESA Threatened; MMPA	A top carnivore in its coastal range and a keystone species of the nearshore coastal zone and associated with kelp forests.	No	Year-round-Common	High. Otters are commonly found in the nearshore waters of Monterey Bay, along the Big Sur Coastline and in Elkhorn Slough.
California sea lion	MMPA	Coastal waters of Monterey Bay are used for foraging with haul-out sites near Fishermen's Wharf; most abundant pinniped in MBNMS.	No	Seasonal-Common	High. Main haul-out sites are located up and down the coast.
Steller sea lion	MMPA	Occasional visitor in fall and winter utilizing the coastal waters of Monterey Bay for foraging, usually found among the California sea lions on the Coast Guard jetty in Monterey harbor.	Yes, 3000 feet seaward of basepoint of rookery at Año Nuevo and extending 3000 feet above rookery.	Seasonal-Occasional	Low. A small population breeds on Año Nuevo Island, just north of Monterey Bay and occasional individuals transit through MBNMS waters
Harbor seal	MMPA	Commonly observed pinniped along MBNMS coastline. Use the offshore waters of Monterey Bay for foraging and beaches for resting. Occur on offshore rocks, on sand and mudflats in estuaries and bays, and on some isolated beaches.	No	Year-round-Common	High. Residents of the study area throughout the year, occurring mainly close to shore.
Northern fur seal	MMPA Depleted	Usually come ashore in California only when debilitated, however, few individuals observed on Año Nuevo Island. Occur off of central California during winter following migration from northern breeding grounds.	No	Seasonal-Rare	Low. Usually 18-28 km from shore in California, however, they have been observed within 5 km of Point Pinos.
Northern elephant seal	MMPA	Usually observed offshore swimming and foraging and only come ashore to	No	Year-round, Common	Low. Northern elephant seals are widely distributed in MBNMS. They are sighted regularly

Appendix D: Consultation Documents and Protected Species List

Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
		one of the established rookeries. Three rookeries are on mainland beaches in MBNMS at Pt. Piedras Blancas, Cape San Martin/Gorda, and Año Nuevo State Park.			over shelf, shelf-break, and slope habitats and they are also present in deep ocean habitats seaward of the 2000 m isobaths.
Guadalupe fur seal	ESA Threatened; MMPA Depleted	Breed along the eastern coast of Guadalupe Island, approximately 200km west of Baja California. In addition, individuals have been sighted in the southern California Channel Islands, including two males who established territories on San Nicolas Island. Guadalupe fur seals have been reported on other southern California islands, and the Farallon Islands off northern California with increasing regularity since the 1980s and only occasional observed foraging and swimming in the waters of Monterey bay.	No	Seasonal-Very Rare	Low. Not known to regularly haul out or breed in MBNMS, but occasionally individuals have been sighted in MBNMS waters or have stranded on beaches located within the study area. ¹ Reference: Monterey Bay National Marine Sanctuary (MBNMS), 2016a. Marine Mammals. II. Pinnipeds (seals and sea lions). http://montereybay.noaa.gov/sitechar/mamm2.html . Accessed on June 15, 2016.
Harbor porpoise	MMPA	Observed in shallow sandy bottom areas of the Monterey Bay shelf where they forage.	No	Year-round-Common	Moderate. The main population is located offshore Sunset Beach State Park, individuals have been reported in the nearshore waters adjacent to the former Fort Ord military base.
Risso's dolphin	MMPA	Generally found in waters greater than 1,000m in depth and seaward of the continental shelf and slopes but have been sighted associated with squid congregations in the nearshore environment of Monterey Peninsula.	No	Year-round-Occasional	High An increase in the number of Risso's dolphins in MBNMS has occurred since 1973. They feed on squid.

Appendix D: Consultation Documents and Protected Species List

Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
Common dolphin – long-beaked	MMPA	Found relatively close to shore swimming and foraging.	No	Year-round-Common	High. The common dolphin is the most abundant cetacean found in the coastal waters of California, and the abundance within MBNMS has increased in recent years.
Common dolphin – short-beaked	MMPA	A more pelagic species than the long-beaked common dolphin, they utilize Monterey Bay for foraging. ³	No	Year-round-Rare	Low. Generally found offshore. Short-beaked common dolphins are often found in association with underwater ridges, seamounts, and continental shelves where upwelling occurs and prey is abundant.
Dall’s porpoise	MMPA	The most pelagic of the porpoises in MBNMS, they utilize Monterey Bay for foraging.	No	Year-round-Rare	Low. Most frequently seen off of Point Pinos and over the Monterey Canyon
Bottlenose dolphin	MMPA Depleted	Includes coastal and offshore populations. Both species use the waters of Monterey Bay for foraging.	No	Year-round-Common	Moderate. More than 45 individuals have been sighted during one recent survey. This species is now considered a resident of Monterey Bay, and is confined to within one km of shore. ³
Pacific white-sided dolphin	MMPA	Commonly seen near the shelf break in the offshore waters of Monterey Bay.	No	Year-round Common	Moderate. This had been the most frequently seen dolphin in Monterey Bay but has recently been replaced by the common dolphin. Occurs primarily within 15km west of Carmel Bay and within 25km southwest of Santa Cruz
Northern right whale dolphin	MMPA	Deep, cold temperate waters over the continental shelf and slope in offshore Monterey Bay.	No	Year-round-Rare	Low. Sighting patterns from aerial and shipboard surveys suggest seasonal north-south movements, with animals found primarily off California during the colder water months and shifting northward into Oregon and Washington as water temperatures increase in late spring and summer.
Minke whale	MMPA	Can be in coastal/inshore and oceanic/offshore areas of Monterey bay.	No	Year-round-Occasional	Low. Occasional sightings in the nearshore waters of Monterey Bay. Sightings are usually of single individuals

Appendix D: Consultation Documents and Protected Species List

Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
Blue whale	ESA Endangered; MMPA Depleted	In Monterey Bay, blue whales often occur near the edges of the submarine canyon and shelf-break edges where krill tends to concentrate. Blue whales feed only on krill and are in Monterey Bay between June and October, during times of high krill abundance. Blue whales begin to migrate south during November.	No	Seasonal-Common	Moderate. Regularly observed in Monterey Bay but mostly in deep waters.
Humpback whale	ESA Endangered; MMPA Depleted	Central California population of humpback whales migrates from their winter calving and mating areas off Mexico to their summer and fall feeding areas off coastal California. Humpback whales occur in Monterey Bay from late April to early December.	No. Proposed critical habitat for the Central American and Mexico DPSs of humpback whales include the waters of MBNMS (84 FR 54354).	Seasonal-Common	High. Observed throughout Monterey Bay. The humpback whale ESA listing final rule (81 FR 62259, September 8, 2016) established 14 distinct population segments (DPSs) with different listing statuses. The CA/OR/WA humpback whale stock primarily includes whales from the endangered Central American DPS and the threatened Mexico DPS, plus a small number of whales from the non-listed Hawaii DPS.
Fin whale	ESA Endangered; MMPA Depleted	More common farther from shore; occasionally encountered during the summer and fall in Monterey Bay.	No	Seasonal-Occasional	Moderate. Fin whales found mainly farther offshore in deep waters. Most migrate from the Arctic and Antarctic feeding areas in the summer to tropical breeding and calving areas in the winter
Sperm whale	ESA Endangered; MMPA Depleted	Occur in many open oceans; live at the surface of the ocean but dive deeply to catch giant squid.	No	Year-round-Occasional	Low. Offshore mostly in deep waters.
Gray whale	MMPA Depleted	Predominantly occur within the nearshore coastal waters of Monterey Bay. This species has been delisted under ESA but remains protected under MMPA.	No	Seasonal-Common	Moderate. Occurring in coastal waters during late fall-winter southward migration and again late winter to early summer during their northward migration.

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Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
Killer whale	ESA Endangered; MMPA	Transient species observed throughout coastal California waters. The Southern Resident DPS is endangered and occurs mainly within the inland waters of Washington State and southern British Columbia, but also in coastal waters from Southeast Alaska through California	No (however, critical habitat for Southern Resident Killer Whale DPS might be revised based on 80 FR 9682 from February 24, 2015).	Seasonal-Occasional	Moderate. Most common during April, May, and June as they feed on northbound migrating gray whales.
North pacific right whale	ESA Endangered; MMPA Depleted	Seasonally migratory; inhabit colder waters for feeding, and then migrate to warmer waters for breeding and calving. Although they may move far out to sea during their feeding seasons, right whales give birth in coastal areas.	No	Seasonal-Very Rare	Low. Sightings in MBNMS are very rare. Migration patterns of the North Pacific right whale are unknown, although it is thought the whales spend the summer in far northern feeding grounds and migrate south to warmer waters, such as southern California, during the winter.
Sei whale	ESA Endangered; MMPA Depleted	Sighted in offshore waters throughout the latitudinal range of MBNMS, though usually occur seaward of the sanctuary's western boundary. Observed generally in deep water habitats including along the edge of the continental shelf, over the continental slope, and in the open ocean.	No	Seasonal-Very Rare	Low. Sightings have become rare in MBNMS since the 1980s. The movement patterns of sei whales are not well known, but they are typically observed in deeper waters far from the coastline. Sei whales have an unpredictable distribution. Many whales may be found in one area for a period and then not return for years or decades.
Short-finned pilot whale	MMPA	Found primarily in deep waters in warmer tropical and temperate waters. Forage in areas with high densities of squid.	No	Year-round-Very Rare	Low. Generally found in deep water
Baird's beaked whale	MMPA	Inhabit deep offshore waters in the North Pacific. Baird's beaked whales generally migrate seasonally based on surface water temperature. During summer and fall they are found in or	No	Seasonal-Rare	Low. Sightings in the fall in Monterey Bay and in deep waters.

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Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
		near the waters of the continental slope. Between April and October, Baird's beaked whales have been observed in the nearshore waters of the Bering Sea and Okhotsk Sea. They will move farther offshore during winter and spring when sea temperatures have decreased.			
Cuvier's beaked whale	MMPA	Deep pelagic waters (usually greater than 1,000m deep) of the continental shelf and slope. Seasonality and migration patterns are unknown. ⁶	No	Seasonality unknown-Very Rare	Low. Generally, occur in the deep waters. Infrequent strandings in Monterey Bay.
Leatherback sea turtle	ESA Endangered	Offshore pelagic environment and often associated with the 50 m isobaths, and can be found quite close to shore, even reported as such in Monterey Bay.	Yes	Seasonal-Occasional	Low. Leatherback sea turtles are most commonly seen between July and October, when the surface water temperature warms to 15-16° C and large jellyfish, the primary prey of the turtles, are seasonally abundant offshore.
Green sea turtle	ESA Threatened	Common inhabitants of coastal regions, embayments, and lagoons, but mainly occur in tropical regions, occasionally ranging into Monterey Bay during periods of warm water.	No	Seasonal-Occasional	Low. In the eastern Pacific, green turtles have been sighted from Baja California to southern Alaska but most commonly occur from San Diego south.
Loggerhead sea turtle	ESA Endangered	An oceanic species in temperate and tropical regions.	No	Seasonal-Occasional	Low. In the U.S., most recorded sightings are of juveniles off the coast of California but occasional sightings are reported along the coasts of Washington and Oregon.
Olive ridley sea turtle	ESA Threatened	Found in warm temperate and tropical waters, typically < 15 km from mainland shores but also in oceanic waters. In the eastern Pacific, the range of the Olive Ridley turtle extends from southern California to northern Chile.	No	Year-round-Very Rare	Not Expected. An olive ridley sea turtle stranded in Pacific Grove in the fall of 2011 and if the surface waters are warm (approaching 60 degrees), In the eastern Pacific, olive ridley sea turtles are highly migratory and those migratory pathways vary annually.

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Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
California red-legged frog	ESA Threatened	This species occurs from sea level to elevations of about 1,500 meters (5,200 feet). It has been extirpated from 70 percent of its former range and now is found primarily in coastal drainages of central California, from Marin County, California, south to northern Baja California, Mexico (74 FR 51825).	Yes, found in rivers within which water sampling during Snapshot Day occurs	Seasonal, rare	Low. Uses a variety of habitats but do require a breeding pond, or slow-flowing stream reaches or deep pools which hold water long enough for the tadpoles to metamorphosize. The breeding season runs from November through April and mating depends on seasonal climatic patterns but commonly occurs in February or March.
Chinook salmon (Sacramento River winter-run ESU)	ESA Endangered	Anadromous and semelparous. As adults they migrate from a marine environment into the fresh water streams and rivers of their birth (anadromous) where they spawn and die (semelparous).	No	Seasonal	Moderate. Chinook salmon typically enter the Sacramento River from November to June and spawn from late-April to mid-August, with a peak from May to June. They inhabit nearshore coastal waters of Central California throughout the year, but especially during migration periods.
Chinook salmon (Central Valley spring-run ESU)	ESA Threatened	Anadromous and semelparous. As adults they migrate from a marine environment into the fresh water streams and rivers of their birth (anadromous) where they spawn and die (semelparous).	No	Seasonal	Moderate. Chinook salmon typically enter the Sacramento River from November to June and spawn December to April. They inhabit nearshore coastal waters of Central California throughout the year, but especially during migration periods.
Chinook salmon (California Coastal ESU)	ESA Threatened	Juveniles may spend 3 months to 2 years in freshwater before migrating to estuarine areas as smolts and then into the ocean to feed and mature. They prefer streams that are deeper and larger than those used by other Pacific salmon species.	No	Seasonal	Low. Historically, the range extended from Oregon to the Ventura River in California. Chinook salmon in this ESU exhibit an ocean-type life history and use Monterey Bay waters for foraging.
Coho Salmon (Central California coast ESU)	ESA Endangered	Spend approximately the first half of their life cycle rearing and feeding in streams and small freshwater tributaries with stable gravel substrates. The remainder of the life	Yes, found in rivers within which water sampling during Snapshot Day occurs	Seasonal	Moderate. Historically, runs were common in the Pajaro and Salinas Rivers but have not been observed since the 1990s. Current runs exist in Waddell Creek, Scott Creek, San Lorenzo River, Soquel Creek, and Aptos Creek. In Monterey County, only two small runs in the Carmel and Big

Appendix D: Consultation Documents and Protected Species List

Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
		cycle is spent foraging in estuarine and marine waters of the Pacific Ocean.			Sur Rivers exist. May potentially occur in the waters adjacent to the Action Area during migration.
Steelhead (Central California Coast DPS)	ESA Threatened	Steelhead are anadromous and can spend up to 7 years in fresh water prior to smoltification, and then spend up to 3 years in salt water prior to first spawning.	Yes, found in rivers within which water sampling during Snapshot Day occurs	Seasonal	Low. The nearest naturally spawned populations occur in Aptos Creek, north of the Project site within Santa Cruz County. **: In estuarine areas extreme high water is the best descriptor of lateral extent for critical habitat. We are designating the area inundated by extreme high tide because it encompasses habitat areas typically inundated and regularly occupied during the spring and summer when juvenile salmon are migrating in the nearshore zone and relying heavily on forage, cover, and refuge qualities provided by these occupied habitats.
Steelhead (South Central California Coast DPS)	ESA Threatened	Steelhead are anadromous and can spend up to 7 years in fresh water prior to smoltification, and then spend up to 3 years in salt water prior to first spawning.	Yes, found in rivers within which water sampling during Snapshot Day occurs	Seasonal	Moderate. This DPS occupies rivers from the Pajaro River in Santa Cruz County to (but not including) the Santa Maria River in Santa Barbara County.
North American green sturgeon, southern DPS	ESA Threatened	Within the marine environment, the Southern DPS occupies coastal bays and estuaries from Monterey Bay to Puget Sound in Washington. Individuals occasionally enter coastal estuaries to forage. All of Monterey Bay is designated critical habitat for green sturgeon.	Yes, within 60 fathoms (fm) depth from Monterey Bay, California (including Monterey Bay)	Seasonal	Moderate. Subadult and adult green sturgeon mainly occupy coastal marine and estuarine habitats throughout the water column but typically feed in benthic environments (Erickson and Hightower 2007; Dumbauld et al. 2008). Subadult and adult green sturgeon may undergo extensive seasonal migrations to reach productive feeding grounds, including Monterey Bay (NOAA, 2009). In marine waters off the Rogue River, Green sturgeon primarily occupied the water column between 40 and 70 m (~130' to ~230') depths (Erickson and Hightower 2007). However, off Newport, Oregon, tagged sturgeon were found mainly in association

Appendix D: Consultation Documents and Protected Species List

Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
					with highly complex seafloor habitats (e.g., boulders) between 20–60 m (Huff et al. 2011). Subadult Green sturgeon have been recorded just outside of San Francisco Bay at average depths of 24 m (Ethan Mora, University of California, Santa Cruz, pers. comm.).
Longfin smelt	ESA Candidate for Listing	Anadromous estuarine species occupying the middle or bottom of water column in salinities between 15-30 ppt.	No	Seasonal	Low. A single longfin smelt collected from the Monterey Bay area was reported by Eschmeyer et al. (1983) but the San Francisco Bay-Delta population is considered to be the southernmost population for the species.
Tidewater goby	ESA Endangered	California's coastal estuaries and enclosed lagoons near the mouths of coastal streams, and can also be found in brackish waters of adjoining marshes and streams.	Yes	Year-round	Low. Seasonally present in estuarine habitats within Monterey Bay including Elkhorn Slough, Bennet Slough, and Salinas River, all of which are outside of the study area.
Eulachon	ESA Threatened	Spawning and rearing in estuarine river habitat; migrate to saltwater where they spend three years and then return to river spawning locations.	No	Seasonal-Very Rare	Low. Monterey Bay is at the southernmost limit of this species distribution, and the population is in decline (NMFS, 2016).
Black abalone	ESA Endangered	Coastal and offshore island intertidal habitats on exposed rocky shores where bedrock provides deep, protective crevices for shelter.	Yes	Year-round Common	Moderate. Could be present on hard substrate areas in the nearshore, intertidal portions of the Action Area.
California condor	ESA Endangered	Adult will lay single egg between January and March; in 2006, a Big Sur pair was found nesting in a Coast Redwood and also condors were discovered feeding on a Gray Whale carcass on the Big Sur coast; captive bred condors have release site in Big Sur area	No	Year-round; Occasional	Moderate. Often flies over MBNMS in Big Sur area and could feed on dead marine mammals in or adjacent to MBNMS.

Appendix D: Consultation Documents and Protected Species List

Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
California least tern	ESA Endangered	The Pacific Coast of California, from San Francisco to Baja California. See 5-year review (PDF) for detailed, up-to-date distribution information. California least terns winter in Mexico. When feeding, they follow schools of fish and are sometimes seen as far north as southern Oregon. Nest on open beaches kept free of vegetation by the tide. Mating in April or May	No	Seasonal (April-September); rare	Low. Highest frequency of birds seen in July and early August (eBird bar chart for Monterey, Santa Cruz and San Luis Obispo Counties Jan-Dec 1900-2019).
Short-tailed albatross	ESA Endangered	Both adult and juvenile birds extensively use areas of the western Pacific east of Japan.	No	Year-round; very rare	Low. Short-tailed albatross 5-year review states juvenile (< 1 year old) short-tailed albatrosses travel much more broadly throughout the North Pacific than adult birds; breed in Japan (USFWS, 2014)
California clapper rail	ESA Endangered	Historically, the range may have extended from salt marshes of Humboldt Bay to Morro Bay. The salt marshes of San Francisco Bay have been the center of its abundance. The California clapper rail now occurs only within the tidal salt and brackish marshes around San Francisco Bay where it is restricted to less than 10 percent of its former geographic range.	No	Year-round; very rare	Not expected. South of the San Francisco Bay Area (Bay Area), clapper rails formerly occurred in Elkhorn Slough, Monterey County (Silliman 1915), and Morro Bay, San Luis Obispo County (Brooks 1940). Clapper rails were consistently detected in Elkhorn Slough up to 1972, when an estimated 10 pairs were observed (Varoujean 1972). Subsequently, rails were observed only sporadically (Winter and Laymon 1979), and were last documented there in 1980 (Roberson 1985). (p.7); breeding begins by February, nesting starts mid-march and extends into August (USFWS, 2013).
Marbled murrelet	ESA Threatened	Nest in forested areas containing characteristics of older forests; For nesting habitat to be accessible to marbled murrelets, it must occur close enough to the marine environment for marbled murrelets to fly back and forth.	Yes, 81 FR 51348	Seasonal; occasional	Low. Often in small flocks on coastal waters, where it dives underwater searching for fish.

Appendix D: Consultation Documents and Protected Species List

Common Name	Listing Status	Habitat Requirements	Designated Critical Habitat found in Action Area	Regional Occurrence	Potential to Occur in the Action Area
		The farthest inland distance for a site with nesting behavior detections is 24 mi (39 km), respectively (81 FR 51348).			
Western snowy plover	ESA Threatened	Barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, river bars, along alkaline or saline lakes, reservoirs, and ponds. Nests are a natural or scraped depression on dry ground	Yes, Critical habitat: 06/19/2012: 77 FR 36727	Year-round	Moderate to High. Nesting: March-September
White sharks	CSC	In California, important white shark habitat occurs around Monterey Bay and Greater Farallones, national marine sanctuaries. White shark populations are impacted by purposeful and incidental capture by fisheries, marine pollution, and coastal habitat degradation. "Protected" by MBNMS regulations: prohibited to attract any white shark within the Sanctuary (15 CFR 922.132 (a)(13).	Not applicable	Year-round	Moderate to High. Present in coastal waters throughout the State and juveniles and adults are known to frequent the nearshore coastal waters along Monterey Bay coastline.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:

June 18, 2020

Consultation Code: 08ESMF00-2019-SLI-2224

Event Code: 08ESMF00-2020-E-06779

Project Name: Monterey Bay National Marine Sanctuary Revisions to Management Plan and Regulations

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Ventura Fish And Wildlife Office

2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Project Summary

Consultation Code: 08ESMF00-2019-SLI-2224

Event Code: 08ESMF00-2020-E-06779

Project Name: Monterey Bay National Marine Sanctuary Revisions to Management Plan and Regulations

Project Type: ** OTHER **

Project Description: NOAA proposes to operate Monterey Bay National Marine Sanctuary by managing activities occurring within the sanctuary, conducting research, monitoring and resource protection, conducting routine field operations, and implementing various outreach and educational activities, consistent with the NMSA.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/36.71745122750306N122.30746751695605W>



Counties: Marin, CA | Monterey, CA | San Francisco, CA | San Luis Obispo, CA | San Mateo, CA | Santa Cruz, CA

Endangered Species Act Species

There is a total of 23 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse <i>Reithrodontomys raviventris</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613	Endangered
Southern Sea Otter <i>Enhydra lutris nereis</i> No critical habitat has been designated for this species. <i>This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.</i> Species profile: https://ecos.fws.gov/ecp/species/8560	Threatened

Birds

NAME	STATUS
California Clapper Rail <i>Rallus longirostris obsoletus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern <i>Sterna antillarum browni</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl <i>Strix occidentalis caurina</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Short-tailed Albatross <i>Phoebastria (=Diomedea) albatrus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered
Western Snowy Plover <i>Charadrius nivosus nivosus</i> Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is proposed critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
San Francisco Garter Snake <i>Thamnophis sirtalis tetrataenia</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5956	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Tidewater Goby <i>Eucyclogobius newberryi</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
Mission Blue Butterfly <i>Icaricia icarioides missionensis</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6928	Endangered
Myrtle's Silverspot Butterfly <i>Speyeria zerene myrtleae</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6929	Endangered
San Bruno Elfin Butterfly <i>Callophrys mossii bayensis</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394	Endangered

Flowering Plants

NAME	STATUS
Hickman's Potentilla <i>Potentilla hickmanii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6343	Endangered
Marin Dwarf-flax <i>Hesperolinon congestum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5363	Threatened
San Mateo Woolly Sunflower <i>Eriophyllum latilobum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7791	Endangered
Santa Cruz Tarplant <i>Holocarpha macradenia</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6832	Threatened
Showy Indian Clover <i>Trifolium amoenum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered
White-rayed Pentachaeta <i>Pentachaeta bellidiflora</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7782	Endangered

Critical habitats

There are 4 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> https://ecos.fws.gov/ecp/species/2891#crithab	Final
Marbled Murrelet <i>Brachyramphus marmoratus</i> https://ecos.fws.gov/ecp/species/4467#crithab	Final
Tidewater Goby <i>Eucyclogobius newberryi</i> https://ecos.fws.gov/ecp/species/57#crithab	Final
Western Snowy Plover <i>Charadrius nivosus nivosus</i> https://ecos.fws.gov/ecp/species/8035#crithab	Final



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
Phone: (805) 644-1766 Fax: (805) 644-3958

In Reply Refer To:

June 18, 2020

Consultation Code: 08EVEN00-2019-SLI-0565

Event Code: 08EVEN00-2020-E-01006

Project Name: Monterey Bay National Marine Sanctuary Revisions to Management Plan and Regulations

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed list identifies species listed as threatened and endangered, species proposed for listing as threatened or endangered, designated and proposed critical habitat, and species that are candidates for listing that may occur within the boundary of the area you have indicated using the U.S. Fish and Wildlife Service's (Service) Information Planning and Conservation System (IPaC). The species list fulfills the requirements under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the species list should be verified after 90 days. We recommend that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists following the same process you used to receive the enclosed list. Please include the Consultation Tracking Number in the header of this letter with any correspondence about the species list.

Due to staff shortages and excessive workload, we are unable to provide an official list more specific to your area. Numerous other sources of information are available for you to narrow the list to the habitats and conditions of the site in which you are interested. For example, we recommend conducting a biological site assessment or surveys for plants and animals that could help refine the list.

If a Federal agency is involved in the project, that agency has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a major construction project*, the Federal agency has the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the Federal agency determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve

conflicts with respect to threatened or endangered species or their critical habitat prior to a written request for formal consultation. During this review process, the Federal agency may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. These recommendations are advisory because the jeopardy prohibition of section 7(a)(2) of the Act does not apply until the species is listed or the proposed critical habitat is designated. The conference process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

When a proposed species or proposed critical habitat may be affected by an action, the lead Federal agency may elect to enter into formal conference with the Service even if the action is not likely to jeopardize or result in the destruction or adverse modification of proposed critical habitat. If the proposed species is listed or the proposed critical habitat is designated after completion of the conference, the Federal agency may ask the Service, in writing, to confirm the conference as a formal consultation. If the Service reviews the proposed action and finds that no significant changes in the action as planned or in the information used during the conference have occurred, the Service will confirm the conference as a formal consultation on the project and no further section 7 consultation will be necessary. Use of the formal conference process in this manner can prevent delays in the event the proposed species is listed or the proposed critical habitat is designated during project development or implementation.

Candidate species are those species presently under review by the Service for consideration for Federal listing. Candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. If early evaluation of your project indicates that it is likely to affect a candidate species, you may wish to request technical assistance from this office.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Wildlife's Natural Diversity Data Base. You can contact the California Department of Fish and Wildlife at (916) 324-3812 for information on other sensitive species that may occur in this area.

[*A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.]

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ventura Fish And Wildlife Office

2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Sacramento Fish And Wildlife Office

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08EVEN00-2019-SLI-0565

Event Code: 08EVEN00-2020-E-01006

Project Name: Monterey Bay National Marine Sanctuary Revisions to Management Plan and Regulations

Project Type: ** OTHER **

Project Description: NOAA proposes to operate Monterey Bay National Marine Sanctuary by managing activities occurring within the sanctuary, conducting research, monitoring and resource protection, conducting routine field operations, and implementing various outreach and educational activities, consistent with the NMSA.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/36.71745122750306N122.30746751695605W>



Counties: Marin, CA | Monterey, CA | San Francisco, CA | San Luis Obispo, CA | San Mateo, CA | Santa Cruz, CA

Endangered Species Act Species

There is a total of 43 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Giant Kangaroo Rat <i>Dipodomys ingens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6051	Endangered
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered
Southern Sea Otter <i>Enhydra lutris nereis</i> No critical habitat has been designated for this species. <i>This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.</i> Species profile: https://ecos.fws.gov/ecp/species/8560	Threatened

Birds

NAME	STATUS
California Clapper Rail <i>Rallus longirostris obsoletus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Condor <i>Gymnogyps californianus</i> Population: U.S.A. only, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
California Least Tern <i>Sterna antillarum browni</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Least Bell's Vireo <i>Vireo bellii pusillus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Western Snowy Plover <i>Charadrius nivosus nivosus</i> Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard <i>Gambelia silus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
San Francisco Garter Snake <i>Thamnophis sirtalis tetrataenia</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5956	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened
Santa Cruz Long-toed Salamander <i>Ambystoma macrodactylum croceum</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7405	Endangered

Fishes

NAME	STATUS
Tidewater Goby <i>Eucyclogobius newberryi</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
Kern Primrose Sphinx Moth <i>Euproserpinus euterpe</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7881	Threatened
Ohlone Tiger Beetle <i>Cicindela ohlone</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8271	Endangered
Smith's Blue Butterfly <i>Euphilotes enoptes smithi</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4418	Endangered
Zayante Band-winged Grasshopper <i>Trimerotropis infantilis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1036	Endangered

Crustaceans

NAME	STATUS
<p>Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498</p>	Threatened

Flowering Plants

NAME	STATUS
Beach Layia <i>Layia carnosa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6728	Endangered
Ben Lomond Spineflower <i>Chorizanthe pungens</i> var. <i>hartwegiana</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7498	Endangered
Ben Lomond Wallflower <i>Erysimum teretifolium</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7429	Endangered
California Jewelflower <i>Caulanthus californicus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4599	Endangered
Chorro Creek Bog Thistle <i>Cirsium fontinale</i> var. <i>obispoense</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5991	Endangered
Clover Lupine <i>Lupinus tidestromii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4459	Endangered
Coastal Dunes Milk-vetch <i>Astragalus tener</i> var. <i>titi</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7675	Endangered
Contra Costa Goldfields <i>Lasthenia conjugens</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Hickman's Potentilla <i>Potentilla hickmanii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6343	Endangered
Marsh Sandwort <i>Arenaria paludicola</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2229	Endangered
Menzies' Wallflower <i>Erysimum menziesii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2935	Endangered
Monterey Clover <i>Trifolium trichocalyx</i> No critical habitat has been designated for this species.	Endangered

NAME	STATUS
Species profile: https://ecos.fws.gov/ecp/species/4282	
Monterey Gilia <i>Gilia tenuiflora ssp. arenaria</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/856	Endangered
Monterey Spineflower <i>Chorizanthe pungens var. pungens</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/396	Threatened
Salt Marsh Bird's-beak <i>Cordylanthus maritimus ssp. maritimus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6447	Endangered
Santa Cruz Tarplant <i>Holocarpha macradenia</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6832	Threatened
Scotts Valley Polygonum <i>Polygonum hickmanii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3222	Endangered
Scotts Valley Spineflower <i>Chorizanthe robusta var. hartwegii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7108	Endangered
Spreading Navarretia <i>Navarretia fossalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1334	Threatened
Yadon's Piperia <i>Piperia yadonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4205	Endangered

Conifers and Cycads

NAME	STATUS
Gowen Cypress <i>Cupressus goveniana ssp. goveniana</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8548	Threatened
Santa Cruz Cypress <i>Cupressus abramsiana</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1678	Threatened

Critical habitats

There are 5 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> https://ecos.fws.gov/ecp/species/2891#crithab	Final
Monterey Spineflower <i>Chorizanthe pungens var. pungens</i> https://ecos.fws.gov/ecp/species/396#crithab	Final
Robust Spineflower <i>Chorizanthe robusta var. robusta</i> For information on why this critical habitat appears for your project, even though Robust Spineflower is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/9287#crithab	Final
Tidewater Goby <i>Eucyclogobius newberryi</i> https://ecos.fws.gov/ecp/species/57#crithab	Final
Western Snowy Plover <i>Charadrius nivosus nivosus</i> https://ecos.fws.gov/ecp/species/8035#crithab	Final

APPENDIX E

DEPARTMENT OF DEFENSE EXEMPTED ACTIVITIES IN DAVIDSON SEAMOUNT MANAGEMENT ZONE

The current Monterey Bay National Marine Sanctuary (MBNMS) regulation at 15 CFR 922.132(c)(1) states, in part, that a list of exempted Department of Defense (DOD) activities at the Davidson Seamount Management Zone (DSMZ) is published in the 2008 MBNMS Management Plan Final Environmental Impact Statement (FEIS). However, due to an administrative error, the list of exempted activities (identified in a December 18, 2006 letter to NOAA from the U.S. Air Force 30th Space Wing) was never included in the 2008 FEIS. The MBNMS Superintendent subsequently confirmed in a January 5, 2009 letter to the U.S. Air Force 30th Space Wing that NOAA acknowledged the list of exempted activities as valid from the effective date of inclusion of the DSMZ within MBNMS (March 9, 2009) and that NOAA would subsequently correct the administrative record and regulations to properly document the exempted DOD activities within the DSMZ.

Accordingly, NOAA proposes to modify 15 CFR 922.132(c)(1) by replacing “2008 Final Environmental Impact Statement” with “2020 Environmental Assessment for MBNMS Management Plan Review”. This appendix serves as the published list of exempted DOD activities within the DSMZ referenced and confirmed by the MBNMS Superintendent’s January 5, 2009 letter to the U.S. Air Force 30th Space Wing. NOAA herein affirms that the exemptions requested by the Air Force in 2006 and confirmed by NOAA in 2008 have been valid since the effective date of the DSMZ’s addition to MBNMS - March 9, 2009.

The December 18, 2006 letter to NOAA from the U.S. Air Force 30th Space Wing identifying existing DOD activities at the DSMZ, and NOAA’s March 9, 2009 affirmation letter to the U.S. Air Force 30th Space Wing are included in this appendix.

Below is a summarized list of U.S. Air Force exempted activities within the DSMZ:

1) Spacelift Operations

- a. Rocket launches for the purpose of inserting satellites into orbit.
 - b. In-flight jettisoning into the ocean of spent booster stages, strap-on boosters, and other launch vehicle debris (including residual propellant).
-

- c. Discharge into the ocean of launch vehicle debris from positive flight termination actions that halt thrust or destroy vehicles following non-nominal trajectories.

2) Intercontinental Ballistic Missile (ICBM) Testing

- a. Missile launches for the purpose of testing ICBMs.
- b. In-flight jettisoning into the ocean of spent booster stages, strap-on boosters, and other launch vehicle debris (including residual propellant).
- c. Discharge into the ocean of launch vehicle debris from positive flight termination actions that halt thrust or destroy vehicles following non-nominal trajectories.

3) Missile Defense Testing and Operations

- a. Missile defense tests that destroy both attack and target vehicles in-flight.
- b. In-flight jettisoning into the ocean of spent booster stages, post-boost vehicles, and other launch vehicle debris (including residual propellant).
- c. Discharge into the ocean of launch vehicle debris from purposeful mid-air impact and multiple launch vehicle destruction.
- d. Discharge into the ocean of launch vehicle debris from positive flight termination actions that halt thrust or destroy vehicles following non-nominal trajectories.

4) Aircraft Operations and Short/Medium Range Missile Testing

- a. Testing of military and civilian aircraft, ballistic missiles, guided missiles, anti-aircraft artillery, and other weapon systems, launched over the ocean from land, sea, and air.
 - b. Routine military aircraft operations (fixed-wing and rotary wing), such as training, transfer, and transport.
 - c. Discharge into the ocean of flares, chaff, sea dye, and other debris related to aircraft training operations.
 - d. Water survival training, including, but not limited to, simulated emergency egress through a cockpit frame, life raft deployment and use, low-altitude helicopter evacuation operations.
 - e. Discharge into the ocean of aircraft debris from positive flight termination actions that halt thrust or destroy vehicles following non-nominal trajectories.
-



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Monterey Bay National Marine Sanctuary

299 Foam Street
Monterey, California 93940

January 5, 2009

Mr. Ronald Cortopassi
30 SW/CD
747 Nebraska Boulevard, Suite 201
Vandenberg Air Force Base, California 93437-5000

Dear Mr. Cortopassi:

This letter acknowledges and identifies previous and ongoing United States Air Force (USAF) activities in and adjacent to the Davidson Seamount area (off central California) that are exempted from federal prohibitions for the Monterey Bay National Marine Sanctuary (MBNMS or Sanctuary).

Two years ago, the National Marine Sanctuary Program (NMSP) of the National Oceanic and Atmospheric Administration (NOAA) published for public review and comment a Draft Management Plan and Environmental Impact Statement for the MBNMS. Subsequently, the NMSP received a 6-page correspondence (enclosure 1) from you on behalf of the 30th Space Wing dated December 18, 2006.

Your letter and attachment identified several previous and ongoing activities by the USAF in the vicinity of the Davidson Seamount, an underwater formation that had been identified in NOAA's Draft Management Plan for potential inclusion within the boundaries of the MBNMS. Specifically, the USAF requested that certain activities be exempted from any future MBNMS prohibitions promulgated for the Davidson Seamount.

On November 20, 2008, NOAA published a Final Rule (73 FR 70488) that, among other things, expanded the boundaries of the MBNMS to incorporate the waters and submerged lands of the Davidson Seamount area, henceforth referred to as the Davidson Seamount Management Zone (DSMZ). Page 70537 of the Final Rule (enclosure 2) includes revised regulatory text for 15 CFR 922.132(c)(1) providing that military activities listed in the 2008 MBNMS Final Environmental Impact Statement (FEIS) are exempted from the indicated MBNMS prohibitions within the DSMZ. However, due to an error, pre-existing military activities in the DSMZ were not listed in the FEIS as intended.

This letter thus serves as official acknowledgement and confirmation by the NMSP, NOAA that the activities specifically identified in the USAF December 18, 2006 letter to the NMSP (enclosure 1) are exempted from the indicated MBNMS prohibitions within the DSMZ. In the remainder of the MBNMS, only those USAF activities specifically identified in the 1992 MBNMS FEIS are exempt from the indicated Sanctuary prohibitions. New activities may be exempted from MBNMS prohibitions by the Director of the Office of National Marine Sanctuaries, NOAA after consultation between the Director and the Department of Defense. Should any discharges occur within the Sanctuary such as those described in your December 18, 2006 comment letter, or other incidents, please notify our office as soon as possible in accordance with the regulatory requirements of 15 CFR 922.132(c)(2) (enclosure 2).



The USAF has been cooperative throughout the management plan revision process, and we appreciate your participation. We apologize for the omitted list of USAF activities in the FEIS. Thank you for bringing this to our attention. If you have any further questions regarding USAF exemptions applicable within the DSMZ or other parts of the MBNMS, please do not hesitate to contact me.

Sincerely,



Paul Michel
Superintendent

Enclosures: (2)

cc: Walter Schobel, USAF
Daniel J. Basta, NOAA
William Douros, NOAA



DEPARTMENT OF THE AIR FORCE
30TH SPACE WING (AFSPC)



#5

Mr. Ronald Cortopassi
30 SW/CD
747 Nebraska Blvd, Suite201
Vandenberg AFB, CA 93437-5000

Brady Phillips
JMPR Coordinator
NOAA-National Marine Sanctuary Program
1305 East-West Hwy, N/ORM-6
Silver Spring, MD 20910

Dear Mr. Phillips,

The 30th Space Wing (30 SW) appreciates the opportunity to comment on the proposed changes to 15 CFR Part 922, and will continue, to the maximum extent practicable as has been done in the past, avoid any adverse impacts to the Monterey Bay National Marine Sanctuary. In particular, 30 SW concurs with the language found on-section 922.132(c) of the proposed regulation.

The 30 SW located at Vandenberg AFB conducts military activities off the Coast of California. Some of these operations are conducted within the scope of the Monterey Bay National Marine Sanctuary Draft Management Plan/Environmental Impact Statement. Per the Federal Register/Vol. 71, No. 194/Friday, October 6, 2006/Proposed Rules, Page 59062, Paragraph 922.132 (c) (1), (All Department of Defense Activities...), we are submitting the required documentation to be incorporated within the Final Draft Management Plan/Environmental Impact Statement describing our military activities to be exempt from Sanctuary regulations (Attachment 1).

] 5-1

If you any questions, or need any clarifications, please call me at 805-606-4752.

Wh 18 Dec 06
RONALD B. CORTOPASSI, GM-15
Executive Director

Attachment:
30th Space Wing Military Activities

cc: Sean Morton, NOAA

Vandenberg AFB Baseline Activities
Monterey Bay National Marine Sanctuary (MBNMS)
Draft Management Plan

1.0 Overview

Vandenberg Air Force Base (AFB) is located on California's central coast between Los Angeles and San Francisco, about 55 miles northwest of Santa Barbara. Vandenberg's unique location provides 42 miles of Pacific Ocean shoreline, over 99,000 acres of varied terrain and restricted airspace for spacelift, ballistic test, aeronautical operations, and military exercises. A 15,000-foot runway, boat dock, railway system and several major highways service Vandenberg AFB.

Most of Vandenberg's coastline faces West, with the remainder facing South. This unique geography permits a wide range of over-ocean launch azimuths, from the southeast to the northwest. Vandenberg is the only location in the continental United States where spacecraft can be launched into polar orbit without overflying land. Additionally, the West Coast Offshore Operating Area (WCOOA) provides approximately 200,000 square miles of over-water and sea-land transition zones for launch, aeronautical and cruise missile testing/operations.

2.0 Vandenberg AFB Activities

The types of activities conducted at Vandenberg AFB, which may have an impact on marine resources, can be categorized into the following areas:

- Spacelift Operations
- Intercontinental Ballistic Missile (ICBM) Testing
- Missile Defense Testing and Operations
- Aircraft Operations and Short/Medium Range Missile Testing

A description of each category is provided below.

2.1 Spacelift Operations

Spacelift operations consist of launching rockets for the purpose of inserting satellites into earth orbit. Launch vehicles, such as, but not limited to Atlas, Delta, and Pegasus, are generally composed of multiple stages that are stacked one upon another. Each stage consists of a rocket motor and a supply of propellant (fuel and oxidizer). After the propellant in one stage is consumed, the entire stage is jettisoned from the rest of the launch vehicle and the next stage is ignited to resume powered flight. Some launch vehicles are configured with two or more strap-on boosters, which are attached to the

sides of the launch vehicle. Strap-on boosters and the vehicle's first stage are fired concurrently in order to provide additional thrust during the initial minutes of flight.

Spent booster stages, strap-on boosters, and other launch vehicle debris are jettisoned into the Pacific Ocean during spacelift operations. Ground launches from Vandenberg (e.g., Delta and Atlas) are not expected under any circumstance to impact the Monterey Bay National Marine Sanctuary (MBNMS), but air-launched vehicles (i.e., Pegasus) could. Historically our launch rates for spacelift have varied and our future launch rates are subject to change based on mission need. From 2000-2005, there have been a total of 30 spacelift operations, or an average of 5 launches per year. In 1966, the number of spacelift launches peaked at about 46 in that year alone. A large majority of these launches were ground-based and did not impact the MBNMS. The small number of launches that were air-based could have resulted in debris being deposited in or near the MBNMS.

As previously mentioned, a typical booster stage consists of a rocket motor and a large tank used for storing propellant. Booster stages of air-launched vehicles of the type that can impact the MBNMS are less than 30 feet in height. Comparatively, the size of ground-launched booster stages vary from vehicle to vehicle, but some of the larger booster stages can have a 10-foot diameter and be nearly 90 feet in height. Large strap-on boosters can have a 10-foot diameter and exceed 110 feet in height. Booster stages, which consist primarily of metal components, fall into the ocean after their propellant has been consumed. Residual amounts of propellant may reside inside booster stages when they fall into the ocean.

Jettisoned objects sink to the ocean floor and are not recovered due to the extreme difficulty in locating and recovering such objects in deep ocean waters. Furthermore, the high costs associated with deep recovery operations would be prohibitive. On rare occasion, launch anomalies occur. Various sized fragments from a destroyed vehicle as well as pieces of unburned solid propellants could be dispersed over a wide area potentially inside portions of the MBNMS. Liquid propellants would likely burn during the explosion or evaporate shortly thereafter.

The Department of Defense (DoD), the National Aeronautics and Space Administration (NASA), other government agencies, and various commercial enterprises conduct Spacelift operations at Vandenberg AFB. As the appointed executive agent for space, the AF is responsible for ensuring public safety. As such, positive control measures are employed during all missile and space launch activities. All launch vehicles are equipped with flight termination packages and tracking systems that offer operators the ability to terminate thrust or destroy vehicles that follow non-nominal trajectories. DoD personnel are entrusted with this responsibility during powered flight (that phase of flight when thrust is provided by engines/motors that may include overflight near the MBNMS). In this role, the DoD is responsible for positive flight termination actions taken for all launches whether they are DoD, civil or commercial in nature.

2.2 ICBM Testing

Vandenberg AFB is the primary location in the United States where ICBMs are launched for testing purposes. Ballistic missiles, such as, but not limited to, Minuteman, are usually launched to targets located near the Kwajalein Atoll in the Western Pacific; however, some missiles are launched to targets in other broad ocean areas. The marine impact of ballistic missile testing is similar to the impact of spacelift operations.

Spent booster stages fall into the Pacific Ocean during ICBM testing operations. Highly variable testing configurations result in jettisoned objects falling over a wide area of the ocean. Jettisoned objects and other missile debris sink to the ocean floor and are not recovered due to the extreme difficulty in locating and recovering such objects in deep ocean waters. Furthermore, the high costs associated with deep recovery operations would be prohibitive. Deposition of ICBM stages into the MBNMS would be rare, but could happen.

In the event of ICBM launch anomalies, variously sized fragments from a destroyed vehicle as well as unburned solid propellants and some unburned liquid propellant (upper stages such as post boost vehicles), could be dispersed over a very wide area and potentially inside portions of the MBNMS. Such launch anomalies are rare.

ICBM operations at Vandenberg AFB are conducted by the Department of Defense (DoD). As the appointed executive agent for space, the AF is responsible for ensuring public safety. As such, positive control measures are employed during all missile and space launch activities. All launch vehicles are equipped with flight termination packages and tracking systems that offer operators the ability to terminate thrust or destroy vehicles that follow non-nominal trajectories. DoD personnel are entrusted with this responsibility during powered flight (that phase of flight where ICBM stages or debris could be deposited into or near the MBNMS).

2.3 Missile Defense Testing and Operations

Missile defense testing operations also occur from Vandenberg AFB, where a target is destroyed down range by an interceptor missile, laser, or other weapon system. Missile intercept operations result in debris being dispersed over a wide area of the ocean and potentially inside portions of the MBNMS. In addition to missile defense testing operations, a number of operational interceptors are on alert at Vandenberg AFB in the event of an actual missile attack on the United States.

Spent booster stages fall into the Pacific Ocean during missile defense testing operations. Highly variable testing configurations result in jettisoned objects falling over a wide area of the ocean. Jettisoned objects and other missile debris sink to the ocean floor and are not recovered due to the extreme difficulty in locating and recovering such objects in deep ocean waters. Furthermore, the high costs associated with deep recovery operations would be prohibitive. Depositing stages from missile defense testing in the MBNMS would be rare, but could happen.

In the event of a missile defense launch, variously sized fragments from a destroyed vehicle as well as unburned solid propellants and some unburned liquid propellant (upper stages such as post boost vehicles), could be dispersed over a very wide area and potentially inside portions of the MBNMS. Such launch anomalies are rare.

Missile defense testing operations at Vandenberg AFB are conducted by the Department of Defense (DoD). As the appointed executive agent for space, the AF is responsible for ensuring public safety. As such, positive control measures are employed during all missile and space launch activities. All launch vehicles are equipped with flight termination packages and tracking systems that offer operators the ability to terminate thrust or destroy vehicles that follow non-nominal trajectories. DoD personnel are entrusted with this responsibility during powered flight (that phase of flight where missile stages or debris could be deposited into or near the MBNMS).

2.4 Aircraft Operations, Space Operations, and Short/Medium Range Missile Testing

Extending 200 miles offshore and traversing the entire west coast of the United States, the West Coast Offshore Operating Area (WCOOA) provides the ideal airspace for testing military and civilian aircraft, ballistic missiles, guided missiles, and other weapon systems. Most WCOOA tests/operations are conducted off the California coast due to the stable air mass, utilizing radar, telemetry and optical sensors at Vandenberg AFB and the Naval Air Warfare Center at Point Mugu.

Different types of ballistic and guided missiles are launched from land, sea and air (over water) for various reasons, including, but not limited to, testing guided missiles, intercept technologies for a national missile defense system, and testing anti-aircraft artillery. The target area for some short range missiles may only be a couple miles offshore, which could result in missile debris being deposited into the MBNMS. Past aircraft overflight operations have occurred inside the MBNMS and such activity is expected to continue in the future.

Other operations conducted in the WCOOA consist of aircraft and aeronautical test operations. Airspace corridors (over-land and over-water) are routinely used for aircraft flight test operations. Additionally, aircraft from other military installations routinely use the 15,000-foot landing strip at Vandenberg AFB for refueling and training exercises. Training exercises, involving both fixed wing and rotor aircraft, are conducted at all altitudes within the MBNMS Study Area. Devices used for training include, but are not limited to, flares, chaff, and sea dye. Water survival training is also conducted within the study area, which consists of, but is not limited to, simulating emergency egress through a cockpit, practicing life raft usage, and hoisting people from the ocean. Low altitude flights near the shore are infrequent, but do occur occasionally.

Missile testing, space operations, and aircraft operations in the WCOOA are conducted by the Department of Defense. As the executive agent for space, the AF is responsible

17 Oct 2006

for ensuring public safety. As such, positive control measures are employed during all missile, aircraft, and space operations. Except for some small missile systems having a maximum affected flight area entirely over water and away from population areas, all vehicles are equipped with flight termination packages and tracking systems that offer operators the ability to terminate thrust or destroy vehicles that follow non-nominal trajectories. DoD personnel are entrusted with this responsibility during powered flight (that phase of flight where missile stages or debris could be deposited into or near the MBNMS).



Federal Register

**Thursday,
November 20, 2008**

Part III

Department of Commerce

**National Oceanic and Atmospheric
Administration**

15 CFR Part 922

**Gulf of the Farallones National Marine
Sanctuary Regulations; Monterey Bay
National Marine Sanctuary Regulations;
and Cordell Bank National Marine
Sanctuary Regulations; Final Rule**

harvesting, aquaculture, or lawful fishing activities.

(4) 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, except as incidental and necessary to:

- (i) Conduct lawful fishing activities;
- (ii) Anchor a vessel;
- (iii) Conduct aquaculture or kelp harvesting;
- (iv) Install an authorized navigational aid;

(v) Conduct harbor maintenance in an area necessarily associated with a Federal Project in existence on January 1, 1993, including dredging of entrance channels and repair, replacement, or rehabilitation of breakwaters and jetties;

(vi) Construct, repair, replace, or rehabilitate a dock or pier; or

(vii) Collect jade pursuant to paragraph (a)(1) of this section, provided that there is no constructing, placing, or abandoning any structure, material, or other matter on or in the submerged lands of the Sanctuary, other than temporary placement of an authorized hand tool as provided in paragraph (a)(1) of this section. The exceptions listed in paragraphs (a)(4)(ii) through (a)(4)(vii) of this section do not apply within the Davidson Seamount Management Zone.

(5) Taking any marine mammal, sea turtle, or bird within or above the Sanctuary, except as authorized by the Marine Mammal Protection Act, as amended, (MMPA), 16 U.S.C. 1361 *et seq.*, Endangered Species Act, as amended, (ESA), 16 U.S.C. 1531 *et seq.*, Migratory Bird Treaty Act, as amended, (MBTA), 16 U.S.C. 703 *et seq.*, or any regulation, as amended, promulgated under the MMPA, ESA, or MBTA.

(6) Flying motorized aircraft, except as necessary for valid law enforcement purposes, at less than 1,000 feet above any of the four zones within the Sanctuary described in Appendix B to this subpart.

(7) 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.

(8) Possessing within the Sanctuary (regardless of where taken, moved, or removed from), any marine mammal, sea turtle, or bird, except as authorized by the MMPA, ESA, MBTA, by any

regulation, as amended, promulgated under the MMPA, ESA, or MBTA, or as necessary for valid law enforcement purposes.

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

(10) Leaving harmful matter aboard a grounded or deserted vessel in the Sanctuary.

(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. This prohibition does not apply to fishing below 3000 feet within the Davidson Seamount Management Zone, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States).

(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 3000 feet within the Davidson Seamount Management Zone, which is prohibited pursuant to 50 CFR part 660 (Fisheries off West Coast States).

(12) Introducing or otherwise releasing from within or into the Sanctuary an introduced species, except striped bass (*Morone saxatilis*) released during catch and release fishing activity.

(13) Attracting any white shark within the Sanctuary.

(14) Interfering with, obstructing, delaying, or preventing an investigation, search, seizure, or disposition of seized property in connection with enforcement of the Act or any regulation or permit issued under the Act.

(b) The prohibitions in paragraphs (a)(2) through (11) of this section do not apply to an activity necessary to respond to an emergency threatening life, property, or the environment.

(c)(1) All Department of Defense activities must be carried out in a manner that avoids to the maximum extent practicable any adverse impacts on Sanctuary resources and qualities. The prohibitions in paragraphs (a)(2) through (12) of this section do not apply to existing military activities carried out by the Department of Defense, as specifically identified in the Final Environmental Impact Statement and Management Plan for the Proposed Monterey Bay National Marine Sanctuary (NOAA, 1992). (Copies of the FEIS/MP are available from the Monterey Bay National Marine Sanctuary, 299 Foam Street, Monterey,

CA 93940.) For purposes of the Davidson Seamount Management Zone, these activities are listed in the 2008 Final Environmental Impact Statement. New activities may be exempted from the prohibitions in paragraphs (a)(2) through (12) of this section by the Director after consultation between the Director and the Department of Defense.

(2) In the event of destruction of, loss of, or injury to a Sanctuary resource or quality resulting from an incident, including but not limited to discharges, deposits, and groundings, caused by a Department of Defense activity, the Department of Defense, in coordination with the Director, must promptly prevent and mitigate further damage and must restore or replace the Sanctuary resource or quality in a manner approved by the Director.

(d) The prohibitions in paragraph (a)(1) of this section as it pertains to jade collection in the Sanctuary, and paragraphs (a)(2) through (11) and (a)(13) of this section, do not apply to any activity conducted under and in accordance with the scope, purpose, terms, and conditions of a National Marine Sanctuary permit issued pursuant to 15 CFR 922.48 and 922.133 or a Special Use permit issued pursuant to section 310 of the Act.

(e) The prohibitions in paragraphs (a)(2) through (a)(8) of this section do not apply to any activity authorized by any lease, permit, license, approval, or other authorization issued after the effective date of Sanctuary designation (January 1, 1993) and issued by any Federal, State, or local authority of competent jurisdiction, provided that the applicant complies with 15 CFR 922.49, the Director notifies the applicant and authorizing agency that he or she does not object to issuance of the authorization, and the applicant complies with any terms and conditions the Director deems necessary to protect Sanctuary resources and qualities. Amendments, renewals, and extensions of authorizations in existence on the effective date of designation constitute authorizations issued after the effective date of Sanctuary designation.

(f) Notwithstanding paragraphs (d) and (e) of this section, in no event may the Director issue a National Marine Sanctuary permit under 15 CFR 922.48 and 922.133 or a Special Use permit under section 310 of the Act authorizing, or otherwise approve: the exploration for, development, or production of oil, gas, or minerals within the Sanctuary, except for the collection of jade pursuant to paragraph (a)(1) of this section; the discharge of primary-treated sewage within the Sanctuary (except by certification,



AMERICA'S UNDERWATER TREASURES