Draft Environmental Assessment for Eelgrass Habitat Expansion in San Diego Bay, California

Naval Facilities Engineering Systems Command
NAVFAC Southwest

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Prepared for:
United States Department of the Navy
Navy Region Southwest

Abstract

Designation:	Environmental Assessment
Title of Proposed Action:	Eelgrass Habitat Expansion
Project Location:	San Diego Bay, San Diego, CA
Lead Agency for the EA:	Department of the Navy
Affected Region:	San Diego County, California
Action Proponent:	Navy Region Southwest
Point of Contact:	Naval Facilities Engineering Systems Command Southwest Attention: Code EV26.SVR 750 Pacific Highway, (12th Floor Environmental) San Diego, CA 92132-5190
Date:	July 2023

The United States Department of the Navy (Navy) has prepared this Environmental Assessment in accordance with the National Environmental Policy Act, as implemented by the Council on Environmental Quality Regulations and Navy regulations. Since its celebrated establishment in 2008, the Navy has used credits from the Navy Region Southwest San Diego Bay Eelgrass Mitigation Bank (Bank) to offset unavoidable eelgrass and other habitat impacts from infrastructure projects and testing and training activities in San Diego Bay. The Navy proposes to add to the existing Bank by expanding eelgrass habitat at one or more sites in San Diego Bay, San Diego, California. The purpose of the Proposed Action is to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem. The Proposed Action is needed to facilitate implementation of future Navy projects and activities in San Diego Bay that may have the potential to impact eelgrass habitat. Expanding eelgrass habitat would support the Navy's continued commitment to the conservation and management of the bay while furthering the Navy's execution of its congressionally mandated roles and responsibilities.

EXECUTIVE SUMMARY

ES.1 Proposed Action

The United States (U.S.) Department of the Navy (Navy) proposes to add to the existing Navy Region Southwest San Diego Bay Eelgrass Mitigation Bank (Bank) by expanding eelgrass habitat at one or more sites in San Diego Bay, San Diego, California.

ES.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem. The Proposed Action is needed to facilitate implementation of future Navy projects and activities in San Diego Bay that may have the potential to impact eelgrass habitat. Expanding eelgrass habitat would support the Navy's continued commitment to the conservation and management of the bay while furthering the Navy's execution of its congressionally mandated roles and responsibilities.

ES.3 Alternatives Considered

Alternatives were developed for analysis based on the following three reasonable alternative screening factors:

1. Compatible with Current and Future Navy Testing and Training Activities
2. Compatible with Existing and Future Public Land Uses
3. Suitable Physical Conditions for Immediate Material/Eelgrass Placement

Based on an evaluation of potential habitat expansion opportunities in *San Diego Bay Marine Habitat Mitigation and Enhancement Project Options* (Merkel & Associates, 2021), the Navy identified 14 potential habitat enhancement sites in San Diego Bay. The 14 sites made up the pool of potential site alternatives considered in this Environmental Assessment (EA). The 14 potential eelgrass habitat sites were evaluated against the three screening factors. Four sites met the purpose of and need for the Proposed Action and all three screening factors. The Navy proposes to expand eelgrass habitat in San Diego Bay at one or more of the identified four sites grouped into three action alternatives as follows:

Alternative 1: Ballast Point
Alternative 2: Delta Beach to Homeport Island (2A)
Homeport Island Submerged Plateau (2B)
Alternative 3: South Silver Strand

Of the four potential sites, three would support common eelgrass (*Zostera marina*) and would first require the placement of suitable dredged material to raise the bay bottom to a depth that could support eelgrass. One site (Alternative 1 - Ballast Point) would support Pacific eelgrass (*Z. pacifica*) and would not require the placement of suitable dredged material prior to planting eelgrass shoots. In addition, this EA also analyzes the No Action Alternative.

ES.4 Summary of Environmental Resources Evaluated in this Environmental Assessment

Council on Environmental Quality regulations, the National Environmental Policy Act (NEPA), and Navy instructions for implementing NEPA specify that an EA should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. Resources carried forward for detailed analysis in this EA include marine water resources and bathymetry, marine biological resources, and land use. This EA does not carry forward the following resource areas for detailed analysis because potential impacts would be non-existent or negligible: air quality, geological resources, cultural resources, visual resources, airspace, noise, transportation, public health and safety, hazardous materials and wastes, socioeconomics and environmental justice, and infrastructure and utilities.

ES.5 Summary of Potential Environmental Consequences of the Alternatives

Table ES-1 provides a summary of potential impacts to resource areas from implementation of the alternatives.

ES.6 Public Involvement

The Navy solicited public and agency comments during a scoping period from January 6, 2023, through January 27, 2023. The Navy considered comments received during the scoping period in the preparation of the Draft EA. The Navy has made the Draft EA available for public review. The Navy will consider and address relevant public comments in the Final EA. The Navy will also publish the Final EA Notice of Availability and decision document and upload the Final EA/decision document to the Navy Region Southwest website (https://www.cnic.navy.mil/navysouthwestprojects).

Table ES-1. Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*Alternative 1*	*Alternative 2*	*Alternative 3*
Marine Water Resources and Bathymetry	*No impact.*	*Overall Beneficial Impact.* • Long-term beneficial impact to marine water quality, marine sediments, and shoreline; no impact to bathymetry.	*Overall Beneficial Impact.* • Periodic and localized increase in turbidity during site establishment. • Long-term beneficial impact to marine water quality, marine sediments, shorelines, and bathymetry.	*Overall Beneficial Impact.* • Periodic and localized increase in turbidity during site establishment. • Long-term beneficial impact to marine water quality, marine sediments, shorelines, and bathymetry.
Marine Biological Resources	*No impact.*	*Overall Beneficial Impact.* • Short-term and minor adverse impact to existing eelgrass at donor sites. • Long-term beneficial impact to marine habitat, wildlife, and threatened and endangered species from creation of approximately 8.5 acres of eelgrass habitat.	*Overall Beneficial Impact.* • Short-term and minor adverse impact to existing eelgrass at donor sites and expansion sites. • Loss of benthic invertebrates and demersal fish and negligible impact to threatened and endangered species during site establishment. • Long-term beneficial impact to marine habitat, wildlife, and threatened and endangered species through creation of approximately 7.0/12.6 acres of eelgrass habitat for 2A and 2B, respectively.	*Overall Beneficial Impact.* • Short-term and minor adverse impact to existing eelgrass at donor sites and expansion sites. • Loss of benthic invertebrates and demersal fish and negligible impact to threatened and endangered species during site establishment. • Long-term beneficial impact to marine habitat, wildlife, and threatened and endangered species through creation of approximately 9.8 acres of eelgrass habitat.
Land Use	*No impact.*	*No significant impact.* • Compatible with existing land ownership and public land uses and Navy testing and training activities.	*No significant impact.* • Compatible with public land use and Navy testing and training activities.	*No significant impact.* • Temporary exclusion of public water craft during suitable dredged material placement. • Compatible with public land use and Navy testing and training activities.

Draft Environmental Assessment
Eelgrass Habitat Expansion
San Diego Bay, San Diego, California

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Abbreviations and Acronyms

Acronym	Definition
Bank	San Diego Bay Eelgrass Mitigation Bank
BO	Biological Opinion
CAA	Clean Air Act
CARB	California Air Resources Board
CEMP	California Eelgrass Mitigation Policy
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
CY	Cubic Yards
CZMA	Coastal Management Act
dB	decibel(s)
DoD	Department of Defense
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
ft	Feet/Foot
GHG	Greenhouse Gas
in	Inches
INRMP	Integrated Natural Resources Management Plan
MBRT	Mitigation Bank Review Team
MBTA	Migratory Bird Treaty Act
MHHW	Mean Higher High Water
mi	Miles
mi^2	Square Miles
MLLW	Mean Lower Low Water
mm	Millimeters
MMPA	Marine Mammal Protection Act
NAAQS	National Ambient Air Quality Standards
NAB	Naval Amphibious Base
NAVFAC SW	Naval Facilities Engineering Systems Command Southwest
Navy	United States Department of the Navy
NBC	Naval Base Coronado
NBPL	Naval Base Point Loma
NBSD	Naval Base San Diego
NEMS	Navy Eelgrass Mitigation Sites
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitric Oxide
NRSW	Navy Region Southwest
NTC	Naval Training Center
NT U	Nephelometric Turbidity Units
O^3	Ozone
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PFMC	Pacific Fishery Management Council
$PM_{2.5}$	Fine particulate matter less than or equal to 2.5 microns in diameter
PM_{10}	Suspended particulate matter less than or equal to 10 microns in diameter
Port	Port of San Diego/San Diego Unified Port District
ppm	Parts Per Million
ppt	Parts Per Trillion
PTS	permanent threshold shifts
RMS	Root Mean Square
ROI	Region of Influence
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SO_x	Sulfur Oxide
U.S.	United States
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGCRP	U.S. Global Change Research Program
VOC	Volatile Organic Compounds
WOTUS	Waters of the U.S.

1 Purpose of and Need for the Proposed Action

1.1 Introduction

The United States (U.S.) Department of the Navy (Navy) proposes to add to the Navy Region Southwest (NRSW) San Diego Bay Eelgrass Mitigation Bank (Bank) by expanding eelgrass habitat in San Diego Bay, San Diego, California. Expanding eelgrass habitat would support the Navy's continued commitment to the conservation and management of the bay while furthering the Navy's execution of its congressionally mandated roles and responsibilities.

The Navy has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality (CEQ) Regulations, and Navy regulations for implementing NEPA.

1.2 Location

San Diego Bay is a natural harbor and deep-water port located in San Diego County, CA approximately ten miles north of the U.S.-Mexico border (Figure 1-1). The bay is approximately 12 miles long and varies in width from 1 to 3 miles. The mouth of San Diego Bay is about 0.6 miles wide and is aligned north-to-south between Point Loma and Zuniga Point. The mouth of San Diego Bay is also referred to as the "outer bay" portion of San Diego Bay. The interior bay generally consists of four regions – the north, north central, south central, and south regions as depicted on Figure 1-1. Collectively the outer and interior bay regions comprise the entirety of San Diego Bay and the project area for this EA.

The highly urbanized land adjacent to the bay includes the cities of San Diego, National City, Chula Vista, Imperial Beach, Coronado, and Point Loma. The Navy maintains a significant presence within San Diego Bay and has considerable interest in the bay as a strategically important port facility in the Pacific.

1.3 Background

1.3.1 Eelgrass and Eelgrass Habitat

Eelgrass is a type of seagrass. Eelgrass found in San Diego Bay consists of two species; common eelgrass (*Zostera marina*) and Pacific eelgrass (*Z. pacifica)*. Of the two, common eelgrass (Photo 1-1) is much more prevalent in San Diego Bay, with Pacific eelgrass only being found in the outer bay waters. Generally, Pacific eelgrass grows in more open coastal areas in clean sands and well flushed environments. Pacific eelgrass is more limited in its distribution than common eelgrass.

Eelgrass forms marine meadows supporting multiple ecological functions including, sediment stabilization, wave dampening, carbon cycling, nutrient uptake, and habitat structuring. Eelgrass is an important and productive habitat in San Diego Bay.

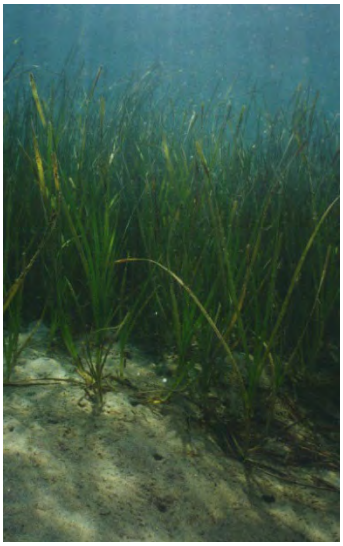


Photo 1-1. Common Eelgrass in San Diego Bay

Figure 1-1. San Diego Bay and Navy Installations

Eelgrass habitat ranks among the most productive habitats in the ocean and are an important component of the San Diego Bay food web (Navy and Port of San Diego [Port], 2013). Eelgrass, similar to other seagrasses, is a "foundation" or habitat-forming species because it creates a highly structured habitat in areas of loose sand or silt and supports key ecological functions in coastal and estuarine ecosystems. Eelgrass meadows serve as important nursery areas for numerous fish and invertebrate species in nearshore environments.

Eelgrass is an ecologically and economically important habitat that can serve as a biological indicator of ecosystem health. Eelgrass meadows play several important roles in coastal and estuarine ecosystems. Eelgrass meadows provide habitat, multi-level foraging opportunities, and spawning areas for fish and invertebrates. Eelgrass meadows also stabilize sediments and improve water quality (Sherman and DeBruyckere, 2018).

Eelgrass beds in San Diego Bay are believed to have historically suffered substantial losses due to their proximity to areas of concentrated human activity. Similar losses have occurred in bays and estuaries along the Pacific coast and elsewhere in the world. In San Diego Bay, these losses were primarily due to past bay fill and deepening projects and past municipal and industrial effluent discharges, and nutrient-rich stormwater discharges. Today, the Clean Water Act (CWA) and other laws protect eelgrass and mandate mitigation for any unavoidable impacts to eelgrass (Navy and Port, 2013).

Of all the types of marine habitats in San Diego Bay, eelgrass beds are unique in that they:

- are of special ecological and regulatory significance;
- are particularly vulnerable to sea level rise;
- provide high overall functional benefits and compensatory mitigation benefits to the Navy to offset impacts of development through both in-kind and out-of-kind habitat mitigation;
- may provide benefit in achieving adaptation functions by shoreline softening or raising the bay floor; and,
- provide enriched habitat functions that are largely not in conflict with other uses of shallow bay waters due to the generally subtidal nature of San Diego Bay's eelgrass habitat (Merkel & Associates, 2021).

Given these unique attributes, one of the most effective ways to enhance San Diego Bay aquatic habitat is to expand the amount of eelgrass habitat. This can be done by planting eelgrass in areas conducive to supporting the development of eelgrass habitat.

1.3.2 San Diego Bay Habitat Enhancement

The Navy partners with the Port in the management of the natural resources of the bay through an Integrated Natural Resources Management Plan (INRMP). Developed with resource agencies, environmental groups, and interested members of the public, the INRMP sets forth a long-term vision and strategy sponsored by the Navy and Port. The intent of the INRMP is to provide direction for the good stewardship that natural resources require, while supporting the ability of the Navy and Port to achieve their missions (Navy and Port, 2013).

Over the past several decades, effluent discharges have been curtailed and stormwater quality has been improved to a point that eelgrass has been in a recent state of expansion. Eelgrass has generally expanded under improved water conditions and resource management and restoration actions. However, climate change and sea level rise projections threaten to reverse this trend.

The recognition that subtidal eelgrass habitat would be lost due to sea level rise, has prompted planners and scientists to begin identifying and planning opportunistic sites for the use suitable dredged material in San Diego Bay to expand eelgrass habitat areas using dredged materials resulting from navigational maintenance projects. By raising the bay floor with suitable dredged materials, the shallower water provides a suitable light environment to support eelgrass growth.

The lack of identified and approved beneficial reuse sites that may accept available suitable dredged material has generally rendered in-bay reuse impractical for prior projects. As a result, the present effort is expected to identify, evaluate, and permit future sites to make use of suitable dredged material that presently are destined for ocean disposal at the U.S. Environmental Protection Agency (USEPA)-designated San Diego (LA-5) Ocean Dredge Material Disposal Site located approximately 6 nautical miles offshore of San Diego and other locations (e.g., the disposal areas located off Silver Strand Training Complex-North).

1.3.3 Navy Region Southwest San Diego Bay Eelgrass Mitigation Bank

The Navy must implement waterfront development activities to support Fleet testing and training requirements and repair or replace aging infrastructure. While the Navy designs mission-critical infrastructure projects in San Diego Bay to avoid or minimize impacts to eelgrass and other aquatic habitat, sometimes impacts are unavoidable. The Navy implements project specific mitigation and uses credits from the Bank to offset unavoidable habitat impacts from Navy actions. The use of the Bank is an accepted manner for compensating for impacts and an efficient mechanism for permitting such projects.

Adopted as a formal mitigation bank on June 26, 2008, the Bank was the first marine mitigation bank created on the west coast. The Bank currently consists entirely of common eelgrass. The Bank includes multiple mitigation sites and allows for new sites to be added to the Bank.

The Bank's individual mitigation sites, termed Navy Eelgrass Mitigation Sites (NEMS), are numbered NEMS-1 through NEMS-6 (Figure 1-2). NEMS-3 is not depicted on Figure 1-2 because NEMS-3 was never established. The NEMS range in size from 0.54 acres (NEMS 2) to 16.5 acres (NEMS-5). The average acreage of all five NEMS is 6.45 acres. In addition, the Navy is in the process of establishing NEMS-7, located in Smuggler's Cove (Figure 1-2). Generally, it takes the Navy approximately five to seven years to bring a potential NEMS from concept to fruition. The process must satisfy the California Eelgrass Mitigation Policy and Implementing Guidelines (National Oceanic and Atmospheric Administration [NOAA] Fisheries, 2014) before a site can be adopted.

The Navy tracks the status of the Bank mitigation credit/debits annually and reports the changes to an interagency Mitigation Bank Review Team (MBRT) including representatives from the U.S. Army Corps of Engineers (USACE), NOAA Fisheries, U.S. Fish & Wildlife Service (USFWS), Navy, and California Department of Fish and Wildlife. The MBRT meets annually to discuss debits and credits to the Bank and future potential utilization proposals.

Figure 1-2. Existing Navy Eelgrass Mitigation Sites in San Diego Bay

In recent years, there has been an increased demand for Bank credits as the Navy has implemented projects and constructed new infrastructure to serve changing fleet requirements and new vessel types. In addition, new testing and training activities and legacy site cleanup activities have added to eelgrass mitigation needs. Given anticipated future needs for increased activities and infrastructure projects, the expansion of eelgrass habitat is necessary to provide additional Bank credits.

1.4 Purpose of and Need for the Proposed Action

1.4.1 Purpose of the Proposed Action

The purpose of the Proposed Action is to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem.

Since its celebrated establishment in 2008, the Navy has used credits from the Bank to offset unavoidable impacts from infrastructure projects and testing and training activities in San Diego Bay. The Navy anticipates that future projects and activities in support of Navy mission requirements could have unavoidable negative impacts on eelgrass habitat in the bay.

The proposed expansion of eelgrass by the Navy would allow these mission-critical projects to be implemented using credits from the Bank to offset potential unavoidable negative impacts to eelgrass habitat.

Navy Commitment to San Diego Bay

The Navy is committed to the conservation of San Diego Bay.

Expanding eelgrass habitat would support the Navy's continued commitment to the conservation and management of the bay while furthering the Navy's execution of its congressionally mandated roles and responsibilities under 10 U.S. Code section 8062.

1.4.2 Need for the Proposed Action

The Proposed Action is needed to facilitate implementation of future Navy projects and activities in San Diego Bay that may have the potential to impact eelgrass habitat.

With the evolving Navy mission and increased focus into the Pacific, the Navy anticipates more activity in San Diego Bay. With this anticipated increase in activity, the Navy also anticipates a similar increase in mitigation requirements and associated demand for Bank credits, leading to a reduction in the Bank balance. Because adding eelgrass to the Bank can take five to seven years and Navy needs for the credits can arise at any time, the Navy must start planning now to increase the current Bank balance to meet future aquatic habitat mitigation needs.

Establishing the eelgrass in advance of immediate project need for mitigation credit provides Navy flexibility and maximizes the value of the mitigation. Expanding the Bank would also simplify the approval process for critical Navy projects and activities, ultimately furthering the Navy's execution of its congressionally mandated roles and responsibilities under 10 U.S. Code (U.S.C.) section 8062[1].

[1] 10 U.S.C. Section 8062 states that: "*The Navy shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea. It is responsible for the preparation of naval forces necessary for the effective prosecution of war except as otherwise assigned and, in accordance with integrated joint mobilization plans, for the expansion of the peacetime components of the Navy to meet the needs of war*."

1.5 Scope of Environmental Analysis

This EA includes an analysis of potential environmental impacts associated with the action alternatives and the No Action Alternative. The environmental resource areas analyzed in this focused EA include marine water resources and bathymetry, marine biological resources, and land use. The Navy also evaluated potential impacts to other resource areas and determined the potential impacts would be negligible or non-existent, as summarized in Chapter 3.

The geographic study area for each resource analyzed may differ due to how the Proposed Action interacts with or affects the resource. For instance, a study area for marine sediments may only include the potential eelgrass expansion site, whereas the marine biological resources study area may include a larger geographic region to reflect those areas potentially impacted by in-water activity.

1.6 Key Documents

Key documents are sources of information incorporated into this EA. Key documents are documents of similar actions, analyses, or impacts that may apply to this Proposed Action. CEQ guidance encourages incorporating documents by reference. Documents incorporated by reference in part or in whole include:

- **San Diego Bay Marine Habitat Mitigation and Enhancement Project Options.** This 2021 study identified and analyzed multiple potential habitat enhancement opportunity sites in San Diego Bay. The identification of sites in this key document does not mean to infer that the areas identified are all of the opportunities available, or that those identified are optimally or maximally sized. Rather, the sites provide a diverse array of habitat enhancement opportunities widely distributed across bay ecoregions that offer potential for future habitat enhancement (Merkel & Associates, 2021).
- **San Diego Bay INRMP.** The San Diego Bay INRMP (Navy and Port, 2013) is a long-term, collaborative strategy for managing the bay's natural resources and the primary means by which the Navy and Port jointly plan natural resources work in San Diego Bay.

1.7 Relevant Laws and Regulations

The Navy has prepared this EA based upon federal and state laws, statutes, regulations, and policies that are pertinent to the implementation of the Proposed Action, including the following:

- NEPA (42 U.S.C. sections 4321 et seq)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508)
- Navy regulations for implementing NEPA (32 CFR part 775)
- Clean Air Act (CAA) (42 U.S.C. sections 7401 et seq.)
- CWA (33 U.S.C. sections 1251 et seq.)
- Rivers and Harbors Act (33 U.S.C. 403 section 10)
- Coastal Zone Management Act (CZMA) (16 U.S.C. sections 1451 et seq.)
- Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. section 9601 et seq.)
- National Historic Preservation Act (NHPA) (54 U.S.C. sections 300101 et seq.)
- Endangered Species Act (ESA) (16 U.S.C. sections 1531 et seq.)

- Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (16 U.S.C. sections 1801 et seq.)
- Marine Mammal Protection Act (MMPA) (16 U.S.C. sections 1361 et seq.)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. sections 703–712)
- Executive Order (EO) 11988, *Floodplain Management*
- EO 12088, Federal Compliance with Pollution Control Standards
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks
- EO 13175, Consultation and Coordination with Indian Tribal Governments
- EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds
- EO 13990, Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis
- EO 14008, Tackling the Climate Crisis at Home and Abroad
- Any additional, relevant statutes or governing directives

A description of the Proposed Action's consistency with these laws, policies, and regulations, as well as the names of resource agencies responsible for their implementation, is presented in Chapter 5.

1.8 Public and Agency Participation and Intergovernmental Coordination

CEQ regulations (40 CFR part 1506.6) direct agencies to involve the public in preparing and implementing their NEPA procedures.

The Navy solicited public and agency comments during a scoping period from January 6, 2023, through January 27, 2023. The Navy notified the public, agencies, and stakeholders by publishing the scoping notice in the San Diego Union Tribune, the Chula Vista Star, the Coronado Eagle Journal, the Peninsula Beacon, and the Spanish language edition of the San Diego Union Tribune. The Navy mailed scoping notification letters to all federal, state, and locally elected officials. The Navy also mailed scoping notification postcards to stakeholders and posted a scoping fact sheet to the NRSW website. The Navy considered comments received during the scoping period in the preparation of the Draft EA. Appendix A provides the scoping notices.

The Navy has made the Draft EA available for public review. The Navy will consider and address relevant public comments in the Final EA. The Navy will also publish the Final EA Notice of Availability and decision document and upload the Final EA/decision document to the NRSW website (https://www.cnic.navy.mil/navysouthwestprojects).

The Navy anticipates consulting with NOAA Fisheries, the USFWS, and the California Coastal Commission, and will obtain pre-project implementation CWA permits from the USACE and Regional Water Quality Control Board (RWQCB).

2 Proposed Action and Alternatives

2.1 Proposed Action

The Navy proposes to add to the existing Eelgrass Mitigation Bank by expanding eelgrass habitat at one or more sites in San Diego Bay, San Diego, California. The Proposed Action does not include or assess dredging activities that would generate suitable dredged material for use as beneficial fill for the establishment of a potential eelgrass site. Dredging projects would undergo their own separate sediment testing, disposal permitting, and environmental analysis.

2.2 Screening Factors

NEPA's implementing regulations provide guidance on the consideration of alternatives to a federally proposed action and require rigorous exploration and objective evaluation of reasonable alternatives. To be "reasonable" an alternative must substantially meet the stated purpose of, and need for, the Proposed Action and should be technically and economically practical or feasible. Only those alternative determined to be reasonable require detailed analysis. Accordingly, the Navy has determined that San Diego Bay, as defined in Section 1.2, is the only reasonable location for the Proposed Action and has not identified any location alternatives.

Based on an evaluation of potential habitat expansion opportunities identified in *San Diego Bay Marine Habitat Mitigation and Enhancement Project Options* (Merkel & Associates, 2021), the Navy initially identified 18 potential habitat enhancement sites in San Diego Bay. Two of the sites (Naval Training Center [NTC] Channel A and Channel B) were later combined into one site (NTC Channel). Thus, 17 sites make up the pool of potential site alternatives (Table 2-1 and Figure 2-1) considered in this EA. Three of the 17 potential sites are non-eelgrass sites (North Island at Zuniga Jetty, South Grande Caribe, and South Bay Power Plant Intake Channel Marsh). When the three non-eelgrass sites are excluded, the remaining 14 sites offer approximately 174 acres of potential eelgrass habitat expansion.

The 14 potential eelgrass habitat sites that meet the purpose and need were evaluated against three screening factors:

1. **Compatible with Current and Future Navy Testing and Training Activities**. An eelgrass habitat expansion site must not present the potential to conflict with current or future Navy testing and training activities. For example, certain testing and training activities require bottom conditions with little to no eelgrass, as dense stands of eelgrass can disrupt acoustic transmissions and obscure landmarks. Bottom depth is also an important consideration. The placement of dredged material to support the establishment of eelgrass habitat would result in shallower water depths, which may limit or conflict with specific testing and training activities.

   To avoid and minimize potentially negative impacts to marine habitat, the Navy follows protocols that focus the majority of its testing and training activities in San Diego Bay in areas that have little to no eelgrass present. Establishment of eelgrass beds at sites that the Navy uses for testing and training would place constraints on both current and future use of these areas.

Table 2-1. Potential Eelgrass Expansion Site Alternatives

Potential Eelgrass Expansion Site Name	*Habitat Type(s)*	*Site Size (in acres)*	*Land Use Control Agency*
Ballast Point	Pacific Eelgrass	10.1	Navy
North of Subpen	Common Eelgrass Buttress Reef	1.1 0.6	Navy
Degaussing Pier Plateau	Common Eelgrass Buttress Reef	1.2 0.3	Navy
Northern Naval Training Center Channel A[1]	Common Eelgrass	0.7	Navy[2]
Northern Naval Training Center Channel B[1]	Common Eelgrass	2.3	Navy[2]
East Harbor Island West of A-9	Common Eelgrass	7.2	Port of San Diego
First Street Coronado	Common Eelgrass Buttress Reef	6.0 2.2	Port of San Diego
Delta Beach to Homeport Island	Common Eelgrass	9.0	Port of San Diego[3]
Homeport Island Submerged Plateau	Common Eelgrass	13.0	Port of San Diego[3]
NEMS 1 Expansion	Common Eelgrass	15.0	Navy
Former A-8 Anchorage	Common Eelgrass	34.8	Port of San Diego
South Silver Strand	Common Eelgrass	10.0	Port of San Diego
Central South Bay	Common Eelgrass	18.2	Nat. Wildlife Refuge & Port of San Diego
Emory Channel	Common Eelgrass	14.8	Port of San Diego
Emory Cove	Common Eelgrass	15.0	Port of San Diego

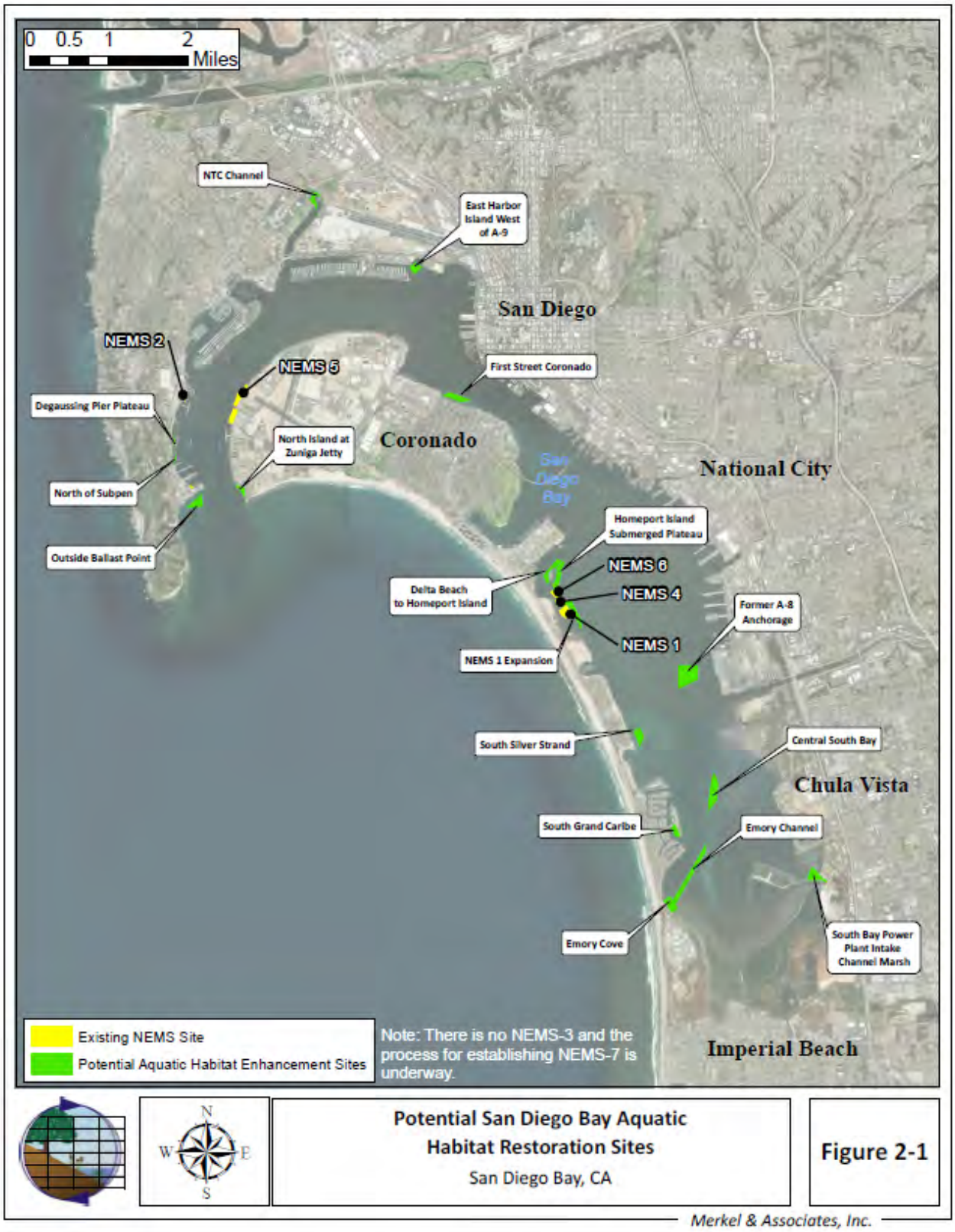
Notes: Does not include three non-eelgrass sites identified in the San Diego Bay Marine Habitat Study.

[1] These two sites were later combined into one site: "Naval Training Center Channel."

[2] These sites are currently under contract for transfer to the City of San Diego.

[3] Navy restricted area overlays these Port of San Diego submerged lands.

Figure 2-1. Potential Eelgrass Expansion Site Alternatives



The Navy has preliminarily identified areas used for testing and training where the presence of eelgrass would be incompatible with its activities. If eelgrass were introduced into these areas, unavoidable conflicts between testing and training activities and eelgrass would occur. Thus, a potential eelgrass habitat expansion must be compatible with existing and future Navy testing and training activities.

2. **Compatible with Existing and Future Public Land Uses.** A site must not present a potential for eelgrass to conflict with existing public land uses. For example, placing suitable dredged material in areas currently used for public recreation would result in shoal water. The shallower water could potentially interfere with safe navigation by vessels of a draft presently using the waters and thereby may adversely impact certain existing public recreation activities (e.g., boating).

   Establishing eelgrass in certain areas may be incompatible with potential future activities in San Diego Bay. For example, future aquaculture or restoration projects proposed by other entities may be incompatible with eelgrass expansion within the same area. Thus, a potential site must not be incompatible with existing or future public land uses.

3. **Suitable Physical Conditions for Immediate Material/Eelgrass Placement.** A potential site must have the existing physical conditions to facilitate the timely and predictable placement of suitable dredged material, should bottom elevations require raising to support eelgrass habitat. A site must not require any structural improvements (e.g., placement of underwater rock containment structures) in order to physically retain suitable dredged material at the site, or accommodate the direct planting of eelgrass if the site bathymetry is already within an appropriate depth range. Certain areas of San Diego Bay have steep slopes adjacent to the shoreline and would require structural fill (rock or rubble) to contain suitable eelgrass substrate material.

   In addition, construction on steep bay floor slopes creates risk of secondary slumping that could adversely affect site sustainability. Thus, a potential site without a flat or gently sloping bottom that could not be constructed by unconfined soft sediment fills and that would require structural improvements and would not meet this factor.

   The second key physical condition considered in this factor is a site's exposure to strong currents that may result in the displacement of suitable dredged material that could raise the bay floor in a manner that is undesired or unpredictable. For example, finer sediments that comprise most suitable opportunistic sediment available within the bay may be dispersed during placement within swift current areas, while fine grain sands may be scoured away over a more prolonged period due to tidal exchanges.

2.2.1 Screening Process

Through an iterative process, Navy planners, scientists, and operators considered and evaluated the potential site alternatives against the screening factors. Key to this process was examining the potential for existing or future public or Navy activities to be incompatible with eelgrass expansion. For example, the presence of eelgrass can severely degrade the acoustic signals associated with certain Navy testing and training platforms and sensors, thus degrading the ability to achieve training/testing objectives. In addition, based on early engagement with the Port, the Port informed the Navy that eelgrass expansion in certain areas would be incompatible with Port plans.

Based on feedback from Navy operators, Navy planners made slight adjustments to some of the potential site boundaries to avoid known incompatibilities but still retain otherwise feasible potential eelgrass expansion sites.

2.3 Alternatives Carried Forward for Analysis

Based on the reasonable alternative screening factors and meeting the purpose and need for the Proposed Action, three alternatives consisting of four eelgrass expansion sites were identified and will be analyzed within this EA.

In addition, the Navy considered and dismissed ten sites from further consideration in this EA as each site failed to meet one or more of the screening factors (Table 2-2). Section 2.4 summarizes the reasons why the Navy did not carry the ten sites forward for analysis in this EA at this time. This EA also analyzes the No Action Alternative.

2.3.1 No Action Alternative

Under the No Action Alternative, the Navy would not implement the Proposed Action. The No Action Alternative is the status quo in which the Navy would not create additional eelgrass habitat in San Diego Bay. Implementing the No Action Alternative would not provide ecological benefits to San Diego Bay and would not add to the Bank. The No Action Alternative would not meet the purpose and need for the Proposed Action; however, as required by NEPA, the Navy has carried forward the No Action Alternative for analysis and provides a baseline for measuring environmental consequences of the Proposed Action.

2.3.2 Proposed Action

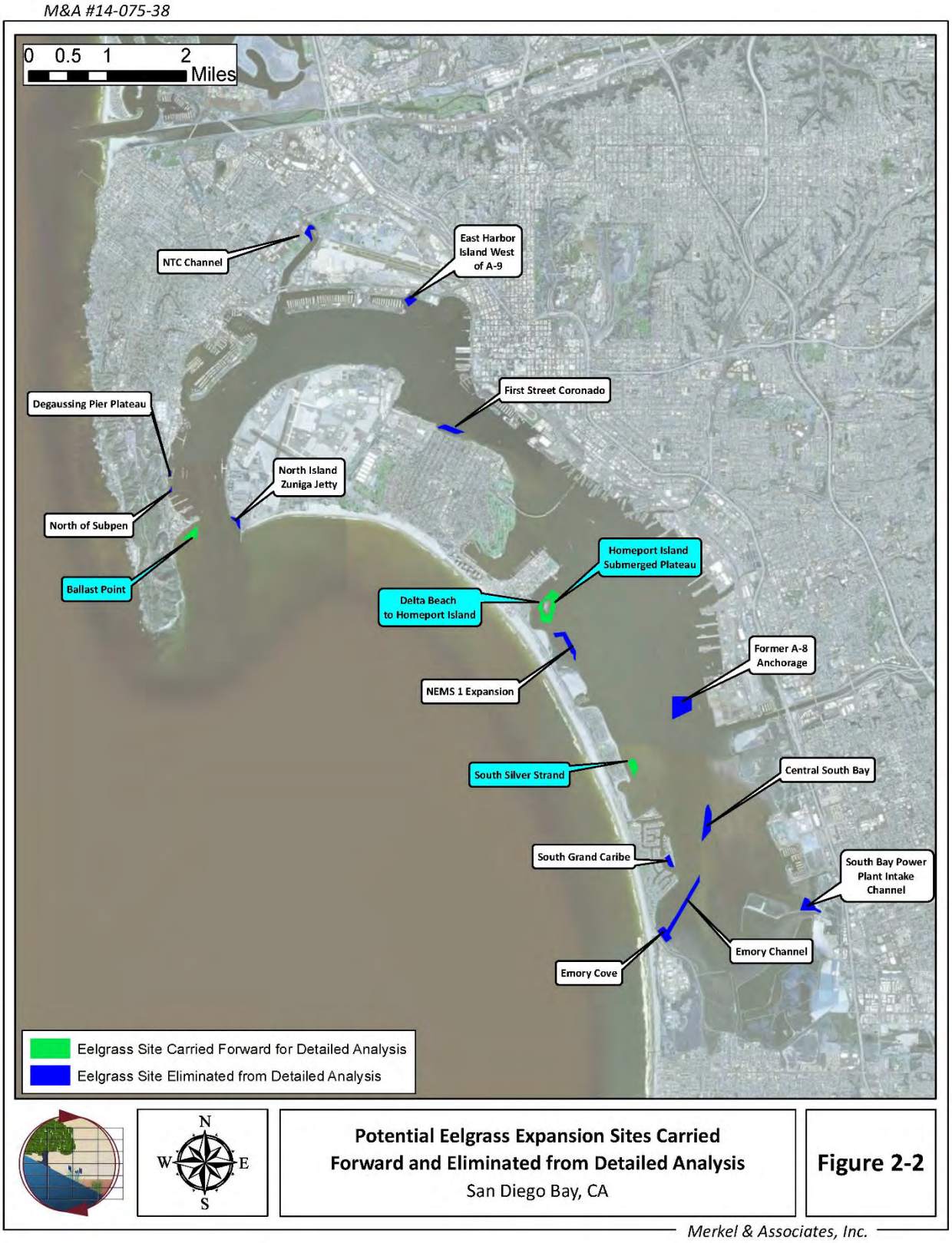
Under the Proposed Action, the Navy would create additional eelgrass habitat in San Diego Bay at one or more of the four sites grouped into three alternatives as follows:

Alternative 1: Ballast Point
Alternative 2: Delta Beach to Homeport Island (2A)
Homeport Island Submerged Plateau (2B)
Alternative 3: South Silver Strand

Table 2-3 summarizes the proposed sites and their respective characteristics. Of the four potential sites, three are sites that would support common eelgrass (*Zostera marina*) and would involve placement of suitable dredged material to raise the bay floor to elevations suited to support eelgrass and then be planted. One site (Alternative 1 - Ballast Point) would support Pacific eelgrass (*Z. pacifica*) at current depths and as such, would not need to be filled prior to planting eelgrass shoots. Figure 2-2 depicts the locations of the potential eelgrass expansion sites carried forward and eliminated from detailed analysis.

The Navy would either directly plant eelgrass shoots at a site with existing bathymetry that is suitable for eelgrass habitat expansion, or first bring in sufficient suitable dredged material to create the necessary bathymetry that would then support the planting of eelgrass shoots and subsequent development of eelgrass habitat.

Figure 2-2. Potential Eelgrass Expansion Sites Carried Forward and Eliminated from Detailed Analysis



1 **Table 2-2. Potential Eelgrass Expansion Site Alternatives and Screening Factors for All Alternative Sites**

2

Potential Eelgrass Expansion Site (Site Size/Volume of Suitable Dredged Material Required to Maximize Site Potential)	*Screening Factors*			*Site Carried Forward for Detailed Analysis in EA?*
	1. Compatible with Current and Future Navy Testing and Training?	*2. Compatible with Existing and Future Public Land Uses?*	*3. Suitable Physical Conditions for Immediate Use?*	
Ballast Point (10.1 acres/0 cubic yards [CY])	✓	✓	✓	YES
North of Subpen (1.1 acres/15,000 CY of concrete rubble and 8,000 CY of suitable dredged material)	X - Incompatible with activities	N/A*	X – Site would require engineered containment structure	NO
Degaussing Pier Plateau (1.2 acres/8,700 CY of concrete rubble and 11,000 CY of suitable dredged material)	X - Incompatible with activities	N/A*	X - Site has strong currents and would require engineered containment structure	NO
Naval Training Center (Channel A and Channel B) (4.5 acres/69,000 CY)	✓	X – This site is currently under contract for transfer to the City of San Diego from the Navy	✓	NO
East Harbor Island West of A-9 (7.2 acres/35,000 CY)	✓	X - Incompatible with recreational boating	✓	NO
First Street Coronado (6.0 acres/78,000 CY of concrete rubble and 190,000 CY of suitable dredged material)	✓	✓	X - Site would require a large, engineered containment structure	NO
Delta Beach to Homeport Island (9.0 acres/63,000 CY)	✓	✓	✓	YES
Homeport Island Submerged Plateau (13.0 acres/95,000 CY)	✓	✓	✓	YES
NEMS 1 Expansion (15.0 acres/124,000 CY)	X - Incompatible with activities	✓	✓	NO
Former A-8 Anchorage (34.8 acres/255,000 CY)	✓	X - Incompatible with recreational boating and aquaculture plans	✓	NO
South Silver Strand (10.0 acres/130,000 CY)	✓	✓	✓	YES
Central South Bay (8.2 acres/118,000 CY)	✓	✓	X – Site exposed to strong currents that would disperse placed sediment without engineering controls	NO
Emory Channel (14.8 acres/72,000 CY)	✓	X - Incompatible with Port of San Diego plans	✓	NO
Emory Cove (15.0 acres/74,000 CY)	✓	X - Incompatible with Port of San Diego plans	✓	NO

Notes: CY= cubic yards *No public uses presently occur in these restricted waters.

Table 2-3. Potential Eelgrass Expansion Site Alternatives and Key Characteristics

Alt. #	Site Name	Est. Site Size (Acres)	Est. Material Volume (CY)	Type of Eelgrass	Anticipated Max. Eelgrass Yield (acres)
1	Ballast Point	10.1	0	*Pacific*	8.5
2A	Delta Beach to Homeport Island	9.0	63,000	*Common*	7.0
2B	Homeport Island Submerged Plateau	13.0	95,000	*Common*	12.6
3	South Silver Strand	10.0	130,000	*Common*	9.8
	Total	**42.1**	**288,000**		**37.9**

The anticipated eelgrass credit yield was estimated using the NOAA Wetland Mitigation Calculator (King & Price, 2004) incorporated into the California Eelgrass Mitigation Policy (NOAA Fisheries, 2014) and discounts potential eelgrass mitigation value based on eelgrass presence derived from multiple bay-wide eelgrass surveys conducted under the San Diego Bay INRMP. The discounted credit yield is considered the estimated maximum the site would provide based on the NOAA Wetland Mitigation Calculator calculation of present eelgrass value within the site, but does not consider potential eelgrass yield from eelgrass growing down shallow side slopes.

Under the Proposed Action, the Navy would establish and plant the site(s), maintain, and monitor the site(s), and then incorporate eelgrass site(s) into the Bank. The Navy would continue to monitor and manage the site(s) under the Navy's natural resource management system once incorporated into the Bank.

2.3.2.1 Overview of Proposed Eelgrass Habitat Expansion Activities

Site Establishment and Planting Activities

In the first phase of work, clean and suitable dredged material derived from San Diego Bay maintenance or excavation projects[2] would be identified for use at the proposed common eelgrass site(s) as needed. Dredged material for use at the eelgrass expansion site(s) would be limited to that material determined by USACE and USEPA to be physically, chemically, and biologically suitable for unconfined aquatic disposal under Inland Testing Manual criteria (USEPA and U.S. Department of the Army, 1998).

Prior to placing suitable dredged material at the site(s), the Navy would conduct eelgrass surveys to quantify the amount of existing eelgrass at each site(s). The surveys would be conducted in accordance with the CEMP (NOAA Fisheries, 2014) and used to quantify any temporary loss of eelgrass from site establishment.

Barges, scows, tugs, small boats, and other vessels would then transport the material to the selected site whereupon the material would be placed within the designated site boundaries. Suitable dredged material could be delivered in phases or all at once. The duration of the site preparation activities would depend upon how many different dredging projects the site would need to eventually contribute enough suitable dredged material to reach the site's intended size. While most activity is anticipated to occur during the day, some activity may occur during the night.

[2] The activity would be subject to separate NEPA analysis.

Suitable dredged material would be deposited at a site or sites using any one of the following methods or a combination of methods or similar methods:

- free fall placement (bulk load) using hopper or barges with bottom doors or split hull hopper/barges;
- side casting at site (suitable dredged material is pumped from the hopper into the water column at site)

On average, the Navy anticipates that one or two projects per year might general suitable dredged material. Naval Base San Diego (NBSD), Naval Base Coronado (NBC), and Naval Base Point Loma (NBPL) have recurring maintenance dredging projects. In addition, there are occasional in-water construction projects that could be candidates for providing material for the eelgrass habitat expansion site, as needed. Once sufficient substrate exists at the eelgrass expansion site, the Navy would smooth/grade the area and prepare it for planting.

The smoothing/grading would be performed by clamshell redistribution of sediment within the site(s) as may be necessary and sweeping the site with a clamshell dredge bucket or excavator on a deck barge to flatten high points and fill low points. A shallow draft barge would move the site and the bottom would be systematically flattened to the desired site elevations. This final grading work effort would take a few days to a few weeks to complete, depending on the overall degree of variance in the height of the original fill placement events.

Because of the potential phased nature of suitable dredged material delivery, it is anticipated that some portions of the site would support eelgrass as an interim condition while the site continues to be filled. When this happens, an increased function of the partially complete site would develop, however until the site is finished, the expanded eelgrass would not be considered as either mitigation credit or impacted habitat until the site is completed. This would be considered an acceptable and temporary impact of the Proposed Action.

When the Navy brings a site, or a completed phase of the site, to the desired final elevations, divers would revegetate the site following established standard practices of transplanting eelgrass from natural donor beds as anchored bareroot planting units. Diver biologists would hand-extract turions (leaf shoots and rhizomes) from donor eelgrass beds located in San Diego Bay at a rate of 10 percent or less of the available shoots within the donor beds. The crews would then process planting units and then plant these into the expansion site at a density of 1 planting unit per square meter of the site (see Photo 2-1 at right). In cases where eelgrass beds are to be impacted by separate project activities elsewhere in the bay, harvesting may be raised from 10 percent to as much as 100 percent in an eelgrass material salvage to be used in the habitat restoration.

Photo 2-1. Photo Depicting a Diver Planting Eelgrass Shoots.

None of the alternative sites would require placement of hard substrate (e.g., rock buttresses) to anchor or stabilize the sites. For common eelgrass sites where the bay floor elevations would be raised, the Navy would coordinate with the NOAA and U.S. Coast Guard to add the site to bay navigation charts.

Eelgrass planting may or may not be completed within five years depending on the site and availability of suitable dredged material. If the project extends beyond five years from the decision document date, the Navy will evaluate if the environmental analysis is sufficient or determine if there is a need for supplemental environmental analysis to address any potential changes.

Site Monitoring, Maintenance, and Reporting

The Navy would monitor the effectiveness of the eelgrass habitat expansion activities and prepare annual reports on the extent and health of the site. As needed, the Navy would perform maintenance of the site to support achievement of the habitat expansion goals. Once the site has met all success criteria (generally a five-year process), the Navy would add the site to the Bank. Once the site is accepted into the Bank by the interagency MBRT as a NEMS, the Navy would annually track the status of the site (i.e., mitigation credit/debits) and provide annual reports to the interagency MBRT.

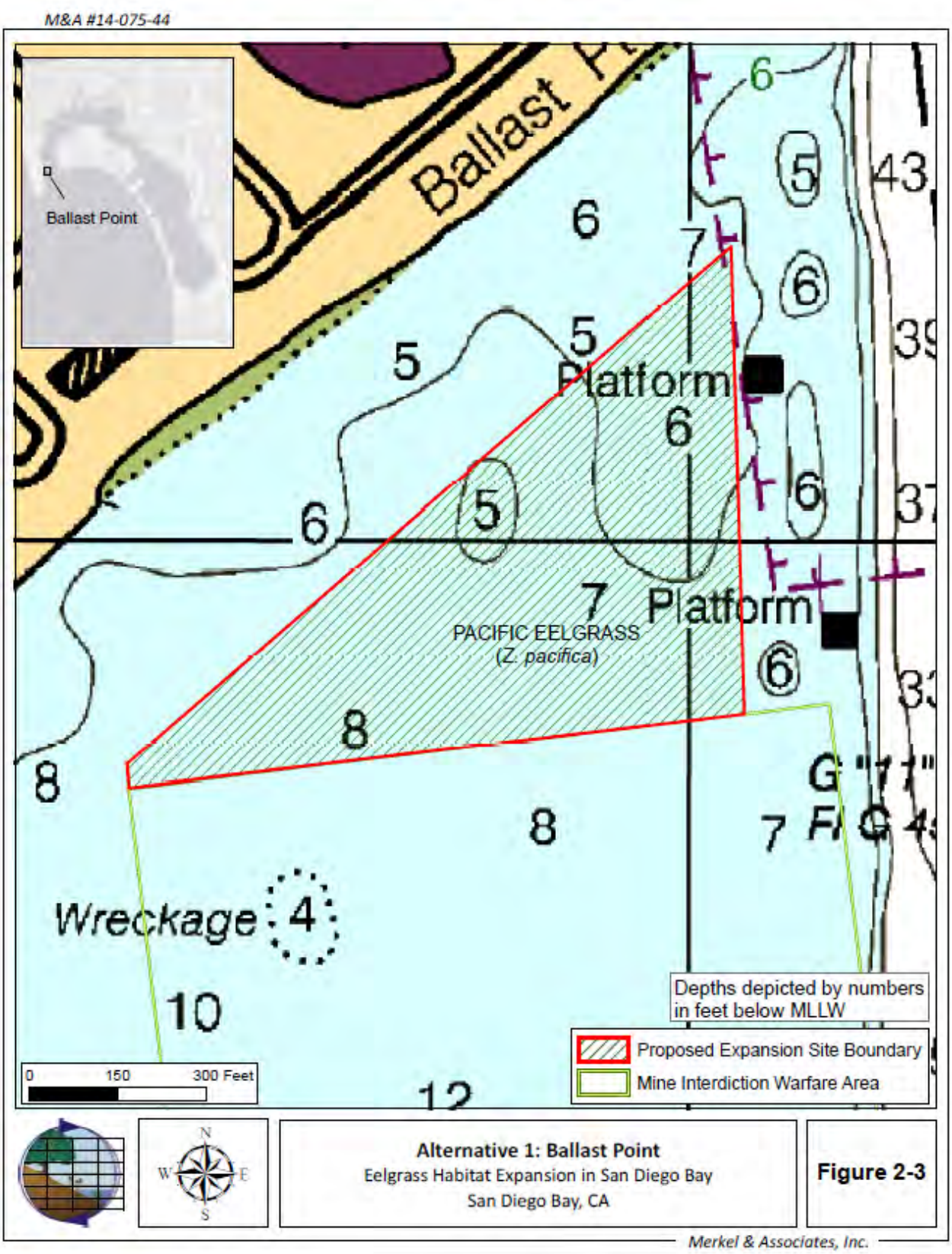
2.3.2.2 Alternative 1 – Ballast Point

The Ballast Point site is located in the outer bay waters and consists of approximately 10.1 acres adjacent to the Point Loma peninsula (Figure 2-3). The original boundaries of this site were adjusted to avoid and minimize potential impacts to existing and future Navy activities. Water depths at the Ballast Point site range from approximately -7 feet (ft) mean lower low water (MLLW) to -9 ft MLLW, with an 16 average depth of approximately -8 ft MLLW.

The area outside of Ballast Point historically supported healthy beds of Pacific eelgrass in the early to mid-1990s. The eelgrass beds declined dramatically in the early 2000s and have not recovered since. High surf and surges from Hurricane Marie in August 2014 further scoured the site and reduced the amount of eelgrass. It is believed that Pacific eelgrass has not recovered in the area due to difficulty in recruiting seed into the area because of the presence of the San Diego Bay entrance channel, Zuniga Jetty, and prevailing swell direction coupled with low overall natural recruitment of the species.

Contractors would extract donor eelgrass from Pacific eelgrass beds east of Zuniga Jetty, prepare planting units and replant areas following an adaptive management process by first establishing test plots to determine site suitability to support eelgrass and then expanding outward from areas that were determined to be suitable to support eelgrass. Because the existing bathymetry is already sufficient to support eelgrass habitat, this site would not require the placement of suitable dredged material. The anticipated maximum eelgrass yield for this site is approximately 8.5 acres of Pacific eelgrass.

Figure 2-3. Alternative 1: Ballast Point



2.3.2.3 Alternative 2 – Delta Beach to Homeport Island (2A) and Homeport Island Submerged Plateau (2B)

Alternative 2 consists of two sites – Alternative 2A, Delta Beach to Homeport Island and Alternative 2B, Homeport Island Submerged Plateau (Figure 2-4). Because these two sites are located near each other and adjacent to the existing Homeport Island, they share many of the same existing environmental conditions. Therefore, this EA evaluates both sites as one alternative.

To comply with the 2000 Record of Decision for CVN II and USACE Permit No. 982004900-KMM, the Navy created Homeport Island using dredged material (Navy and Port, 2013). The island was only constructed to one-third of its original design size because sediment was diverted offshore for disposal.

Alternative 2A: Delta Beach to Homeport Island

The Delta Beach to Homeport Island site is approximately 9.0 acres and is located adjacent to Naval Amphibious Base Coronado (Figure 2-4). The original boundaries of this site were adjusted to avoid and minimize potential impacts to existing and future Navy activities. For this site, the Navy would have to import suitable dredged material to raise the bay floor from an existing depth of approximately -10 ft MLLW to approximately -5 ft MLLW. The Navy would place suitable dredged material (mud or sand fill) between the existing Homeport Island and the Delta Beach shoreline to shallow the gap between the shoreline and island.

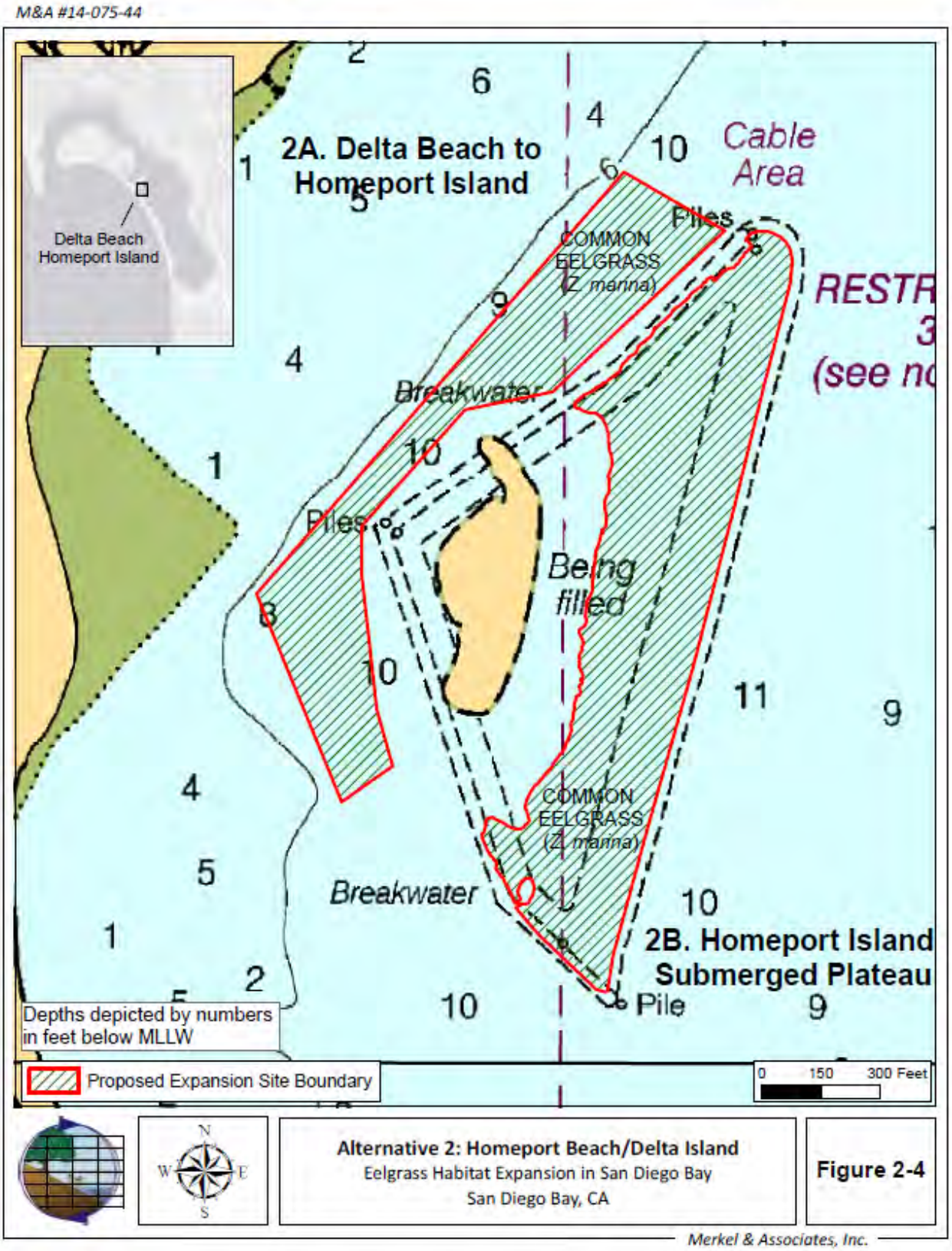
Based on existing bathymetry, the Navy would need to import approximately 63,000 cubic yards (CY) of suitable dredged material (sand and/or mud) from one or more dredging projects. The Navy would place the suitable dredged material from one end of the site to the other. As the site is already located in a marked shallow zone, the Navy does not anticipate the need to install an additional mariner notification/navigation sign. However, should it be determined that shoal markers are necessary, this would include the placement and maintenance of up to two piles and signage. The waters over the eelgrass site would not be closed to public navigation or Navy testing or training activities. The anticipated maximum eelgrass yield for this site is approximately 7.0 acres of common eelgrass.

Alternative 2B: Homeport Island to Submerged Plateau

The Homeport Island Submerged Plateau site is approximately 13.0 acres and is located adjacent to Naval Amphibious Base Coronado (Figure 2-4). For this site, the Navy would have to import suitable dredged material to raise the bay floor from the existing depth of approximately -10 ft MLLW to approximately -5 ft MLLW. The Navy would place suitable dredged material between existing containment jetties within the designated area. Contractors would place suitable dredged material in the area. If the suitable dredged material is mostly mud, contractors may need to construct a sand containment berm to -5 ft MLLW between the rock wings.

Based on existing bathymetry, the Navy would need to import approximately 95,000 CY of suitable dredged material (sand and/or mud). As the site is already located in a marked shallow zone, the Navy does not anticipate the need to install an additional mariner notification/navigation sign. However, should it be determined that shoal markers are necessary, this would include the placement and maintenance of up to two piles and signage. The waters over the eelgrass site would not be closed to public navigation or Navy testing or training activities. The anticipated maximum eelgrass yield for this site is approximately 12.6 acres of common eelgrass.

Figure 2-4. Alternative 2: Delta Beach/Homeport Island



2.3.2.4 Alternative 3 – South Silver Strand

The South Silver Strand site is approximately 10.0 acres and is located along the Silver Strand just north of the entrance to Crown Cove (Figure 2-5). This site originally overlapped a portion of the Silver Sand Training Complex-Alpha training area. Based on feedback from Navy operators, Navy planners adjusted the site boundaries to avoid and minimize the potential impacts to existing and future Navy testing and training activities in this area.

For this site, an area would be filled to extend the shoreline eelgrass beds bayward. This area would be raised from an existing depth of approximately -12 ft MLLW up to approximately -5 ft MLLW. Based on existing bathymetry, the Navy would need to import approximately 130,000 CY of suitable dredged material (sand and/or mud). As the site is located near Crown Cove (an area used by recreational boaters), the Navy would install and maintain up to two mariner notification/navigation signs on piles along the southern side of the site.

The waters over the eelgrass site would not be closed to public navigation or Navy testing or training activities. The anticipated maximum eelgrass yield for this site is approximately 9.8 acres of common eelgrass.

2.4 Alternatives Considered but not Carried Forward for Detailed Analysis

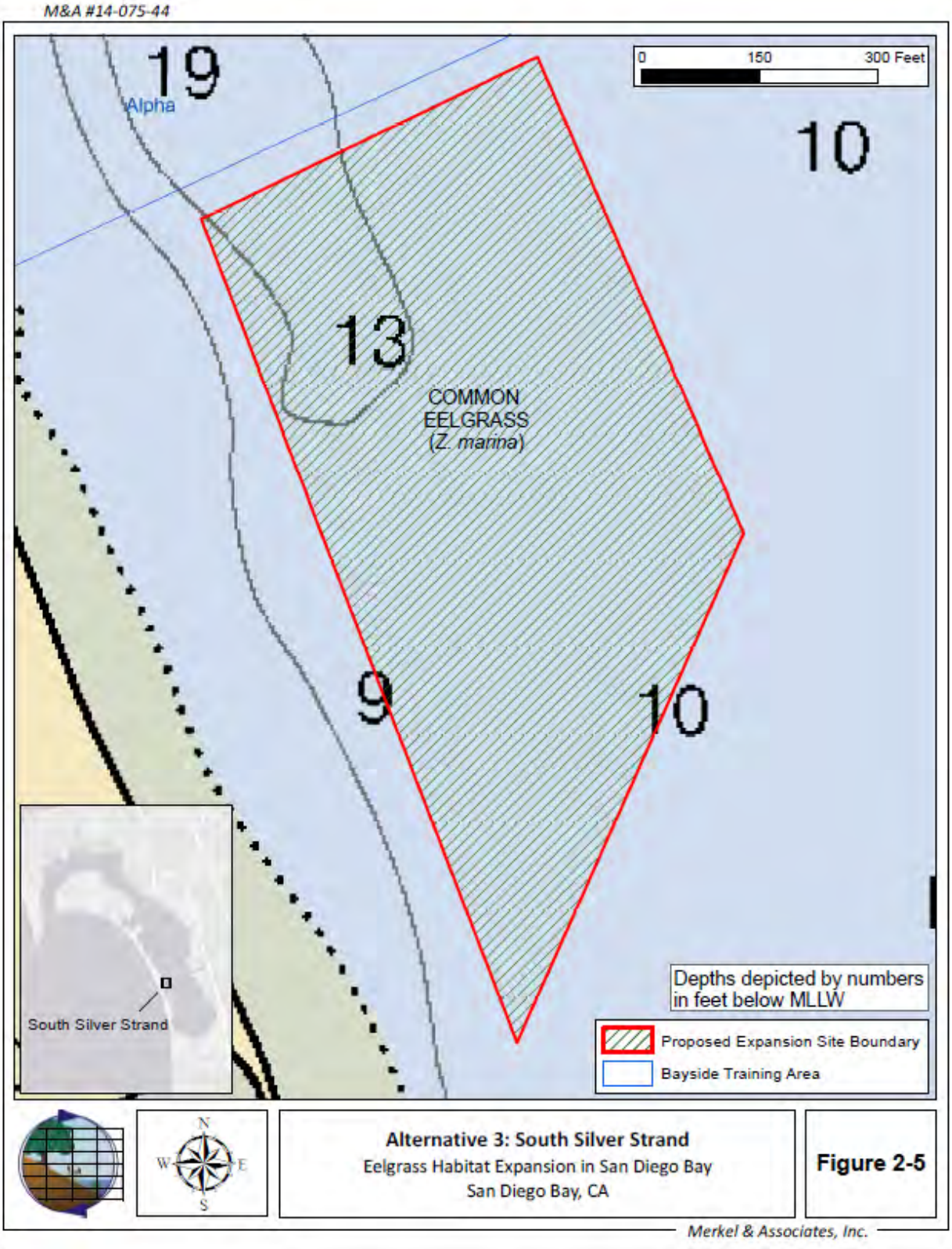
The Navy initially explored locations throughout San Diego Bay for habitat restoration/enhancement potential (Merkel & Associates, 2021) (refer to Section 2.2). After evaluating the potential alternative sites against the screening factors, the Navy determined that sites outside of San Diego Bay and ten potential sites within San Diego Bay did not meet one or more of the identified screening factors for the present project. The following paragraphs summarize why each potential site was not carried forward for detailed analysis at this time as part of this EA.

Sites Outside of San Diego Bay. The focus of this project is San Diego Bay and creating additional eelgrass habitat to offset impacts from future Navy projects and activities in San Diego Bay. Therefore, establishing eelgrass expansion site(s) outside of San Diego Bay does not meet the purpose of and need for the project. Therefore, this EA does not carry forward a detailed analysis of sites located outside of San Diego Bay.

North of Subpen. This potential site is located in an area used extensively for Navy activities that require the deeper waters currently present. This potential site has steep subtidal slopes descending from the sides of Point Loma and would require a buttress reef to support the placement of suitable dredged material and eelgrass shoots. This potential site does not meet screening factors 1 or 3. Therefore, this EA does not carry forward a detailed analysis of this site.

Degaussing Pier Plateau. This potential site has steep subtidal slopes that would require a buttress reef to support the placement of suitable dredged material and eelgrass shoots. The buttress reef would encroach on existing Navy pier infrastructure and limit the ability to perform maintenance dredging around the degaussing pier. Situated near the entrance to San Diego Bay, the site is within a high traffic area for recreational boaters. The site is also exposed to strong currents that actively move the existing sediment. This potential site does not meet screening factors 1 or 3. Therefore, this EA does not carry forward a detailed analysis of this site.

Figure 2-5. Alternative 3: South Silver Strand



Naval Training Center Channel A and B (NTC Channel). The submerged lands associated with Naval Training Center Channel A and Channel B are currently under contract for transfer to the City of San Diego. The Navy and city are currently discussing the future ownership and status of the contract. Based on the current status of the contract and discussions, this site is not currently available. While the site may become available in the future, this potential site does not currently meet screening factor 2. Therefore, this EA does not carry forward a detailed analysis of this site.

East Harbor Island West of A-9. This potential site is located in the Harbor Island East Basin, an active recreational boating area. Decreasing the water depth in this area would constrain existing boat and recreational activity in this area. This potential site does not meet screening factor 2. Therefore, this EA does not carry forward a detailed analysis of this site.

First Street Coronado. This potential site has steep subtidal slopes and would necessitate a large buttress reef to support an expanded eelgrass plateau extending offshore from an existing persistent eelgrass bed. This potential site does not meet screening factor 3. Therefore, this EA does not carry forward a detailed analysis of this site.

NEMS 1 Expansion. This potential site is located within waters used by the Navy for current training. The Navy has identified future training requirements in this area that would be incompatible with eelgrass expansion. This potential site does not meet screening factor 1. Therefore, this EA does not carry forward a detailed analysis of this site.

Former A-8 Anchorage. This potential site is located in the central south bay in an area used for public boating. The area is also being considered by others for aquaculture development. This potential site does not meet screening factor 2. Therefore, this EA does not carry forward a detailed analysis of this site.

Central South Bay. This potential site is also located in central south bay but not in a high recreational boating area. However, due to the bottom configuration and other conditions, strong tidal currents regularly affect the site. These current conditions will be exacerbated over time by sea level rise and continued tidal restoration within the South Bay increasing the south bay tidal prism and thus current velocities in this area. Thus, the site conditions would not be conducive to holding finer-grained sediment typically found in dredged material, without the inclusion of an engineered containment structure. This potential site does not meet screening factor 3. Therefore, this EA does not carry forward a detailed analysis of this site.

Emory Channel. This potential site is in south bay. During early coordination, the Port indicated this site would not be available for potential Navy eelgrass expansion. This potential site does not meet screening factor 2. Therefore, this EA does not carry forward a detailed analysis of this site.

Emory Cove. This potential site is in south bay. During early coordination, the Port indicated this site would not be available for potential Navy eelgrass expansion. This potential site does not meet screening factor 2. Therefore, this EA does not carry forward a detailed analysis of this site.

3 Affected Environment and Environmental Consequences

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing any of the alternatives and an analysis of the potential direct and indirect effects of each alternative.

All potentially relevant environmental resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and Navy guidelines; the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. In addition, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

"Significantly," as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed under several perspectives such as society as a whole, the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant. Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, the more intense a potential impact would be expected to be significant.

This EA does not analyze the generation of suitable dredged material for use as beneficial fill for the establishment of the potential eelgrass site Alternatives 2 or 3. Dredging activity would be subject to separate NEPA analysis. This EA does analyze the transportation of clean and suitable dredged material derived from San Diego Bay maintenance or new excavation project to the various sites for Alternatives 2 or 3.

Dredged material delivered to the eelgrass expansion site(s) would be limited to that material determined by USACE and USEPA to be physically, chemically, and biologically suitable for unconfined aquatic disposal under Inland Testing Manual criteria (USEPA and U.S. Department of the Army, 1998). Barges, scows, and other vessels would transport the material to the selected site(s) whereupon the material would be placed within the designated site boundaries.

This EA also analyzes the placement and contouring of the suitable dredged material at the site(s) and the planting of eelgrass shoots. Suitable dredged material could be delivered in phases or all at once. Similarly, planting could occur in phases or all at once. This EA analysis also assumes that each site would receive sufficient material for site establishment within a five-year period following the completion of the NEPA process. Eelgrass planting may or may not be completed within the same five-year period depending on the site and availability of suitable dredged material. The Navy would evaluate and determine if supplemental environmental analysis would need to be prepared to address any potential changes.

This section analyzes the following resource areas in detail: marine water resources and bathymetry, marine biological resources, and land use. The potential impacts to the following resource areas are considered to be negligible or non-existent so they were not analyzed in detail in this EA.

Air Quality: San Diego Bay is located within the San Diego Air Basin (SDAB), which covers all of San Diego County. SDAB is in severe nonattainment for the criteria pollutant ozone (O_3). The portion of SDAB that contains San Diego Bay is also a maintenance area for criteria pollutant carbon monoxide (CO). San Diego County is classified by the USEPA as unclassified/attainment for all other criteria pollutants. Because San Diego County is in nonattainment for O_3 and a maintenance area for CO, a General Conformity evaluation is required (USEPA, 2023; 86 Federal Register 29522; San Diego Air Pollution Control District [SDAPCD], 2022).

Due to the nonattainment and maintenance status of these criteria pollutants within the SDAB, the use of *de minimis* thresholds to define the limit at which a formal Conformity Determination under the CAA General Conformity Rule is required. Air quality is further regulated in the SDAB by the SDAPCD. Rules set forth by the SDAPCD regulate diesel engine emissions, dust generating activities, vehicle idling time limits, and the emissions allowable from heavy construction equipment. The nonattainment and maintenance status of the SDAB is also the context from a NEPA perspective, and the *de minimis* thresholds are measures of intensity appropriate to the context. Therefore, if the predicted project-related emissions are estimated to below the applicable *de minimis* levels for criteria pollutants, emissions are presumed not to be significant under NEPA. Conversely, if the emissions are estimated to above *de minimis* levels, they would require further analysis under NEPA.

Blue carbon is a term to describe atmospheric carbon dioxide that is captured and stored in coastal and marine ecosystems, including the ocean and coastal seagrass, mangroves, and saltmarsh habitats. Growing recognition of the ability of wetlands and seagrasses to combat climate change by sequestering and storing atmospheric carbon has led to increased interest in quantifying the greenhouse gas (GHG) benefits of coastal ecosystems. So-called “coastal blue carbon” is of great significance for both carbon sequestration and storage, as wetlands (both freshwater and saline) store 20–30 percent of global sediment carbon while making up just 5–8 percent of global land surface (Port of San Diego, 2022)

Under the No Action Alternative, no eelgrass habitat expansion activities would occur. There would be no change to existing air quality; therefore, no impacts to air quality would occur. Although the Proposed Action (Alternatives 1, 2, or 3) would have relatively minor effects to air quality, and associated criteria pollutant emissions would not substantially contribute to air basin pollution, a quantitative analysis was conducted for comparison with the applicable *de minimis* threshold levels.

The emissions estimated for the Proposed Action include barging during placement of suitable dredged material for alternatives and support boats for the barge and eelgrass shoot planting. Alternative 3 was the basis of the emission estimate as it would have the highest estimated number of days for the placement of suitable dredged material and eelgrass planting, based on the total approximate volume of suitable dredged material required. Thus, Alternative 3 represents the upper limit of estimated emissions from the Proposed Action. All other alternatives would have lower emissions due to smaller work areas and a smaller volume of suitable dredged material. The emissions estimate also conservatively assumed completion of Alternative 3 within one year, though it is likely the project would be completed in phases over more than one year. Thus, by considering all potential activities in one year, a conservative or “upper bound” of emissions can be estimated.

Total emissions resulting from Alternative 3 were estimated using information presented in Chapter 2, general air quality assumptions, and emission factors compiled from the following sources: OFFROAD Emission Factors (California Air Resources Board [CARB] 2017); CARB EMFAC2014 Model (CARB 2014); 40 CFR 1042 Control of Emissions from New and In-Use Marine Compression-Ignition Engines and Vessels; and Emission Factors from Analysis of Commercial Marine Vessel Emissions and Fuel Consumption Data (USEPA 2000). See Appendix B for a complete listing of sources, assumptions, and emission estimates.

Table 3-1 presents the estimated emissions with implementation of Alternative 3, conservatively assumed to be completed within one year. Post-establishment of Alternative 3, there would be no new sources of emissions.

Table 3-1. Estimated Eelgrass Habitat Expansion Emissions for Alternative 3

Emission Source	Emissions (tons/year)					
	CO[1]	VOC[2]	NO_X[2]	SO_x	PM_{10}	$PM_{2.5}$
Total Annual Emissions	9.84	3.56	4.22	0.94	0.48	0.43
Annual Conformity *de minimis* Threshold[3]	100	25	25	N/A	N/A	N/A
Exceeds Conformity de minimis Threshold?	No	No	No	N/A	N/A	N/A

Notes: 1 SDAB is a maintenance area for the CO National Ambient Air Quality Standard (NAAQS).
2 SDAB is a severe nonattainment area for the 2015 8-hour ozone (O3) NAAQS; Volitile Organc Compounds (VOCs) and Nitric Oxide (NOx) are precursors to the formation of O3.
3 40 CFR 93.153. CO = carbon monoxide; NOx = nitric oxide; SOx = sulfur oxide; PM2.5/10 = particulate matter less than 2.5/10 microns.

As shown in Table 3-1, even if all activity occurred within one year, the estimated emissions associated with Alternative 3A would be below all conformity *de minimis* thresholds. Because Alternative 3 represents the largest potential generator of emissions, Alternatives 1, 2A, and 2B would also conform to the SDAB State Implementation Plan and would not trigger a conformity determination under Section 176(c) of the CAA. The Navy has prepared a Record of Non-Applicability (refer to Appendix B) for CAA conformity in accordance with Navy CAA Conformity Guidance.

In addition, as demonstrated by the emissions in Table 3-1, if the Navy elected to select multiple sites for simultaneous implementation, emissions would still be less than *de minimis* levels[3]. Accordingly, while air quality is not carried forward for detailed analysis in this EA, it should be noted that implementation of the Proposed Action would expand eelgrass and with the expansion, an increased potential to sequester, or capture, carbon dioxide as blue carbon in San Diego Bay, resulting in a long-term beneficial impact to air quality and climate change.

Geological Resources: The Proposed Action is entirely water-based. No impact to soil, geological features, or seismic conditions would occur. There would be no change to existing geological resources. Therefore, implementation of the No Action Alternative or Alternatives 1, 2, or 3 would result in no impact to geological resources. Accordingly, geological resources is not carried forward for detailed analysis in this EA. Marine sediments and bathymetry are addressed in Section 3.1.

[3] For example, multiplying the VOC emissions by three (accounting for all sites that would require suitable dredged material), estimated VOC emissions would be below the 25 tons *de minimis* threshold.

Cultural Resources: San Diego Bay has been the focus of cultural resources survey both on the terrestrial and submerged portions of the landscape. Under the No Action Alternative, no eelgrass habitat expansion activities would occur. There would be no change to existing cultural resources; therefore, no impacts to cultural resources would occur.

The following analysis is based on data from the South Coastal Information Center for any sites within ¼ mile of each potential eelgrass site alternative. Alternative 1, located at Ballast Point on the eastern side of the Point Loma Peninsula, has been extensively studied both on the terrestrial potion of the peninsula and in the underwater landscape to the south of Ballast Point. This is due to State Historic Landmark #69, Fort Guijarros, as well as an historic whaling station, both located on the point. Adjacent to the proposed Alternative 1 at Ballast Point is underwater archaeological site P-37-008897, which has had both pre-contact as well as historic-aged material identified on the sea floor. This area has also been subject to underwater survey as reported in Pettus et al. (1981). The submerged material identified is not considered to be *in situ* and has been subject to movement from the frequent storms in the area, movement of the tides, or possibly the results of dumping into the sea during operation of the Fort during the early 1800s. Another possibility for artifacts identified in the offshore is site P-37-012953, a whaling station. The site record for this notes “sunken maritime features” with no additional information.

Alternative 2A, Delta Beach to Homeport Island and Alternative 2B, Homeport Island Submerged Plateau, have been the subject of an underwater survey using a magnetometer (MacFarlane, 1986) that that identified 12 anomalies in or adjacent to the location including one previously identified isolated artifact to the south of the project area. This is assumed to be associated with onshore sites and transported offshore by storm surges. Alternative 3, South Silver Strand, has no recorded resources within the project location and one resource recorded within ¼ mile. Site P-37-026498 consists of prehistoric, historic, and a few undefined artifacts, including varying lithics, cobble and shell lenses, historic glass bottles and shards, and faunal remains. Located parallel to the State Parks access road and parking lot, the site has been heavily disturbed by various construction projects. Consistent for all alternatives, the NOAA Office of Coastal Survey Wrecks and Obstructions Database shows no recorded shipwrecks within or adjacent to the potential eelgrass habitat expansion sites.

Due to the minimally invasive nature of the Proposed Action, Alternatives 1, 2, or 3 would not affect properties listed on, or properties eligible for listing on, the National Register of Historic Places, nor would these alternatives affect resources that are considered contributing properties to a listed or eligible historic district. Although submerged resources are near Alternatives 1 and 2, the placement of suitable dredged material and/or planting eelgrass shoots would cause no disturbance to the sites, and would, in fact, help to stabilize the sea floor with the development of eelgrass beds. This is particularly the case for Alterative 1, where no suitable dredged material would be placed.

For Alternatives 2 and 3, the suitable dredged material would cover any possible unknown submerged sites present, helping to protect them further from tidal energy and storm surges that cause movement of submerged material. In addition, any pre-contact sites that may be present *in situ* would be buried under the suitable dredged material.

If any potential cultural resources are identified on the sea floor, their locations should be noted and not moved to accommodate eelgrass shoots. Any cultural resources identified would be reported to the project archaeologist at Naval Facilities Engineering Systems Command Southwest (NAVFAC SW).

Consistent with 36 CFR Part 800.5(d)(1), implementation of the Proposed Action would be consistent with a finding of "no historic properties affected." Therefore, implementation of Alternatives 1, 2, or 3 would not affect cultural resources. Accordingly, cultural resources is not carried forward for detailed analysis in this EA.

Visual Resources: Overall, San Diego Bay has high visual quality. The complementary mix of natural and human-built features offers viewers a striking visual landscape. Each of the potential eelgrass sites are located underwater; however, the overlying water surfaces at each site are regularly transited by a variety of watercraft. Under the No Action Alternative, no eelgrass habitat expansion activities would occur. There would be no change to existing views or the viewshed in San Diego Bay; therefore, no impacts to visual resources would occur.

Under Alternative 1, one or two boats would transport divers and eelgrass to and from the Ballast Point site to plant eelgrass shoots. The temporary use of small boats would be consistent with the existing visual environment. Once planted, the Ballast Point site would be below the surface of the water and no visual impacts would occur.

Alternatives 2 and 3 would entail the use of barges, scows, tugs, and small boats on a temporary and short-term basis to transport, place, and contour suitable dredged material and plant eelgrass shoots at the site(s). The marine vessels would be consistent with the types of vessels regularly found on San Diego Bay. Once planted at each site, there would be no impact to visual resources as the eelgrass would be below the surface. There would be no change to existing views or the viewshed in San Diego Bay. Therefore, implementation of Alternatives 1, 2, or 3 would result in a negligible impact to visual resources. Accordingly, visual resources is not carried forward for detailed analysis in this EA.

Airspace: The airspace above and adjacent to San Diego Bay is used by a variety of commercial, public, agency, and military aircraft. Under the No Action Alternative, there would be no change to existing airspace or air operations; therefore, no impacts to airspace would occur. Alternatives 1, 2, or 3 would not alter airspace or air operations. The alternatives would also not require the use of tall equipment that may encroach on airspace nor result in the construction of any structures other than a potential mariner notification/navigation sign (rising approximately 10 ft above MLLW). Therefore, implementation of Alternatives 1, 2 or 3 would not impact airspace. Accordingly, airspace is not carried forward for detailed analysis in this EA.

Noise: The primary noise sources within the project area are air traffic associated with San Diego International Airport, Naval Air Station North Island, the U.S. Coast Guard Air Station, and civilian aircraft, and marine-related activities on and adjacent to San Diego Bay (e.g., boats, ships, and pier/marina/terminal/military activities). While the overall bay is generally exposed to continuous and at times impulsive noises, each of the site alternatives generally are quieter by virtue of their shoreline locations generally away from more intense human activity. There are no federal or state standards limiting construction noise.

Under the No Action Alternative, there would be no change to existing noise environment; therefore, no impacts to noise would occur. No sensitive noise receptors are located near Alternative 1. Under

Alternative 1, small boats would be used to transport divers and eelgrass shoots to and from the Ballast Point site to plant eelgrass shoots. The temporary use of small boats would generate noise levels consistent with and indistinguishable from the surrounding noise environment.

Alternatives 2 and 3 would use barges, scows, tugs, and small boats on a temporary basis to transport, place, and contour suitable dredged material and eelgrass shoots at the site(s). While most activity is anticipated to occur during the day, some activity may occur during the night. Dredge equipment may generate noise up to approximately 80 to 90 decibels at 50 ft (USACE, 2019). There are no sensitive noise receptors located near Alternatives 2 or 3. The Silver Strand Military Family Housing is located approximately 1,000 ft from the nearest extent of Alternative 3. Noise levels typically decrease by 6 decibels with each doubling of distance. Thus, at a distance of approximately 800 ft, noise levels may be between 50 and 60 decibels at the closest residences. While the equipment noise may be noticeable, perhaps even more so during any activity at night, noise levels would be consistent with a residential area.

Furthermore, noise would be intermittent, occurring only when vessels transit to the nearshore and place suitable dredged material. Existing noise sources would continue to dominate the overall noise environment. Noise levels would return to ambient conditions upon completion of smoothing. Therefore, implementation of Alternatives 1, 2 or 3 would result in a negligible and temporary impact to noise. Accordingly, noise is not carried forward for detailed analysis in this EA.

Infrastructure: Development within and around San Diego Bay generates a substantial utility demand. Shore and in-water infrastructure is extensive throughout the bay, reflective of the variety of land uses within the bay margins. Under the No Action Alternative, there would be no change to existing utility demand or facilities; therefore, no impacts to infrastructure would occur. Alternatives 1, 2, or 3 would not increase utility demand or result in new infrastructure or affect existing infrastructure. Therefore, implementation of Alternatives 1, 2, or 3 would not impact infrastructure. Accordingly, infrastructure is not carried forward for detailed analysis in this EA.

Transportation: San Diego Bay is a heavily used commercial, military, and recreational vessel waterbody accommodating a wide range of year-round boating activities that result in maritime traffic. These include Navy ships, commercial ship traffic, and various forms of recreational boating. While on any day there can be hundreds of recreational boats on the bay, larger ships and boats on average number approximately 20 trips per day (Marine Traffic, 2023).

Under the No Action Alternative, no eelgrass habitat expansion activities would occur. There would be no change to existing maritime traffic in San Diego Bay; therefore, no impacts to transportation would occur. Under Alternative 1, small boats would be used to transport divers and eelgrass shoots to and from the Ballast Point site to plant eelgrass shoots. The temporary use of one or two small boats would add a negligible amount of daily boating trips on San Diego Bay.

Alternatives 2 and 3 would entail the use of barges, scows, tugs, and small boats on a temporary and short-term basis to transport, place, and contour suitable dredged material and plant eelgrass shoots at the site(s). The amount of suitable dredged material available and the capacity of dredge scows would influence the number of barge/scow and associated tug trips. For illustrative purposes, a standard barge used in San Diego Bay can hold approximately 2,000 CY of dredged material. If a dredge project generates 60,000 CY of material suitable, then approximately 30 roundtrips spread out over one to two

months would occur to deliver all the suitable dredged material to the site. The addition of an average of one or two daily trips to the existing bay maritime transportation network would be negligible. In addition, any simultaneous trips to multiple sites would be negligible.

Because barges/scows and their tows are unique maritime vessels, all project-related vessels would be marked and lighted in accordance with U.S. Coast Guard regulations, and notices would be published in a Local Notice to Mariners notifying boaters of the times, durations, and locations of activities. Vessel traffic should be able to easily navigate around any short-term obstacles created by dredge/scow and tug traffic. If vessels associated with the transport and placement of suitable dredged material would be moored, it would be done so with sufficient room left in the main navigation channels for other vessels to pass to include appropriate lighting at night. In addition, no impacts to land-based traffic would occur as all activities would be marine-based. Therefore, implementation of Alternatives 1, 2, or 3 would result in a negligible and temporary impact to maritime traffic. Accordingly, transportation is not carried forward for detailed analysis in this EA.

Public Health and Safety: The San Diego Harbor Police, U.S. Coast Guard, Navy, and other entities contribute to ensuring public health and safety within San Diego Bay. Under the No Action Alternative, no eelgrass habitat expansion activities would occur. There would be no change to existing public health and safety conditions San Diego Bay; therefore, no impacts to public health and safety would occur.

Given the past activities in San Diego Bay, while not anticipated, unexploded ordnance may be present in dredged bay sediments. Prior to dredging, contractors and the lead agency assess the potential for unexploded ordinance and all applicable screening and safety procedures are implemented. Prior to placement, the suitable dredged material would be screened for potential pollutants and potential unexploded ordnance so that only clean and safe material would be deposited at the site(s). Thus, prior to use, suitable dredged material would have been deemed acceptable and having low likelihood for containing munitions or explosives of concern.

Under Alternative 1 during the planting of eelgrass, operators would use flags to alert persons of the presence of divers in the area. Alternatives 2 and 3 would entail the use of barges, scows, tows, and other small boats. The watercraft would be marked and lighted in accordance with U.S. Coast Guard regulations and diver presence flags would be used during eelgrass shoot planting.

The Navy would also coordinate with the NOAA and U.S. Coast Guard to add the eelgrass site(s) to bay navigation charts. For Alternatives 2 and 3, the Navy would install shoal markers as needed to alert watercraft. These measures would reduce the potential for impacts to people and property. There would be no change to existing public emergency services on the bay, nor would the eelgrass beds interfere with their activities. Therefore, implementation of Alternatives 1, 2, or 3 would result in a negligible impact to public health and safety. Accordingly, public health and safety is not carried forward for detailed analysis in this EA.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires federal agencies to “make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” Under the No Action Alternative, no eelgrass habitat expansion activities would occur; therefore, no impacts to the health and safety of children would occur. The Proposed Action would occur on and in

the waters of San Diego Bay, where children are only transitorily present during recreational water activities. There are no permanent populations of children located near the site alternatives. The Proposed Action would not generate concerning levels of environmental health or safety risks to the public, to include children. Therefore, implementation of Alternatives 1, 2, or 3 would not result in a disproportionate impact to the health and safety of children.

Hazardous Materials and Wastes: The use of hazardous materials and wastes within San Diego Bay is subject to compliance with applicable regulations. There are no known areas of contamination or hazardous materials (e.g., unexploded ordnance) within the potential eelgrass site alternatives.

Under the No Action Alternative, no eelgrass habitat expansion activities would occur. There would be no change to existing hazardous materials and wastes conditions in San Diego Bay; therefore, no impacts to hazardous materials and wastes would occur. Alternative 1 would require the use of one or two small boats. While unlikely to occur, the boat operator(s) would limit the potential for accidental releases of petroleum and debris from vessels and equipment by ensuring proper maintenance, inspection, and operation of vessels and equipment.

Alternatives 2 and 3 would entail the use of barges, scows, tows, and other small boats. These vessels and boats would also be properly maintained, inspected, and operated to minimize the potential for an inadvertent release of petroleum product or debris. In the event of an accidental release, clean-up procedures would occur. Prior to placement, the suitable dredged material would be screened for potential pollutants and potential unexploded ordnance so that only clean and safe material would be deposited at the site(s). Dredged material delivered to the eelgrass expansion site(s) would be limited to that material determined by USACE and USEPA to be physically, chemically, and biologically suitable for unconfined aquatic disposal under Inland Testing Manual criteria (USEPA and U.S. Department of the Army, 1998). Therefore, implementation of Alternatives 1, 2, or 3 would result in a negligible impact to hazardous materials and wastes. Accordingly, hazardous materials and wastes is not carried forward for detailed analysis in this EA.

Socioeconomics: The population of San Diego County is projected to increase 42 percent from its 2010 population of approximately 3,095,000 to approximately 4,385,000 in 2050 (San Diego Association of Governments [SANDAG], 2010). Housing units are also projected to increase 31 percent from approximately in 1,165,000 in 2010 to approximately 1,529,000 in 2050 (SANDAG, 2010). The economy of the San Diego region is primarily based on the service, retail trade, government, and manufacturing sectors. Under the No Action Alternative, no eelgrass habitat expansion activities would occur. There would be no change to existing socioeconomic conditions in or adjacent San Diego Bay; therefore, no impacts to socioeconomics would occur.

Implementation of Alternatives 1, 2, or 3 would occur in the water and not change populations or housing. There would be no change in population demographics, employment characteristics, schools, housing occupancy status, economic activity, or tax revenue. The alternatives would generate periodic short-term employment for dredge/tug operators and specialized divers. Upon establishment of the eelgrass site(s), there would be an anticipated increase in fish in and around the eelgrass, which may result in a corresponding increase in recreational and to a lesser extent, commercial fishery. Therefore, implementation of Alternatives 1, 2, or 3 would result in a negligible beneficial impact to socioeconomics. Accordingly, socioeconomics is not carried forward for detailed analysis in this EA.

Environmental Justice: EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations* requires that "each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health effects of its programs, policies, and activities on minority populations and low income populations." The Proposed Action would occur on and in the waters of San Diego Bay. There are no permanent populations located near the site alternatives. Implementation of the Proposed Action would not limit or permanently obstruct recreational fishing that may be done by minority or low income populations and in the long-term, would likely enhance the potential for successful fishing. Therefore, implementation of Alternatives 1, 2, or 3 would not cause disproportionately high and adverse human health or environmental effects on any minority or low-income populations.

3.1 Marine Water Resources and Bathymetry

This discussion of water resources focuses on marine waters (including marine water quality and marine sediments), shorelines, and bathymetry. Because the Proposed Action is entirely marine-based, non-marine surface water and groundwater would not be impacted. Neither would floodplains or wetlands. As such, surface water and groundwater resources and floodplains and wetlands are not discussed further in this EA.

Marine waters typically include estuaries, waters seaward of the historic height of tidal influence, and offshore high salinity waters. Marine water quality is described as the chemical and physical composition of the water as affected by natural conditions and human activities.

Marine sediments are the solid fragments of organic and inorganic matter created from weathering rock transported by water, wind, and ice (glaciers) and deposited at the bottom of bodies of water. Components of sediment range in size from boulders, cobble, and gravel to sand (particles 0.002 to 0.079 inches [in] in diameter), silt (0.000079 to 0.002 in), and clay (less than or equal to 0.000079 in).

Shorelines can be located along marine waters, brackish estuaries, or freshwater bodies. Physical dynamics of shorelines include tidal influences, channel movement and hydrological systems, flooding or storm surge areas, erosion and sedimentation, water quality and temperature, presence of nutrients and pathogens, and sites with potential for protection or restoration.

Bathymetry is described in terms of the topography of the sea floor or river bottoms where the Proposed Action would occur.

3.1.1 Regulatory Setting

The USACE regulates the discharge of dredge or fill material into wetlands under Section 404 of the CWA as a subset of all Waters of the United States (WOTUS). WOTUS is defined as (1) the territorial seas and traditional navigable waters, (2) tributaries, (3) certain lakes ponds, and impoundments, and (4) adjacent wetlands, and are regulated by USEPA and the USACE. The CWA requires that California establish a Section 303(d) list to identify impaired waters and establish total maximum daily loads for the sources causing the impairment.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill material into wetlands and other WOTUS. Any discharge of dredge or fill material into WOTUS requires a permit from the USACE.

Section 10 of the Rivers and Harbors Act provides for USACE permit requirements for any in-water construction in navigable waters. USACE and some states require a permit for any in-water construction. Permits are required for construction of piers, wharfs, bulkheads, pilings, marinas, docks, ramps, floats, moorings, and like structures; construction of wires and cables over the water, and pipes, cables, or tunnels under the water; dredging and excavation; any obstruction or alteration of navigable waters; depositing fill and dredged material; filling of wetlands adjacent or contiguous to navigable waters; construction of riprap, revetments, groins, breakwaters, and levees.

CZMA provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Actions occurring within the coastal zone commonly have several resource areas that may be relevant to the CZMA. The CZMA is discussed in Section 3.3.1.

The determination of clean dredged material for unconfined ocean disposal as referenced herein is regulated by the Marine Protection, Research, and Sanctuaries Act of 1972.

3.1.2 Affected Environment

The following discussions provide a description of the existing marine water conditions for San Diego Bay and each of the site alternatives.

3.1.2.1 Marine Waters

San Diego Bay

San Diego Bay is a naturally formed, crescent-shaped embayment. It is separated from the Pacific Ocean by Silver Strand Peninsula, a long, narrow sand spit that extends from the City of Imperial Beach to North Island. The mouth of San Diego Bay is about 0.6 mile wide and is aligned north-to-south between Point Loma and Zuniga Point. From the mouth of Otay River to the tip of Point Loma, San Diego Bay is about 15 miles long, and varies from 0.2 to 3.6 miles in width. It is 17 square miles (mi^2) in area at MLLW (Navy, 2015). The bay is classified as Estuarine and Marine Deepwater habitat (USFWS, 2023).

Several major freshwater basins drain into San Diego Bay. These basins include Sweetwater River, which drains to the south-central portion of San Diego Bay; Chollas Valley, which drains to the central portion of the bay; and Otay River and Telegraph Canyon, which drain to southern San Diego Bay. In winter—when San Diego County receives most of its precipitation—fresh water enters San Diego Bay via storm drains, urban runoff, streams, and flood control channels. In summer, freshwater flows into San Diego Bay are minimal, and evaporation of water from the surface of the bay increases. San Diego Bay is an "inverse" embayment—where evaporation exceeds freshwater inputs—creating a net inflow of ocean water (Navy, 2015).

Salinities near the bay entrance approach those of the nearby open ocean. In contrast, salinities in south bay are greater than in the ocean in late summer but can be lower in the winter following rain. This summer occurrence of hypersalinity in south bay may lead to stratified, density-driven flushing in the fall (Navy and Port, 2013).

Ballast Point

The waters within the Ballast Point site alternative are within the "marine" hydrodynamic region of San Diego Bay. Circulation in the marine region is dominated by tidal exchange with the ocean. Efficient flushing of the bay extends approximately 3 to 4 miles from the mouth into the bay, almost to downtown. Residence time of bay water is just a few days. The net result of these circulation patterns in the bay is the presence of cold, clean ocean water (Navy and Port, 2013). Situated at the entrance to San Diego Bay, the Ballast Point site alternative is exposed to wave energy primarily from waves and swell coming from a southerly direction.

Delta Beach to Homeport Island and Homeport Island Submerged Plateau

These two site alternatives are located in the middle portion of San Diego Bay, bracketing Homeport Island. Photo 3-1 depicts the creation of Homeport Island (note the turbidity cloud), and Photo 3-2 depicts Homeport Island at present day. The sites are exposed to localized wave action from boats and local winds and currents.

Photo 3-1. Image showing creation of Homeport Island in March 2001

Photo 3-2. Image of Homeport Island in March 2022

3.1.2.2 Marine Water Quality

San Diego Bay

Before the 1960s, San Diego Bay was one of the most polluted harbors in the world due to more than 70 years of discharge of raw sewage and industrial waste. In 1963, the City of San Diego constructed its wastewater treatment plant on the west side of the Point Loma peninsula to properly treat sanitary sewage before ocean discharge via an offshore pipeline. Use of the treatment plant and elimination of industrial discharges in the 1970s resulted in rapid water quality improvements (Navy, 2015).

Turbidity is a measure of water clarity or murkiness, and can be caused by suspended sediments transported in runoff or increased algal/bacterial growth. Turbidity can also be created by natural and human-induced re-suspension of bottom sediments. Increased turbidity reduces the amount of light available for plant growth underwater, so it can affect the entire ability of the bay to support living organisms (Navy, 2015).

It is common for a persistent turbidity cloud to develop over an eelgrass habitat expansion site while bottom sediments shed fine sediment fractions and stabilize over time. The turbidity plume can extend beyond the site margins over adjacent areas. The scale, shape, and concentration of the plume is dependent upon a number of factors including the characteristics of the sediment, the elevation of the fill, and the wave energy and currents acting on the sites.

Sources of pollution that contribute to water quality degradation include industries on the bay and upstream, marinas and anchorages, ship and boating activities, materials used for underwater hull cleaning and vessel antifouling paints, and urban runoff. Additional pollution sources include creosote-treated wood pier pilings, which are a source of polycyclic aromatic hydrocarbons (PAHs), stormwater runoff from land used for industrial, commercial, and transportation purposes, bilge water discharge, and oil spills (Navy, 2015).

Overall, the levels of contamination in the water and sediment in San Diego Bay appear to be lower now than in decades past, including levels of some metals and PAHs. However, copper concentrations remain routinely higher than federal and state limits for dissolved copper (Navy, 2015).

Section 303(d) of the CWA requires states to conduct biennial assessment of waters that do not meet protective water quality standards, and develop lists of “water quality limited segments” for impaired water bodies. All of San Diego Bay is listed an impaired water body on the CWA Section 303(d) list due to mercury, polychlorinated biphenyls (PCBs), and PAHs (USEPA, 2023).

Like a massive filter, eelgrass helps improve water quality by absorbing pollutants. Recent studies show a drastic reduction in harmful chemicals such as PCBs in areas with eelgrass beds. Other studies have shown that natural bacteria found in the beds helps prevent harmful algal blooms. Eelgrass also traps and retains sediment, resulting in clearer, cleaner water (Pew, 2023).

Ballast Point

The Ballast Point site is located near the bay entrance where water quality is generally better than the rest of the bay. To this point, the Ballast Point site is not included in the impaired water body listing that applies to the rest of San Diego Bay.

Delta Beach to Homeport Island and Homeport Island Submerged Plateau

These two sites are located near the middle portion of the bay, which means they are subject to less tidal flushing influence. Overall water quality is expected to be relatively good, though the sites are within the impaired water body listing.

South Silver Strand

The South Silver Strand site is located further into the southern portion of the bay, where tidal flushing is less pronounced. Overall water quality is expected to be relatively good, though the site is within the impaired water body listing.

3.1.2.3 Marine Sediments

San Diego Bay

Without human intervention, San Diego Bay may have eventually (in geologic time) filled up with sediment delivered by the San Diego, Otay, and Sweetwater Rivers. In addition, it is likely that the northward drift of beach sand that connected Coronado Island with the mainland, and Coronado and North Islands together, eventually would have blocked or nearly blocked the harbor entrance. Breakwaters, channel maintenance, and tidal action prevent this from occurring (Navy and Port, 2013).

Historically, the bay floor and margins were characterized by sand, silt, clay, mud, and mudstone. Sands were most common at the mouth and along the western margins, while finer mud deposits characterized the eastern margins and southern extremity of the bay. The diversion of the San Diego River and the damming of the Sweetwater and Otay Rivers significantly reduced natural sedimentation sources into the bay (Navy and Port, 2013).

Present contribution of sediment from all potential sources is minimal. The diversion of the San Diego River ended all sediment deposition from that river, and damming of the Sweetwater and Otay Rivers reduced sediment delivery by 75 percent. In addition, the extent of unprotected shoreline is a minimal potential contributor of sediment to the bay (Navy and Port, 2013).

The subtidal bottom of San Diego Bay consists primarily of unconsolidated sediments. These include various grain size mixtures of sand, silt, and clay, depending on the degree of water movement and other environmental factors. The silt and clay fractions together are also classified in a more general way as the mud fraction. Around the shoreline of south bay, and also along the western shoreline of central bay, there are fairly extensive intertidal areas of unconsolidated sediment forming mudflats and sand flats (Navy and Port, 2013).

The Navy, Port, and other entities in San Diego Bay perform maintenance dredging activities when needed to ensure the safe passage of vessels. In general, suitable sediments from bay dredging projects consist primarily of silts and clays with some sands.

Depending on the physical, chemical, and biological characteristics of the dredged material, the material may be used as nourishment for beneficial reuse projects (such as beach nourishment or habitat creation), dumped at LA-5 Ocean Dredge Material Disposal Site (located approximately 6 nautical miles southwest of the entrance of San Diego Bay), or disposed of at upland facilities permitted to received sediments that do not meet beneficial reuse or ocean disposal standards.

During the century prior to the 1960s, the annual dredging rate averaged 4.3 to 6.1 million CY, which is 3 to 6 times the former (background) yearly sediment input. This annual dredging rate was roughly 17 to 34 times the current yearly sediment input to San Diego Bay (Navy, 2011). More recently, the USACE, as part of its Operations and Maintenance Program, performed maintenance dredging of 441,000 CY of sediment from the federal navigation channel seaward of Ballast Point to the approach in 2012. In addition, the U.S. Coast Guard dredges their facility at Ballast Point approximately every seven years. Ship building facilities within San Diego Harbor dredge approximately every five to ten years. The Navy performs maintenance dredging of the Navy berth areas as needed (USACE, 2019).

Recurring maintenance dredging projects also occur at NBSD, NBC, and NBPL all have recurring maintenance dredging projects. In addition, there are occasional in-water construction project needs that could be candidates for providing suitable dredged material. On average, the Navy anticipates that one or two dredge projects per year might generate suitable material.

Ballast Point

The Ballast Point site sediments consist primarily of sands with small percentages of silts and clays and occasional rocks and boulders. The sand substrate exhibits weathered long-period wave ripples indicating the site is exposed to large waves.

Delta Beach to Homeport Island and Homeport Island Submerged Plateau

Sediments at these two sites consist of silts and clays (25–65 percent) and sand (Navy and Port, 2013).

South Silver Strand

The South Silver Strand site sediments consist primarily of silts and clays (65–95 percent) (Navy and Port, 2013).

3.1.2.4 Shorelines

The shallower habitats and the bay's natural shoreline have been severely depleted or modified, beginning with the first pier at the end of Market Street in 1850, and the first dredging in 1914. Most historic intertidal areas have been filled in on their landward edge and constricted on their bay side due to dredging. Many sites are now mere slivers of their previous extent. Most of the remaining shoreline has been modified by structures for shoreline stabilization or access, with less than 15.8 miles of soft shoreline left (26 percent of the total shoreline). "Hard" intertidal habitat (riprap and other structures) is plentiful but not natural to the bay. Unprotected shorelines erode when exposed to tidal fluctuation, storm waves, storm surges, and surface runoff (Navy and Port, 2013).

Eelgrass beds provide natural buffers against coastal storms by absorbing the force from waves and, through their extensive root systems, preventing some shoreline sediments from washing away (Pew, 2023).

Ballast Point

The Ballast Point site is located near the bay entrance and exposed to waves, winds, and currents that over time have altered the shoreline and exposed the bottom to ocean energy. The nearest shoreline consists of a narrow rocky and sandy beach backed by concrete protective structures.

Delta Beach to Homeport Island and Homeport Island Submerged Plateau

These two sites are located on either side of Homeport Island. Since its establishment, Homeport Island has been slowly decreasing in size due to erosion. Delta Beach is also subject to erosion, especially during Santa Ana winds that can generate short-interval wind waves that break on the shoreline.

South Silver Strand

The South Silver Strand site is adjacent to an unarmored sandy beach. This site is also exposed to wind-generated energy from Santa Ana events. Boat wakes also reach the shore and transfer energy onto the beach, resulting in minor erosion.

3.1.2.5 Bathymetry

San Diego Bay

Depths in San Diego Bay range from -74 ft MLLW near the tip of Ballast Point to less than -4 ft MLLW at the southern end. In San Diego Bay, *common* eelgrass beds range in depths from 0 MLLW to depths of at least -23 ft MLLW, depending on levels of light and water turbidity. In south bay, the range is from 0 to –7 ft MLLW, in the central bay the range is 0 to –10 ft MLLW, and in the north bay, the range is from 0 to –13 ft MLLW. In the outside bay waters, Pacific eelgrass grows to –23 ft MLLW (Navy and Port, 2013).

Over the past several decades, effluent discharges have been curtailed and stormwater quality has been improved to a point that eelgrass has been in a recent state of expansion. Eelgrass has generally expanded under conditions of long-term drought leading to improving bay water quality and resource management and restoration actions. Climate change and sea level rise projections threaten to reverse this trend as deeper water may not allow for enough light penetration for eelgrass to survive.

Ballast Point

Depths at the Ballast Point site alternative range from approximately -7 ft MLLW to -9 ft MLLW, with an average depth of approximately -8 ft MLLW.

Delta Beach to Homeport Island and Homeport Island Submerged Plateau

Depths at the Delta Beach to Homeport Island site alternative range from approximately -6 ft MLLW to -8 ft MLLW, with an average depth of approximately -7 ft MLLW. Depths at the Homeport Island Submerged Plateau site alternative range from approximately -4 ft MLLW to -10 ft MLLW, with an average depth of approximately -7 ft MLLW.

South Silver Strand

Depths at the South Silver Strand site alternative range from approximately -6 ft MLLW to -14 ft MLLW, with an average depth of approximately -10 ft MLLW.

3.1.3 Environmental Consequences

In this EA the analysis of water resources considers the potential impacts to marine waters, shorelines, and bathymetry. Marine waters analysis includes potential changes to physical and chemical characteristics. The analysis of shorelines considers if the Proposed Action would affect shoreline ecological functions such as channel movement and hydrological systems; flooding or storm surge areas,

areas of erosion and sedimentation, water quality and temperature, presence of nutrients and pathogens, and sites with the potential for protection or restoration.

3.1.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline marine water resources or bathymetry. Therefore, no significant impacts to marine water resources and bathymetry would occur with implementation of the No Action Alternative.

3.1.3.2 Alternative 1 – Ballast Point

Establishment

Under Alternative 1, suitable dredged material would not be required. The planting of eelgrass shoots would result in a short-term and negligible impact to water quality from the localized disturbance of sediments during planting.

As is the case with most boating activity, there would be a potential for an accidental spill of fuel, lubricants, or hydraulic fluid. While unlikely to occur, a spill would have the potential to negatively impact water quality. Vessel operators would limit the potential for accidental releases of petroleum and debris from vessels and equipment by ensuring proper maintenance, inspection, and operation of vessels and equipment. In the event of an accidental release, clean-up procedures would take place. These procedures would avoid/minimize impacts to marine water quality from petroleum products associated with suitable dredged material placement activities.

The Ballast Point site does not require the addition of suitable dredged material; therefore, there would be no change to existing bathymetry.

Post-Establishment

Once established, the eelgrass would help improve water quality by absorbing pollutants and trapping and retaining sediment. The retention of sediment would also help to reduce some of the energy striking the Ballast Point shoreline. The overall sediment characteristics are not anticipated to change from existing conditions. Planting eelgrass shoots would help offset potential future impacts from sea level rise on other deeper eelgrass communities. Therefore, implementation of Alternative 1 would result in beneficial impacts to marine water resources.

3.1.3.3 Alternative 2 – Delta Beach to Homeport Island (2A) and Homeport Island Submerged Plateau (2B) Channel

Establishment

Based on existing site bathymetry, establishment of Alternative 2A and/or 2B would require the placement of approximately 63,000 CY and 95,000 of suitable dredged material, respectively. Suitable dredged material would be deposited using any one of the following methods or a combination of methods or similar methods:

- free fall placement (bulk load) using hopper or barges with bottom doors or split hull hopper/barges;
- side casting at site (suitable dredged material is pumped from the hopper into the water column at site)

The existing sediment at the site consist primarily of silts and clays. Thus, the addition of more material with similar physical characteristics would be compatible with the site conditions. Prior to placement the suitable dredged material would be screened to ensure the sediment physical, chemical, and biological characteristics meets all applicable standards for beneficial reuse at the site.

These sites are at times exposed to currents and/or waves. As such, while most of the suitable dredged material would sink relatively quickly to the bottom, some material may be transported through the water column away from the site. Silts and clays may be dispersed in a turbidity cloud that would dissipate over time and distance (refer to Photo 3-1). Water clarity conditions would likely return to background levels within days after placement ceases, dependent on sediment characteristics and tidal current conditions. It is also possible that some deposited sediments could be periodically stirred up by wind waves until the sediments fully settle.

Given the phased nature of the site establishment and time it would take for the eelgrass to become stabilized at the site, it is prudent to anticipate some degree of increased turbidity both within the suitable dredged material placement area as well as in areas adjacent to area for a longer duration. For this reason, concentrated and persistent turbidity may occur over the site and within the site proximity. Therefore, a conservative assumption has been made that an adverse “turbidity halo” may extend as much as 50 meters from the site during the period over which suitable dredged material is placed, between phases when the site is not active, and during and immediately after final site grading. Given site establishment could occur in phases over several years and it would take additional for the eelgrass to stabilize, turbidity levels could fluctuate for several years at and adjacent to the site.

During the 2004 restoration of 10.5 acres within the South Bay Borrow Pit in central south San Diego Bay, afternoon winds and shallow water generated an observable localized turbidity plume condition over the site for over two years. However, when the similar sized 14.5 acre Port of Los Angeles Pier 300 Eelgrass Expansion Area was constructed in protected waters within Los Angeles Harbor, the scale and duration of detectible turbidity plume over the site was much less than that at the mid-bay borrow site. Similar observations were made with the construction of NEMS 4 and 6, as well as Homeport Island. In these cases, turbidity was limited in distribution due to low wave energy at site depths (K. Merkel, pers. obs.).

In general, placement of dredged material can result in oxygen depletion, eutrophication (excessive algal growth), and resuspension of contaminants. However, these impacts are not likely to occur as a result of the Proposed Action as suitable dredged material would be tested and deemed suitable for placement. Each time that suitable dredged material is deposited at the site, the material would generate localized increases in turbidity, which would result in impacts to water quality (refer to Photo 3-1, which captures the act of creating Homeport Island and the associated turbidity cloud). Turbidity can impact plankton populations by lowering the light available for phytoplankton photosynthesis and by clogging the filter feeding mechanisms of zooplankton. Impacts to marine biological resources from the effects of turbidity are addressed in Section 3.2.3.

The placement of suitable dredged material would result in temporary impacts to water resources and water quality. The placement would also constitute a fill to Waters of the United States and thus trigger permitting and certification requirements for minimizing the impacts to marine water resources and water quality. Prior to site establishment activities, the Navy would apply for and implement the terms

and conditions identified in USACE Section 404/Section 10 permit and San Diego RWQCB Section 401 Water Quality Certification. The Navy would implement any precautionary measures identified in the permit/certification to alleviate turbidity associated with placement of the suitable dredged material.

At its deepest point, the accumulation of suitable dredged material at once or over time would raise the bottom of the sites from their existing depth of approximately -10 MLLW to a depth of approximately -5 ft MLLW. The installation of mariner notification signs and associated piles would generate a negligible amount of turbidity that would quickly dissipate in the water column.

Post-Establishment

Once established, the eelgrass would help improve water quality by absorbing pollutants and trapping and retaining sediment. There would be a minor beneficial impact to impaired waters status of San Diego Bay. Over time the accumulation of sediment and eelgrass would help to reduce the energy of localized wind and waves hitting the shoreline at Homeport Island and Delta Beach, thus reducing shoreline erosion potential.

The addition of suitable dredged material to raise the bottom would greatly enhance the ability for eelgrass to grow in this area as eelgrass range from 0 to -10 ft MLLW in the central bay. Thus, placing suitable dredged material and planting eelgrass shoots would help offset potential future impacts from sea level rise on other deeper eelgrass communities. Therefore, implementation of Alternative 2 would result in beneficial impacts to marine water resources and bathymetry.

3.1.3.4 Alternative 3 – South Silver Strand

Establishment

Based on existing bathymetry, establishment of Alternative 3 would require the placement of approximately 130,000 CY of suitable sediment. Suitable dredged material would be deposited as described for Alternative 2. Similar potential marine water quality impacts as described for Alternative 2 would apply for Alternative 3.

The existing sediment at this site consists primarily of silts and clays. The addition of more material with similar physical characteristics would be compatible with the site conditions. Prior to placement the suitable dredged material would be screened to ensure the sediment physical, chemical, and biological characteristics meets all applicable standards for beneficial reuse at the sites.

Prior to site establishment, the Navy would apply for and implement of the same permit/certifications requirements as described for Alternative 2. During site establishment, the same potential accidental release impacts and marine water quality impact avoidance procedures as described for Alternative 2 would apply for Alternative 3.

At its deepest point, the accumulation of suitable dredged material at once or over time would raise the bottom of the site from its existing depth of approximately -12 MLLW to a uniform average depth of approximately -5 ft MLLW. The Navy would install and maintain up to two mariner notification/navigation signs along the southern side of the site to alert boaters of the change in bathymetry. The installation of the piles would generate a negligible amount of turbidity generation that would quickly dissipate in the water column.

Post-Establishment

The addition of suitable dredged material to raise the bottom would greatly enhance the ability for eelgrass to grow in this area. Once established, the eelgrass would help improve water quality by absorbing pollutants and trapping and retaining sediment. There would be a minor beneficial impact to impaired waters status of San Diego Bay. Over time the accumulation of sediment and eelgrass would help to reduce the energy of localized wind and waves hitting the shoreline and thus reducing shoreline erosion potential. Placing suitable dredged material and planting eelgrass shoots would also help offset potential future impacts from sea level rise on other deeper eelgrass communities. Therefore, implementation of Alternative 3 would result in beneficial impacts to marine water resources and bathymetry.

3.2 Marine Biological Resources

Biological resources include living, native, or naturalized plant and animal species and the habitats within they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

Within this EA, biological resources are divided into two major categories: marine habitat and marine wildlife. Because the Proposed Action would occur entirely within the marine environment, terrestrial vegetation is not discussed. In addition, terrestrial wildlife (e.g., some birds) are only discussed where terrestrial species may use marine habitat. Threatened, endangered, and other special status species are discussed in their respective categories.

3.2.1 Regulatory Setting

Special-status species, for the purposes of this assessment, are those species listed as threatened or endangered under ESA and species afforded federal protection under MMPA, MBTA, the Bald and Golden Eagle Protection Act, or the Magnuson-Stevens Fishery Conservation and Management Act.

The purpose of the ESA is to conserve the ecosystems that threatened and endangered species depend on and to conserve and recover listed species. Section 7 of the ESA requires action proponents to consult with the USFWS or NOAA Fisheries to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. Critical habitat cannot be designated on any areas owned, controlled, or designated for use by the Department of Defense (DoD) where an INRMP has been developed that, as determined by the Department of Interior or Department of Commerce Secretary, provides a benefit to the species subject to critical habitat designation.

All marine mammals are protected under the provisions of the MMPA. The MMPA prohibits any person or vessel from “taking” marine mammals in the U.S. or the high seas without authorization. The MMPA defines “take” to mean “to harass, hunt, capture, or kill or attempt to harass, hunt, capture, or kill any marine mammal.”

Birds, both migratory and most native-resident bird species, are protected under the MBTA, and their conservation by federal agencies is mandated by EO 13186 (Migratory Bird Conservation). Under the MBTA it is unlawful by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take,

capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation.

The 2003 National Defense Authorization Act gave the Secretary of the Interior authority to prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during authorized military readiness activities. The final rule authorizing the DoD to take migratory birds in such cases includes a requirement that the Armed Forces must confer with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate adverse effects of the proposed action if the action will have a significant negative effect on the sustainability of a population of a migratory bird species.

Bald and golden eagles are protected by the Bald and Golden Eagle Protection Act. This act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking golden or bald eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

The Magnuson-Stevens Fishery Conservation and Management Act provides for the conservation and management of the fisheries. Under the Act, essential fish habitat (EFH) consists of the waters and substrate needed by fish to spawn, breed, feed, or grow to maturity. The Navy has prepared a EFH Assessment as part of this project (Appendix C).

3.2.2 Affected Environment

The following discussions provide a description of the existing conditions in San Diego Bay and at each potential eelgrass habitat expansion site for marine habitat, marine wildlife, and threatened and endangered species.

3.2.2.1 Marine Habitat

Marine habitats are habitats that support marine life. Marine life depends in some way on the saltwater A habitat is an ecological or environmental area inhabited by one or more living species.

San Diego Bay

San Diego Bay consists of both vegetated and unvegetated habitats distributed across depth zones defined in the INRMP (Navy and Port, 2013). Unvegetated soft bottom habitat occurs throughout most of the potential sites with depths ranging from -5 ft to approximately -24 ft MLLW. In shallow waters, the mud bottom gives way to sandy substrate with much less evidence of biogenic activities of infauna[4] due to sediment instability and dominance by mobile organisms instead of sessile benthos[5] that predominate in muddy sediments. Refer to Appendix C for a list of species commonly found in this habitat.

[4] *Infauna* are aquatic animals that live in soft sediments.

[5] *Benthos* or benthic organisms live on the ocean floor, either on the substrate (epifauna and epiflora) or inside it, buried or burrowing in the sediment (infauna). Benthic organisms may be *sessile*, attached to a firm surface such as rocks and manmade structures, or mobile, moving freely on or in the bottom sediment.

The 2020 Baywide Eelgrass Survey (Merkel & Associates, 2020) indicated eelgrass is present in various regions of San Diego Bay and within portions of each of the potential eelgrass habitat expansion sites. While baseline surveys have not been updated as of February 2023, a recent visual field inspection of the sites confirmed that eelgrass is present within and adjacent to each site.

Eelgrass beds provide unique nursery and adult fish and invertebrate habitat within and adjacent to meadows due to both the three-dimensional architecture of beds, but also detrital enrichment of the surrounding area. As a result, eelgrass is considered to be a special aquatic site under the 404(b)(1) guidelines of the CWA (40 CFR 230.43). The Pacific Groundfish Fishery Management Plan (FMP) has designated EFH that includes San Diego Bay and has designated seagrass as a habitat area of particular concern (Pacific Fishery Management Council [PFMC], 2022).

Ballast Point

At present, the proposed Ballast Point site consists of approximately 1.66 acres of eelgrass and 8.42 acres of unvegetated soft bottom (Figure 3-1; Merkel & Associates, 2020). The substrate is sand with weathered long-period wave ripples suggesting prior damage from large waves. The area outside of Ballast Point historically supported healthy beds of Pacific eelgrass in the early to mid-1990s. The extent of the eelgrass beds declined dramatically between 2004 and 2008 and the eelgrass beds have not recovered since. High surf and surges from Hurricane Marie in August 2014 further scoured the site and reduced the amount of eelgrass present in the area.

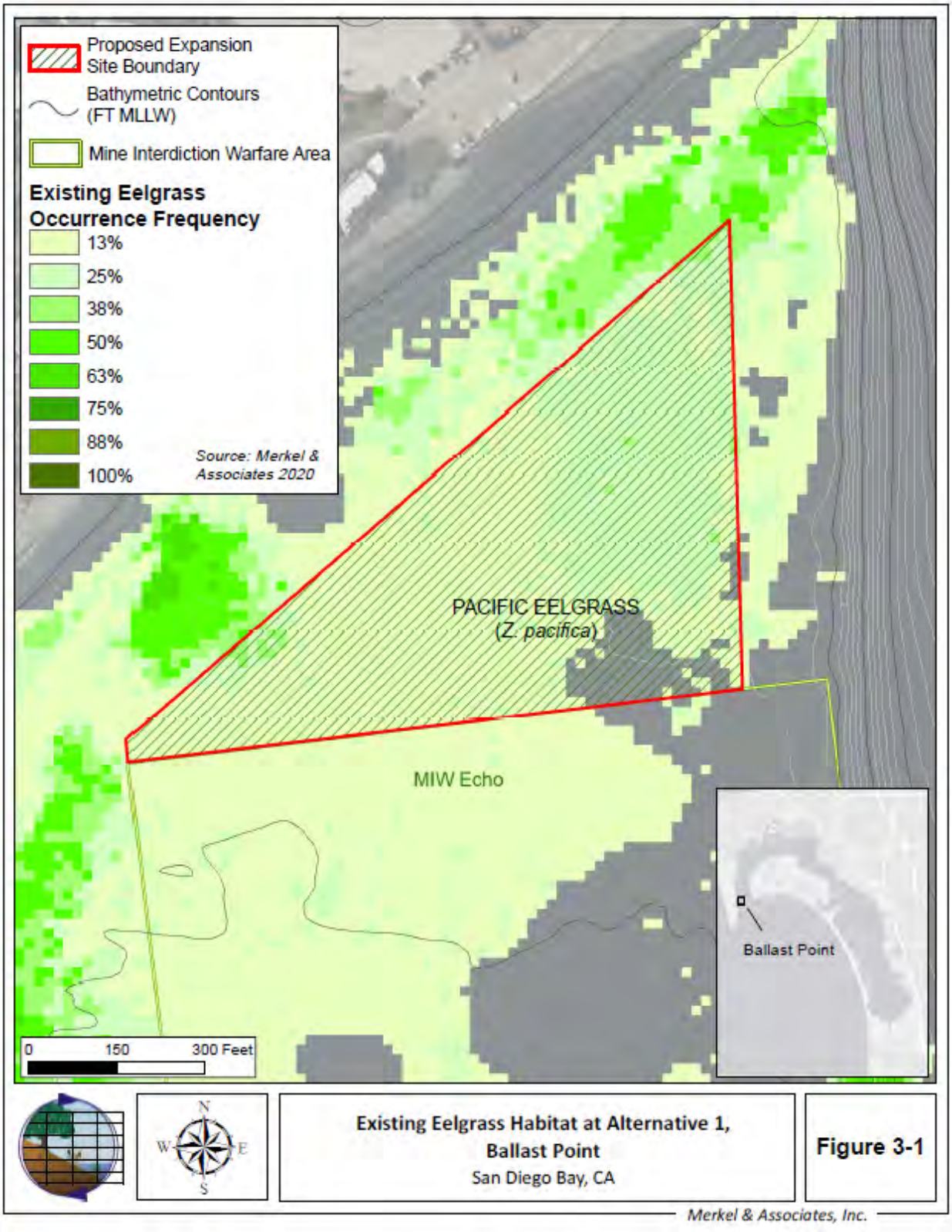
It is believed that Pacific eelgrass has not recovered in the Ballast Point area due to difficulty in recruiting seed into the area because of the presence of the San Diego Bay entrance channel, Zuniga Jetty, and prevailing swell direction coupled with low overall natural recruitment by this species. As a result, eelgrass within this site may fluctuate over time based on storm and surf impacts.

Delta Beach to Homeport Island and Homeport Island Submerged Plateau

Alternative 2A, the Delta Beach to Homeport Island site, presently supports a combination of unvegetated shallow subtidal soft bottom. In sum, the site footprint contains 8.71 acres of shallow unvegetated soft bottom, 0.10 acres of revetment hard bottom, and 1.10 acres of eelgrass habitat[6]. The frequency of eelgrass occupancy within this alternative is generally 13 percent, with areas of 0 percent and 25 percent (Figure 3-2; Merkel & Associates, 2020). The bottom is soft mud with considerable evidence of benthic infaunal organisms. Rock jetties consisting of mixed rock size typified by 200-pound stone extend out from Homeport Island on either side of the area creating a natural border between Alternatives 2A and 2B. The rock jetties are heavily silted, and support limited algal cover, principally comprised of the invasive *Sargassum muticum*.

[6] *The approximate habitat acreage within the footprint for the three suitable dredge material sites also includes area for the side slopes associated with the shoulders of the sites to bring them to desired planting elevations. These perimeter slopes would be nominally 5:1 (run:rise) except where they are buttressed by existing features such as the existing revetement containment of the Homeport Island under Alternatives 2A and 2B. Thus the habitat acreages when added together are slightly larger than the site surface area (flat) acreage.*

Figure 3-1. Existing Eelgrass Habitat at Alternative 1, Ballast Point



These jetties do not support typical diverse sessile invertebrates or macroalgal communities seen in clearer waters of the bay. However, the jetties do support use by sessile and mobile invertebrate species including encrusting sponges (*Haliclona* sp.), a predatory sea slug (*Navanax inermis)*, native Olympia oyster (*Ostrea lurida*), and California spiny lobster (*Panulirus interruptus*), and the invasive spaghetti bryozoan (*Amathia verticillata*), formerly *Zoobotryon verticillatum.* Fish species typically observed along the submerged jetties are round stingray (*Urobatis halleri*) and barred sand bass (*Paralabrax nebulifer*).

Alternative 2B, the Homeport Island Submerged Plateau site, predominantly supports approximately 13.58 acres of unvegetated shallow soft bottom habitat and approximately 0.18 acres of revetment hard bottom. Along the east side of the island is a fringing eelgrass bed covering approximately 0.37 acres that extends into the proposed site at a frequency of 13 percent presence (Figure 3-2; Merkel & Associates, 2020). The site supports a substrate of soft mud bottom with considerable evidence of benthic invertebrate activity being present. On the west side of the site, a steep sandy slope rises up the face of Homeport Island.

South Silver Strand

The South Silver Strand site presently supports approximately 11.16 acres of predominantly unvegetated shallow subtidal habitat, 1.11 acres of moderately deep unvegetated subtidal soft bottom habitat, and an additional approximately 0.03 acres of eelgrass from a small number of eelgrass plants on the bay floor and a slight amount of low frequency eelgrass extending into the shoreward margin of the site (Figure 3-3; Merkel & Associates, 2020). The bottom is composed of soft mud and shows considerable evidence of benthic infaunal activities.

3.2.2.2 Marine Wildlife

The following general description of the marine species found within San Diego Bay applies to each of the potential sites. For details on the types of species found within the habitat types associated with each of the potential alternative sites, refer to the EFH Assessment provided in Appendix C.

San Diego Bay and All Alternative Sites

San Diego coastal waters adjacent to San Diego Bay provide an assortment of marine habitats to a wide range of marine organisms. San Diego Bay is the largest natural and protected bay south of San Francisco provides marine wildlife with shallow and intertidal habitats. Shallow and intertidal habitats are warmer and have less flow, these conditions support eelgrass beds, which create an ideal habitat and nursery for small fish and invertebrates (Navy and Port, 2013).

Figure 3-2. Existing Eelgrass Habitat at Alternative 2, Delta Beath/Homeport Island

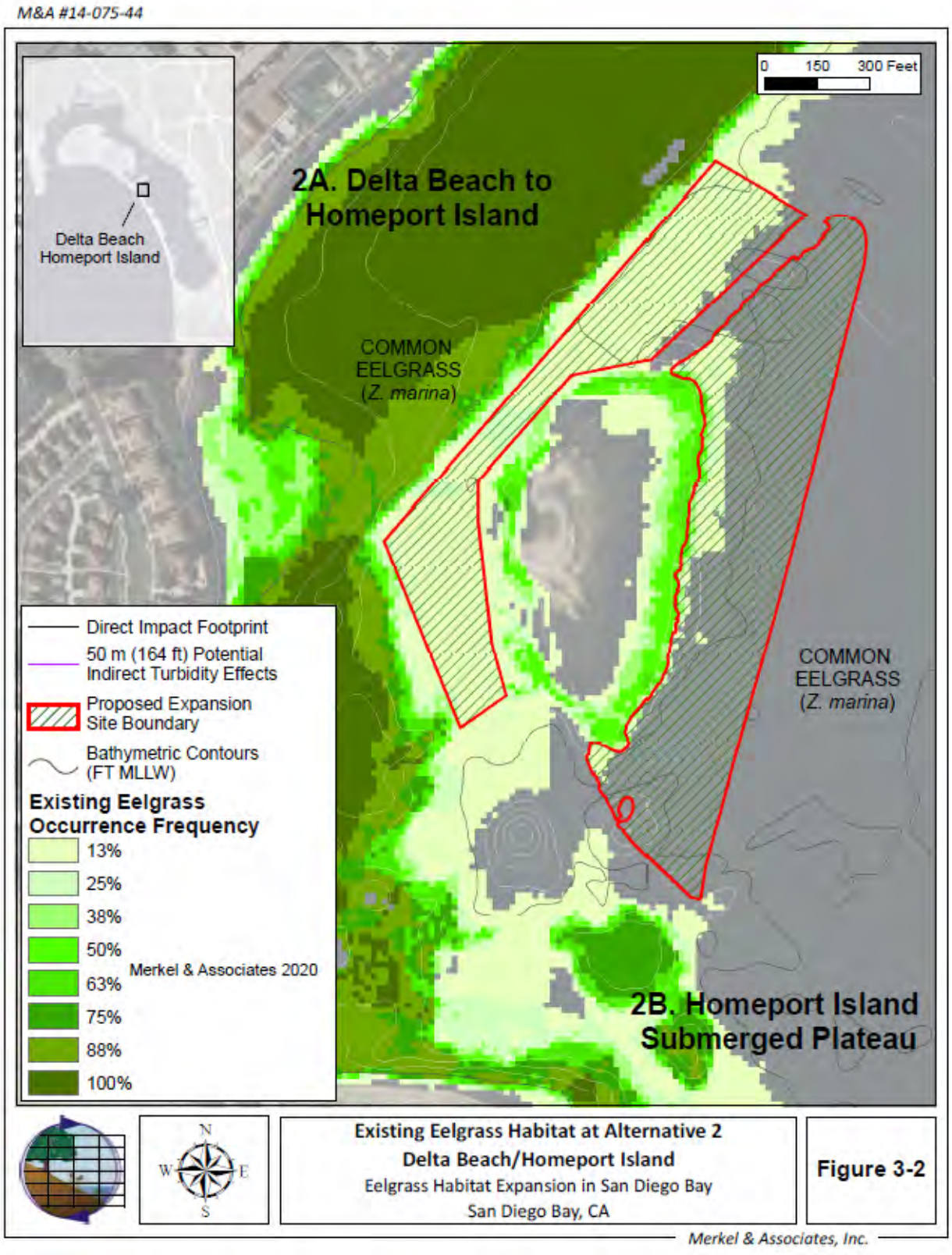
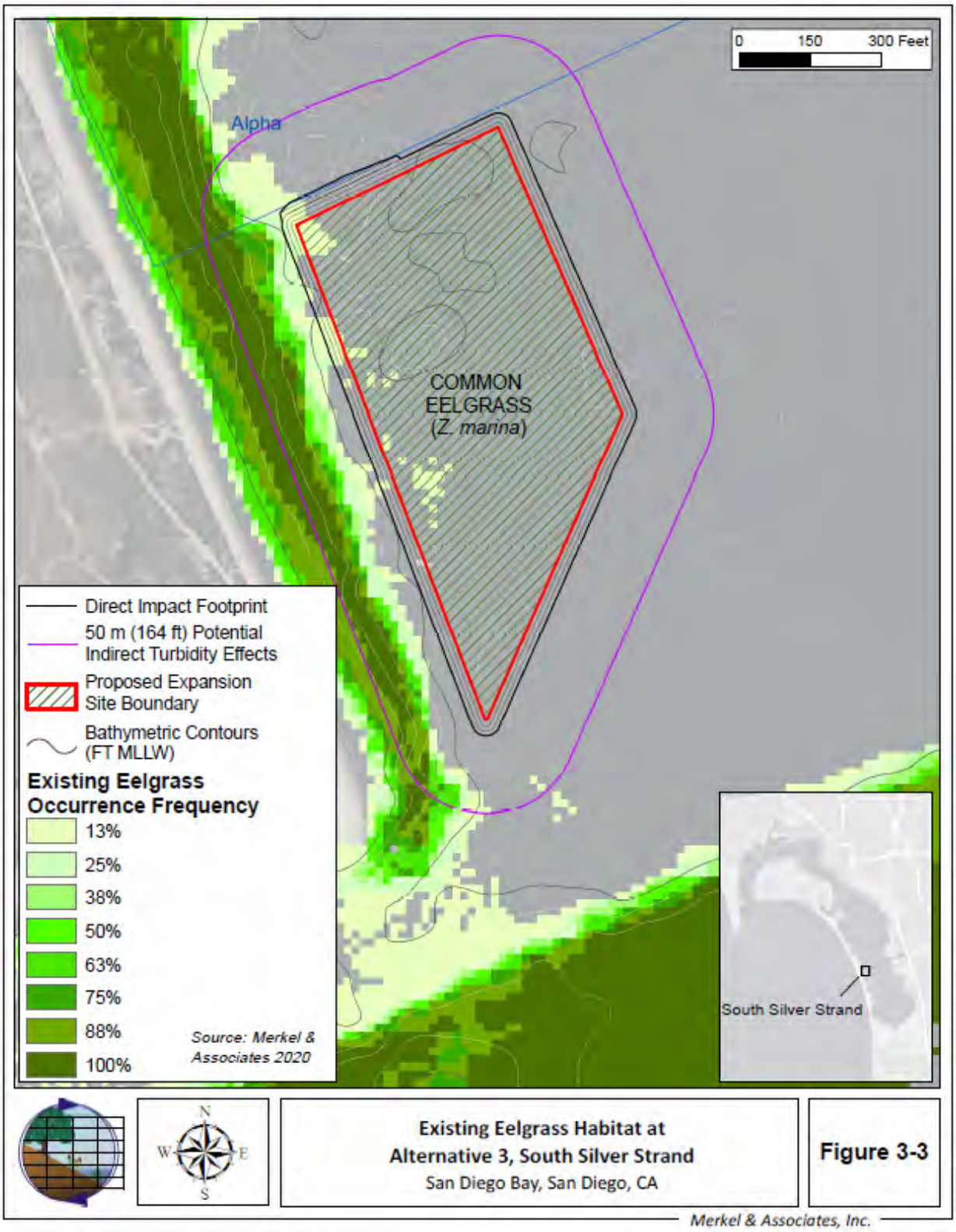


Figure 3-3. Existing Eelgrass Habitat at Alternative 3, South Silver Strand



Marine Mammals

Marine mammals include those mammals that spend the majority of their lives at sea and are almost totally dependent on marine organisms for food. Although 39 marine mammal species may be encountered, California sea lion (*Zalophus Californianus*) and the Pacific harbor seal (*Phoca vitulina*) are the two most common species of marine mammal found in the bay. Though some cetaceans like the coastal bottlenose dolphin (*Tursiops truncatus*) and the common dolphin (*Delphinus delphis*) are common to the area, the San Diego Bay is presently not a common habitat for these dolphins.

Gray whales are often sighted near the entrance of the bay and very infrequently enter the bay. Historically, gray whales were common in the bay but with today's waterfront development, ship traffic, and pollution the bay is no longer a suitable environment for calving (Navy and Port, 2013). When present in the bay, dolphins and whales are generally found to the north and north central bay regions and tend to remain within the deeper channel environments.

Seals and sea lions are regularly present in the bay, but like whales and dolphins they too tend to be more common within the more northerly portions of the bay. The presence of both species in the far south bay is uncommon to rare. Within San Diego Bay, habitual haul-out areas for pinnipeds (seals and sea lions), occur in a few locations at the north end of the bay with a dramatic reduction in marine mammals occurring further into the bay. Seals haul-out on rocks near the root of Ballast Point on Point Loma on large boulders near the low tide line located approximately 1,000 ft to the southwest from the nearest portion of the Alternative 1. Sea lion haul outs are more widespread in the bay and include Zuniga Jetty, multiple channel marker buoys, the bait barge off Naval Base Point Loma, and occasionally on low trafficked docks and moored vessels.

Sea Turtles

The green sea turtle (*Chelonia mydas*) is one of seven species of marine turtles. The green sea turtle has a circumglobal distribution, occurring throughout tropical, subtropical, and, to a lesser extent, temperate waters. Green sea turtles are herbivores, feeding primarily on algae and common eelgrass (*Zostera marina*). The San Diego Bay green sea turtle population is part of the East Pacific distinct population segment, which is listed as threatened under the ESA. As such, the green sea turtle is discussed in Section 3.2.2.3, *Threatened and Endangered Species*.

Fish

Fish are vital components of the marine ecosystem and local economy. To protect this resource, NOAA Fisheries works with regional fishery management councils to identify the essential habitat for every life stage of each federally managed species using the best available scientific information. EFH has been described for approximately 1,000 managed species to date. EFH includes all types of aquatic habitat including wetlands, coral reefs, seagrasses, and rivers; all locations where fish spawn, breed, feed, or grow to maturity.

A recently completed long-term study (Allen et al, 2022) of fish assemblages (groups) in San Diego Bay over 11 non-consecutive years from 1995 to 2019 yielded a total of 525,288 fishes belonging to 90 species. Northern anchovy was the most abundant fish species comprising 41 percent of the total catch despite its virtual absence near the end of the survey period, followed by topsmelt, slough anchovy,

shiner perch, and Pacific sardine. Round stingrays dominated in weight constituting more than 27 percent of the total biomass taken followed by spotted sand bass, and northern anchovy.

Approximately 64 percent of all individual fish captured in San Diego Bay during this study were juveniles. Abundance of eight of the top 35 species (including northern anchovy, topsmelt, slough anchovy, and shiner perch) and all forage species combined decreased over the study. The study conclude that despite various environmental perturbations and the general trends of decreases in larval and fish abundance indices over the Southern California Bight in recent years, the stability in species richness and composition over time reflects the generally resilient nature of the fish assemblage structure of San Diego Bay that has been maintained by active management including restoration practices (Allen et al, 2022).

The fish in San Diego Bay has been previously studied (Merkel & Associates, 2000; Allen et al, 2002; and Hoffman, 2006). The first baywide seasonal study of fishes was published in April 1999, after five years of sampling (1994–1999). Since the five year study, survey efforts using the same methodology have continued on an intermittent basis to present day (Allen et al., 2022). Of the 109 fish species known to occur in San Diego Bay, eleven are managed by NOAA Fisheries under two FMPs – the Coastal Pelagics and Pacific Groundfish Management Plans (National Marine Fisheries Service, 1998; PFMC, 2022).

The overall extent of groundfish EFH is identified as all waters and substrate within depths less than or equal to 3,500 meters to mean higher high water level (MHHW) or the upriver extent of saltwater intrusion, defined as upstream and landward to where ocean-derived salts measure less than 0.5 parts per trillion (ppt) during the period of average annual low flow, seamounts in depths greater than 3,500 meters as mapped in the EFH assessment geographic information system, and areas designated as habitat areas of potential concern not already identified by prior criteria (PFMC, 2022).

Under the Coastal Pelagic Species FMP, EFH is defined to be all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington offshore to the limits of the EEZ and above the thermocline where sea surface temperatures range between 10° Celsius to 26° Celsius. The southern boundary of EFH is the United States-Mexico maritime boundary while the northern boundary is defined as the position of the 10° Celsius isotherm, which varies seasonally and annually (PFMC, 2021).

As a result of the broad EFH definitions under the groundfish FMP and coastal pelagics FMP, all tidal waters of San Diego Bay to MHHW are EFH under both plans. Thus, all the alternative sites occur within EFH.

Benthic Invertebrates

Animals that live on the sea floor are called benthos. Most of these animals lack a backbone and are called invertebrates. Typical benthic invertebrates include sea anemones, sponges, corals, sea stars, sea urchins, worms, bivalves, crabs, among others.

Unvegetated soft bottom habitat occurs throughout most of the potential eelgrass expansion sites, with depths ranging from -5 ft to approximately -24 ft MLLW. Much of the area within the sites is considered to be shallow subtidal habitat, with soft bottom consisting of sand, mud, and silt. Although primarily bare, this area can contain occasional clumps of red algae (*Gracilaria* spp.*, Ceramium* spp.) and loose clumps of a green alga (*Ulva* spp.).

Within the south central region alternative sites, the spaghetti bryozoan is particularly abundant along the western bay margin during summer months. In addition there can also be a regular film of benthic

diatoms forming mats over portions of the bottom. In shallow waters, the mud bottom gives way to sandy substrate with much less evidence of biogenic activities of infauna due to sediment instability and dominance by mobile organisms instead of sessile benthos that dominate in muddy sediments.

Common invertebrates in this habitat include burrowing invertebrate such as bivalves (*Chione* spp., *Macoma nasuta*), the amphipod (*Grandidierella japonica*), bay ghost shrimp (*Neotrypaea* spp.), giant burrowing anemones (*Harenactis attenuata*), and tube-dwelling anemones (*Pachycerianthus* spp.). Other invertebrates commonly observed include the opisthobranch (*Navanax inermis*). The slender sea pen (*Stylatula elongata*) is particularly abundant at the Ballast Point site. Refer to Appendix C for a list of other common invertebrates found in the benthic.

3.2.2.3 Threatened and Endangered Species

San Diego Bay and All Alternative Sites

There are five federally listed species occurring within the San Diego Bay area. Of these; two are in salt marsh habitats (a bird, the Ridgway's rail [*Rallus longirostris levipes*], and a plant, the salt marsh bird's beak [*Chloropyron maritimum*]); two occur on sandy beaches (two birds – the California least tern [*Sterna antillarum browni]* and western snowy plover [*Charadrius alexandrinus nivosus]*); and the only marine species is the East Pacific green sea turtle, which is a year-round resident.

Of these five species, three are listed species that may be affected by the Proposed Action. These include:

- East Pacific green sea turtle – federally listed threatened species;
- California least tern – federally listed endangered species; and
- Western snowy plover – federally threatened species.

There is no designated critical habitat for these three species within the potential eelgrass habitat expansion sites. No impacts to the Ridgway's rail or salt marsh bird's beak are anticipated because the Proposed Action would not impact salt marsh habitat or occur near salt marsh habitat. Thus, these two species are not discussed further.

The Navy has prepared a Biological Assessment for consultation with NOAA Fisheries and the USFWS to support separate ESA Section 7 consultations with the two agencies. This is expected to lead to two separate Biological Opinions (BOs), one with NOAA Fisheries for the green sea turtle and one with the USFWS for the California least tern and the western snowy plover. This EA will be updated to reflect the outcome of ESA Section 7 consultation.

East Pacific Green Sea Turtle

San Diego Bay historically represented one of green sea turtles' northernmost foraging habitats (MacDonald et al. 2012) with other areas of regular turtle occurrence being near warm water effluent discharges from power plants. This made the species both rare and localized in its occurrence in California.

While rare in the state, it is notable that south San Diego Bay has had a long history of supporting a resident aggregation of green sea turtle turtles. The estimates of green sea turtle numbers in the bay have typically ranged between 40 and 60 animals during most months of the year, increasing to 100 animals during peak migratory periods (Eguchi et al. 2010).

Most size classes are represented in the bay from juvenile to adult. However, there are no green sea turtle nesting areas on the west coast of the U.S. Therefore, hatchlings do not occur in the project area. In recent years, the regional population of green sea turtles has been rising and observations of turtles both within habitual use areas, as well as in non-habitual use areas, has increased substantially (Seminoff, NOAA Fisheries pers. com., 2022). Similarly, the number of green sea turtle strandings of both injured and dead turtles has increased in recent years (Seminoff, NOAA Fisheries, pers. comm., 2022).

While it is presently believed that the highest presence of green sea turtles occurs within the South Bay Ecoregion of San Diego Bay, there is substantial evidence to indicate that habitat use extends much wider in the bay, presumably at lower use levels. Multiple anecdotal sightings of green sea turtles, both live and dead have been made throughout San Diego Bay in recent years, and green sea turtles are more commonly being detected in nearshore waters along the southern California coast with high observations being made in the vicinity of La Jolla and central San Diego coastline.

While data indicates that green sea turtles may be found in vegetated and non-vegetated habitats, eelgrass is a common forage base for this species, and it is believed that green sea turtles regularly occur within eelgrass beds in San Diego Bay. All of the potential eelgrass habitat expansion sites occur adjacent to eelgrass habitats, with Alternatives 2 and 3 occurring in areas adjacent to stable eelgrass beds. Further, Alterative 3 occurs near the expansive eelgrass habitat of the South Ecoregion where green sea turtles have historically been most concentrated. For more information on the green sea turtle, refer to the Biological Assessment (to be provided with the Final EA).

For purposes of this assessment, it is anticipated that green sea turtles may make infrequent use of the habitat within any of the potential alternative sites, with the highest likelihood of encounter being at sites nearer the southern end of the bay.

No critical habitat for East Pacific green sea turtle has been designated as of the time of this document publication. However, NOAA Fisheries and USFWS are presently undertaking a review for potential designation of critical habitat. There is no date currently available for a draft rule and it is not known if critical habitat will or will not be designated within San Diego Bay, or if it will include the action areas, should it be designated.

California Least Tern

The California least tern was listed as endangered under the ESA in 1970. They are summer visitors to San Diego County and nest on open sandy beach habitat near the ocean. They arrive in the San Diego Bay region in early to middle April and depart by early to mid-September each year. Least terns have a high degree of nest site affinity, and established nest sites have remained relatively stable in the San Diego Bay region for many years with an occasional new nest area being used for a season on occasion.

There are seven active least tern nesting sites associated with San Diego Bay. These include two sites on airfields at Lindbergh Field and North Island, two at Delta Beach on the Naval Amphibious Base (NAB), one on the D Street Fill in Chula Vista, one on the Chula Vista Wildlife Reserve and one within the South Bay Saltworks. In addition, least terns nest in proximity to San Diego Bay on the ocean beach of Silver Strand.

The most recently completed full statewide nesting season report is from the 2017 nesting season, (California Department of Fish and Wildlife, 2021). During the 2017 season Lindbergh Field supported 19

nests, the North Island site supported 14 nests, North Delta Beach supported 71 nests, South Delta Beach supported 60 nests, NAB Ocean Beach sites supported 343 nests, the D Street Fill supported 89 nests, Chula Vista Wildlife Reserve supported 78 nests, and the South Bay Saltworks supported 28 nests.

Least tern nesting site use and productivity varies from year to year. However, collectively nest colonies at NAB sites (i.e., North and South Delta Beach and NAB Ocean Beach) have been very active in recent years with 910 nests in 2019, 1,159 nests in 2020, 1,142 nests in 2021, and 790 nests in 2022. In comparison Lindbergh Field supported many fewer nests with 19, 6, 11, and 10 nests for the years 2019 through 2022. Only 4 nests were present at North Island in 2019.

Least terns forage in the waters of San Diego Bay particularly in shallow water areas where small fish concentrate and due to countershading and lower wave energy are more visible against the reflective background of the bottom. When tending eggs, least terns tend to forage closer to nest sites, expanding foraging distance as the breeding season chronology progresses towards fledging (Baird, 2010). The distances between least tern nest sites and the alternative sites varies (Table 3-2). For more information on the least tern, refer to the Biological Assessment (to be provided with the Final EA).

Table 3-2. Alternative Distance to Nearest Least Tern Nesting Site

Alt. #	*Site Name*	*Est. Site Size (Acres)*	*Distance To Nearest Nest Site (miles)*	*Nearest Tern Nest Site*	*Suitable Dredged Material Site*
1	Ballast Point	10.1	2.2	North Island	No
2A	Delta Beach to Homeport Island	9.0	0.2	North Delta Beach	Yes
2B	Homeport Island Submerged Plateau	13.0	0.2	North Delta Beach	Yes
3	South Silver Strand	10.0	1.0	South Delta Beach	Yes

Western Snowy Plover

The Pacific coast population of the western snowy plover was listed as threatened under the ESA in 1993 (58 Federal Register 12864). The western snowy plover is a small, resident shorebird that nests and winters along the Pacific coast of the United States and Baja California, Mexico. Nesting by this species is generally localized within a number of widely distributed habitual use area including estuary salt flats, low-activity beaches and beach dunes, coastal levees, and other similar environments. During the winter, birds are more widely distributed and make use of larger portions of the beach as well as bay and estuary shorelines to forage, roost, and shelter. Areas that accumulate kelp and other organic wrack (natural material that washes onto the beach) are good foraging habitat for this species as their primary food source is detritivorous insects and crustacea including kelp flies, brine flies, beetles, amphipods, isopods. Forage species also include juvenile mole crabs, snails, clams, and polychaetes.

Snowy plovers are non-colonial ground nesting birds. They nest in slight scrape depressions often lined with pebbles or shell fragment. Plover breed from mid-March through late July. Egg laying peaks in late May and hatching begins in the latter half of April, peaking in the latter half of June (Unitt, 2004). Chicks are precocial and the flightless young leave the nest shortly after hatching to forage on beach or mudflats. As a result, nesting must occurs within areas with ready access to the shoreline.

Plovers regularly nest on ocean beaches on Naval Amphibious Base, and within San Diego Bay they nest on the levees of the South Bay Saltworks. They have also nested intermittently in small numbers at other sites within San Diego Bay including North and South Delta Beach, D Street Fill, and the Chula Vista Wildlife Reserve. While nesting on beaches within San Diego Bay is uncommon, plovers regularly forage on the bay mudflats and wintering plovers are regular along the shoreline of south central and south San Diego Bay. For more information on the snowy plover, refer to the Biological Assessment (to be provided with the Final EA).

3.2.3 Environmental Consequences

This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute.

3.2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to marine biological resources. Therefore, no impacts to marine biological resources would occur with implementation of the No Action Alternative.

3.2.3.2 Alternative 1 – Ballast Point

Establishment

Eelgrass Donor Sites

Under Alternative 1, eelgrass would be transplanted from donor beds to the expansion sites as bareroot planting units. This would be performed by harvesting eelgrass at a 10 percent harvest level by manually extracting rhizomes from donor sites for preparation of eelgrass planting units that would then be planted at the new site. This approach to transplant material collection has become established practice, with the harvest level being used to ensure that the donor beds are not subject to excessive damage.

The 10 percent harvest level from donor eelgrass beds has been adopted to protect natural eelgrass beds from harm associated with harvesting of eelgrass. Studies in San Diego's Mission Bay (K. Merkel, 1986 unpublished data), at Bay Farm Island in San Francisco Bay (Merkel & Associates, 1999), and more recently at Point Molate in San Francisco Bay (Boyer et al., 2016) have documented a rapid recovery of donor beds following high harvest levels.

Based on the above referenced investigations of donor site harvest recovery, it is believed that the 10 percent harvest level proposed for the restoration program is appropriate and poses no permanent adverse effect to the natural donor beds. The harvest would result in short-term, potentially measurable reduction in eelgrass turion density within the donor beds. This reduction in density is expected to return to pre-harvest levels in less than one growing season based on the recovery response observed for heavier harvesting bed recovery studies as noted above.

Marine Habitat

No suitable dredged material would be placed on-site. The existing unvegetated habitat would be planted with eelgrass shoots, resulting in the permanent loss of approximately 8.42 acres of unvegetated shallow soft bottom habitat. Any turbidity generated would be localized and temporary.

Marine Wildlife

Implementation of Alternative 1 is not expected to result in direct impacts to marine species as a result of low abundance, unsuitable habitat conditions to support managed species, or an ability for managed fish species that may occur within the work areas to avoid the project activities. Alternative 1 would not require the placement suitable dredged material and involves only eelgrass planting. As such, the extent of disturbance in the area would be limited. Marine mammals present in the water would not be expected to be disturbed by the work. This distance is adequate to avoid disturbance of seals and sea lions during the completion of planting work and as such no disturbance of marine mammals is expected.

Threatened and Endangered Species

Under Alternative 1, no suitable dredged material would be placed, and only small boats would be used to shuttle divers and eelgrass shoots to the habitat expansion zone. The potential for encountering a green sea turtle during shoot planting is low, based on their low presence in this area. No impacts to the California least tern or western snowy plover would occur due to the type of proposed activity and distance to known nesting and foraging areas.

Post-Establishment

Marine Habitat

Upon completion of eelgrass habitat expansion activities, the site is anticipated to transition to shallow vegetated eelgrass habitat. The anticipated maximum eelgrass yield for this site is approximately 8.5 acres of Pacific eelgrass, subject to the success of the transplant efforts. The addition of eelgrass habitat would result in beneficial impacts to marine habitat.

Following planting, the site would be monitored for 5 years to ensure site establishment and to document site development conditions. This monitoring would be undertaken at 0-, 6-, 12-, 24-, 36-, 48-, and 60-months post-planting and would document eelgrass extent and density pursuant to the standards of the CEMP. Upon or before completion of the eelgrass establishment period, the site would be moved into the Navy's eelgrass mitigation bank as a new NEMS. Under bank monitoring protocols, the site would be surveyed annually along with all of the existing NEMS sites to quantify credits in the site. The monitoring, debiting, and reporting would be done in conformance with the banking agreement.

Marine Wildlife

Establishment of additional eelgrass would provide additional habitat for a variety of species, resulting in beneficial impacts to marine wildlife.

Threatened and Endangered Species

The creation of additional eelgrass at Ballast Point would provide additional habitat and foraging opportunities for the green sea turtle and California least tern. Negligible potential benefits to the western snowy plover would occur through the increased potential for eelgrass-wrack to wash up on bay shores and increase the bird's food source.

Summary

Implementation of Alternative 1 would result in short-term and negligible impacts to marine habitat and wildlife and threatened and endangered species. In the long-term, the increase in subtidal shallow eelgrass habitat of approximately 8.5 acres would improve marine habitat for marine wildlife and listed species. Therefore, implementation of Alternative 1 would result in beneficial impacts to marine biological resources.

3.2.3.3 Alternative 2 – Delta Beach to Homeport Island and Homeport Island Submerged Plateau

Establishment

Eelgrass Donor Sites

Under Alternative 2, the same potential impacts to eelgrass donor beds as described under Alternative 1 would occur.

Marine Habitat

Development of these two sites would result in the placement of suitable dredged material directly on existing habitat.

Under Alternative 2A, there would be a permanent loss of approximately 8.71 acres of unvegetated shallow subtidal soft bottom habitat and 0.10 acres of revetment hard bottom habitat. In addition, there would also be a temporary loss of approximately 1.10 acres of shallow vegetated subtidal eelgrass habitat.

Under Alternative 2B, there would be a permanent loss of approximately 13.58 acres of unvegetated shallow subtidal soft bottom habitat and 0.18 acres of revetment hard bottom habitat. In addition, there would also be a temporary loss of approximately 0.37 acres of shallow vegetated subtidal eelgrass habitat. Impacts to existing eelgrass habitat within the project area would be mitigated for by subtracting the loss of eelgrass habitat from the eelgrass credit yield assigned to the site where existing eelgrass was lost. Pre-construction surveys would quantify the amount of existing eelgrass prior to site establishment.

The potential phased nature of suitable dredged material delivery would likely result in naturally recruiting eelgrass as an interim condition as some portions of the site(s) while being filled. When this happens, an increased function of the partially complete site would develop, however until the site(s) is finished, the expanded eelgrass would not be considered as either mitigation credit or impacted habitat until the site is accepted into the Bank by the interagency MBRT. This would be considered an acceptable and temporary impact.

This existing rock/hard bottom habitat at Alternative 2 presently supports considerable silt loading and does not function well as rocky reef habitat due to its presence in a high turbidity bay environment. The permanent conversion of the rock jetty slopes to shallow soft bottom habitat to support eelgrass is expected to further exacerbate siltation within the rock crest as a result of fills being brought to elevations equal to the rock crest heights. The result of this change is anticipated to be soft sediment overrun on portions of the rock and a conversion of up to 0.18 acre of the rock containment berm habitat to a mix of soft and hard substrate. This change would result in a temporary displacement of fish and likely mortality of sessile invertebrates and algae present along the submerged jetties.

Alternative 2 would occur in waters occasionally exposed to winds, waves, and currents that have the potential to transport suspended sediment with low wind fetch. As such, it is anticipated that persistent turbidity would be minimal. Thus, it is prudent to anticipate some degree of increased turbidity within the site as well as in areas adjacent to the site. For this reason, it has been anticipated that concentrated and persistent turbidity may occur over the site and at a distance of up to 50 meters from the site during the period over which the site is being filled, between phases when the site is not active, and during and immediately after final site grading. The turbidity plume would be expected to decrease over time as the eelgrass habitat becomes established. Refer to Photo 3-1 for a typical turbidity plume that may be expected during site establishment.

Prolonged elevated water column turbidity may result in adverse impacts to eelgrass as a result of sedimentation on leaves and/or light reduction at canopy depths. Such impacts would be considered adverse should they occur. As a result, annual monitoring of eelgrass within 50 meters of the site would be conducted during placement of suitable dredged material, between placement phases, during final site grading periods, and over the first two years post planting to determine if adjacent beds have been damaged either through area or density reductions. Eelgrass beds would be monitored using CEMP protocols and compared to unaffected reference sites as a control, or baseline, for assessment. Impacts would be determined based on defined standards outlined in the CEMP, including a reduction in areal extent of beds, percent vegetated cover, or a 25 percent or more reduction in eelgrass density of the beds.

Should indirect turbidity impacts to eelgrass occur in association with Alternative 2, the extent of the impact would be mitigated by debiting credits from an established eelgrass bed equal to the value lost based on calculation using the Wetland Mitigation Calculator (King and Price, 2004).

Marine Wildlife

During the site filling process, benthic invertebrate, and to a lesser extent, demersal fish would be buried or displaced from the project footprint. Studies conducted in San Diego Bay to evaluate the recovery of fish and invertebrate communities following benthic disturbance associated with dredging revealed a rapid recovery with the benthic infaunal community recovering in dredged areas. This studies demonstrated that benthic and demersal community disruption within the harbor environment were short lived following significant bottom impact from dredging. Benthic infaunal density and biomass recovered over a period of 5 to 11 months while community composition recovered between 17 and 24 months after impact. Epibenthic invertebrate communities recovered over a period between 29 and 35 months, while the fish community recovered over a period between 14 and 22 months following disturbance (Merkel & Associates, 2009 and 2010).

As a result of the recovery of unvegetated soft bottom harbor habitats following disturbance, impacts are considered to be adverse but temporary. However, such impacts may be prolonged due to suitable dredged material placement and redisturbance of the sites following the final placement of suitable dredged material. These direct impacts would still be considered to be temporary and of no long-term consequence being generally similar in scale and character to large maintenance dredging projects, except that the final condition would result in shallowing the sites to elevations leading to increased light levels at the bay floor and increased productivity of the habitat, irrespective of the cover by eelgrass.

Implementation of Alternative 2 would result in direct impacts to unvegetated soft bottom and vegetated soft bottom. However, the impacts to this habitat would be temporary and/or minimal and are not expected to have permanent or population-level impacts to EFH or managed fish species. Given the anticipated recovery of impacted habitats, and with implementation of the incorporated measures, Alternative 2 is not anticipated to result in permanent unmitigated adverse impacts to EFH or managed fish species.

Under Alternative 2, up to two navigation marker piles may be installed and maintained at each potential site. The piles would be either a 12-inch square pile or a 10 to 12-inch diameter steel pipe pile. This analysis assumes a maximum 12-inch diameter steel pile would be installed by an impact hammer. At a distance of 32.8 feet from the pile, underwater sound would reach an estimated peak between 177 and 192 decibels (dBs) with a root mean square (RMS) level of 165–177 dB_{rms} and a sound equivalency level of approximately 152 to 176 dB based on surrogate pilings driven in waters at Sausalito, El Cerrito, and Oakley, California (California Department of Transportation, 2012).

Assuming a maximum of two marker piles markers are driven during a 24-hour period with the drive time requirement 20 minutes for each pile, the noise generation would result in potential Level A (injury through permanent threshold shifts [PTS]) effects to seals and sea lions at distances less than 130.9 ft and 8.5 ft, respectively, from the piles being driven. Whales, dolphins, and porpoises may experience PTS shifts at distances of 17.7 to 294.6 ft from the piles being driven. However, these species are rare in the project areas. Level B take through acoustic harassment leading to behavioral response may occur at distances of 446 ft from the pile driving activities. Given the low number of marine mammals in the area and the relatively small effects zones around the piles, no impacts are anticipated. However, workers would pause pile driving activities if marine mammals are present within the maximum Level B affect zone (446 ft).

Threatened and Endangered Species

Green Sea Turtle. Alternative 2 is located near primary green sea turtle habitat in San Diego Bay. As such, Alternative 2 has the potential to affect green sea turtles in the immediate vicinity of work with the possibility of vessel collisions, temporary loss of eelgrass foraging habitat due to burial, and potential burial of turtles during placement of the suitable dredged material.

Strikes by high-speed vessels are a well-documented source of injury and mortality to sea turtles. However, given the slow speed of water-based construction equipment (e.g., barges, scows, and tugs) within the bay, a vessel strike is unlikely.

Turtle burial during material placement is a low concern within the work area for several reasons. The first is the low density of turtles in the bay. With an estimated turtle count around 100 individuals, there is a low probability of a turtle being present within the sites. In addition, the process of material placement is slow and controlled, with considerable surface activities to position a scow over a site. It is anticipated that this level of overhead activity would result in green sea turtles vacating the area. However, when scows are positioned, they would be emptied by opening the bottom doors allowing material to be discharged to the bay floor. Material typically falls as a semi-consolidated unit through a limited water column. As a result, while it is unlikely that a green sea turtle would be present at the time of placement, it is also unlikely that a green sea turtle within the placement area would escape without injury.

The interim burial of eelgrass to develop more persistent eelgrass would have a discountable effect on green sea turtle forage habitat availability. With the current estimated number of turtles in San Diego Bay there is no indication or expectation that either the foraging or resting area habitats of the south bay are limiting to turtle populations. Rather, individual animal losses due to various cropping factors such as vessel strikes, coupled with cold climatic tolerance are more likely factors limiting the abundance of turtles in San Diego Bay (Pacific Sea Turtle Recovery Team, 1998).

NOAA Fisheries has not established specific in-water acoustic thresholds for green sea turtles; however, the Navy, in coordination with NOAA Fisheries, developed standards for assessment of sound impacts to turtles for purposes of the Hawaii-Southern California Training and Testing Final EIS/OEIS (Navy, 2013). For sea turtles, the Navy established a threshold for injury from vibratory pile driving and impact driving at 190 dB_{rms}. In review of the literature, the lowest sound intensity stimulus that resulted in a behavioral response was 166 dB_{rms} that resulted in increased swimming activity in caged green and loggerhead sea turtles (McCay et al. 2000, as reported in Navy, 2013). However, it also appears from the literature that turtles become habituated to repeated exposures to sound. Under such circumstances, noises even as high as 179 dB_{rms} were tolerated by turtles without behavioral response when exposure became regular (Moein Bartol et al. 1995, as reported in Navy, 2013).

While there are no widely adopted behavioral thresholds for sound impacts to turtles the 166 dB_{rms} pressure level identified as having the lowest demonstrated behavioral response in green sea turtles has been adopted. The 166 dB_{rms} sound pressure level would be expected to be met with impact pile driving for steel piles. This would be expected to result in turtles moving away from the pile during driving.

The potential impacts to green sea turtles would be expected to be limited with low potential for harassment, harm, or turtle mortality. While the potential for impact to a green sea turtle is low, the Navy would implement the measures presented in Section 3.4 to avoid and minimize potential impacts to green sea turtles.

California Least Tern. The Alternative 2 sites are located approximately 750 ft from the North Delta Beach tern site and more than a mile from the South Delta Beach and the NAB Ocean nest sites. The placement of suitable dredged material and associated turbidity generation may result in terns changing foraging behavior in response to the turbidity plume. In some instances, this may result in avoidance of the plume while in others, it may result in attraction of terns to the plume. The modification of foraging behavior may result in alterations to the time birds are off the nest site, thus exposing eggs or chicks to a greater risk of predation or exposure. Because terns typically forage closer to the nest sites when chicks are present, the distance to the nearest nesting indicates minimal forging behavioral changes may occur, but are not likely to lead to greater effect if detectible at all.

The potential impacts to California least tern would be expected to be limited with low potential for harassment, harm, or mortality. While the potential for impact to the California least tern is low, the Navy would implement the measures presented in Section 3.4 to avoid and minimize potential impacts to the California least tern. The measures presented in Section 3.4 include measures specific to this alternative to avoid suitable dredged material placement during the California least tern nesting season (which is April 1 to September 15).

Western Snowy Plover. The proposed activities associated with creating the eelgrass habitat expansion are not expected to affect western snowy plover as the activity would occur offshore away from nest areas. As a result, no impacts to the western snowy plover are anticipated. While the potential for

impact to the western snowy plover is negligible, the Navy would implement the measures presented in Section 3.4 to avoid and minimize potential impacts to the western snowy plover.

Post-Establishment

Marine Habitat

Alternative 2 would convert unvegetated soft bottom and hard bottom habitat to vegetated soft bottom habitat. The anticipated maximum eelgrass net yield for these sites would be approximately 7.0 acres of common eelgrass and 12.6 acres of common eelgrass, respectively. This conversion to eelgrass would increase the overall function of the habitat and result in beneficial impacts to marine habitat.

Marine Wildlife

Following the fills, the rock is expected to be reduced in the exposed footprint, with replacement habitat being a mix of vegetated and unvegetated soft bottom. The rock along the crest of the jetties would likely continue to provide low-relief habitat suited to attracting return use by some fish and invertebrates, but the level of silt loading would further reduce the already limited function of this habitat. The habitat conversion anticipated is not expected to have long-term negative consequences given the character of this rock feature. The conversion to eelgrass would increase the overall function of the habitat. The Navy would perform the same monitoring and reporting as described under Alternative 1. The addition of eelgrass habitat would result in beneficial impacts to marine wildlife.

Threatened and Endangered Species

As noted in Section 3.2.2.3, the population of green sea turtles has been observed increasing bay-wide. Green sea turtles are also potentially present within the Alternative 2 sites. The expansion of eelgrass may lead to a slight increase in green sea turtles in the area; however, existing Navy activities are currently conducted in accordance with resource agency requirements to avoid and minimize potential impacts to green sea turtles. Thus, no impact to or impact from a potential increase in green sea turtles in the area is anticipated from an increase in eelgrass.

The creation of additional eelgrass under Alternative 2 would provide additional beneficial habitat and foraging opportunities for the green sea turtle and California least tern, resulting in beneficial impacts to threatened and endangered species. Negligible potential benefits to the western snowy plover would occur through the increased potential for eelgrass-wrack to wash up on bay shores and potentially increase the bird's food source.

Summary

Implementation of Alternative 2 would result in short-term and minor impacts to marine habitat and wildlife and threatened and endangered species during site establishment. In the long-term, the increase in subtidal shallow eelgrass habitat of approximately 7.0 and 12.6 acres under Alternatives 2A and 2B, respectively, would improve marine habitat for marine wildlife and listed species. Therefore, implementation of Alternative 2 would result in beneficial impacts to marine biological resources.

3.2.3.4 Alternative 3 – South Silver Strand

Establishment

Under Alternative 3, the same potential impacts to eelgrass donor beds as described under Alternative 1 would occur.

Development of this site would result in the placement of suitable dredged material directly on existing habitat. Under Alternative 3, there would be a permanent loss of approximately 11.16 acres of unvegetated shallow subtidal soft bottom habitat and 1.11 acres of unvegetated moderately deep subtidal soft bottom habitat. In addition, there would also be a temporary loss of approximately 0.03 acres of shallow vegetated subtidal eelgrass habitat. Impacts to existing eelgrass habitat within the project area would be mitigated for by subtracting the loss of eelgrass habitat from the eelgrass credit yield assigned to the site where existing eelgrass was lost.

The potential impacts to unvegetated soft bottom marine habitat and wildlife under Alternative 3 would be as described under Alternative 2.

The potential impacts to threatened and endangered species under Alternative 3 would be similar to those as described under Alternative 2; however, because the nearest California least tern nesting site is located approximately one mile from the proposed eelgrass habitat expansion site, no seasonal work restrictions are proposed.

Post-Establishment

Alternative 3 would convert unvegetated soft bottom to vegetated soft bottom habitat. The anticipated maximum eelgrass net yield for this site would be approximately 9.8 acres of common eelgrass. The potential impacts to unvegetated soft bottom marine habitat under Alternative 3 would be as described under Alternative 2. The conversion to eelgrass would increase the overall function of the habitat. The Navy would perform the same monitoring and reporting as described under Alternative 1. The addition of eelgrass habitat would result in beneficial impacts to marine habitat and wildlife.

The creation of additional eelgrass under Alternative 3 would provide additional habitat and foraging opportunities for the green sea turtle and California least tern, resulting in beneficial impacts to threatened and endangered species. Negligible potential benefits to the western snowy plover would occur through the increased potential for eelgrass-wrack to wash up on bay shores and potentially increase the bird's food source.

Summary

Implementation of Alternative 3 would result in short-term and minor impacts to marine habitat and wildlife and threatened and endangered species during site establishment. In the long-term, the increase of approximately 9.8 acres of subtidal shallow eelgrass habitat would improve marine habitat for marine wildlife and listed species. Therefore, implementation of Alternative 3 would result in beneficial impacts to marine biological resources.

3.3 Land Use

This discussion of land use includes current and planned uses and the regulations, policies, or zoning that may control the proposed land use. The term land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions.

Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational.

3.3.1 Regulatory Setting

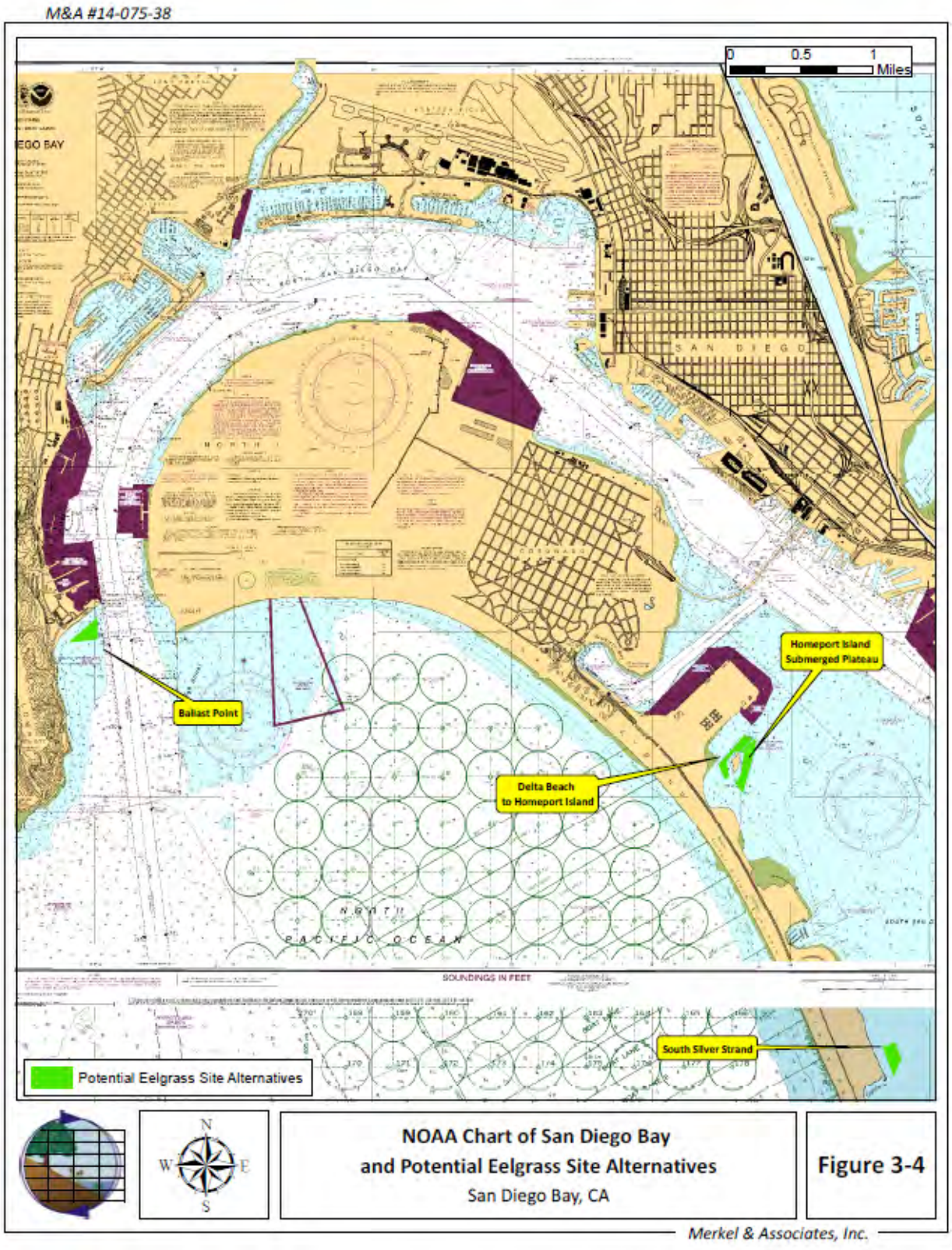
Through the CZMA, Congress established national policy to preserve, protect, develop, restore, or enhance resources in the coastal zone. This Act encourages coastal states to properly manage use of their coasts and coastal resources, prepare and implement coastal management programs, and provide for public and governmental participation in decisions affecting the coastal zone. To this end, CZMA imparts an obligation upon federal agencies whose actions or activities affect any land or water use or natural resource of the coastal zone to be carried out in a manner consistent to the maximum extent practicable with the enforceable policies of federally approved state coastal management programs.

Federal lands, which are “lands the use of which is by law subject solely to the discretion of the Federal Government, its officers, or agents,” are statutorily excluded from the State’s “coastal uses or resources.” If, however, the proposed federal activity affects coastal uses or resources beyond the boundaries of the federal property (i.e., has spillover effects), the CZMA Section 307 federal consistency requirement applies. As a federal agency, the Navy is required to determine whether its proposed activities would affect the coastal zone. This takes the form of a consistency determination, a negative determination, or a determination that no further action is necessary.

The waters of San Diego Bay are considered U.S. Navigable Waters. Under the constitution, the federal government has authority over navigation and interstate commerce. The navigational servitude derives from this authority. It is an entitlement to affect commerce or navigation by using, occupying, or modifying land below the ordinary high water mark of navigable waters, regardless of ownership and without compensation.

The NOAA Chart (18773) for San Diego Bay depicts major infrastructure and designated zones (Figure 3-4). Depicted zones include Security Zones and Restricted Areas. Security Zones (charted in magenta on Figure 3-4) are designated by the U.S. Coast Guard to safeguard vessels or waterfront facilities from destruction, loss or injury from sabotage or other subversive acts, accidents, or other causes of a similar nature. Under 33 CFR 165.33, no person or vessel may enter or remain in a Security Zone without the permission of the Captain of the Ports (NOAA, 2022).

Figure 3-4. NOAA Chart of San Diego Bay and Potential Eelgrass Site Alternatives



Restricted Areas (charted by T-dashed boundaries on Figure 3-4) are designated by the USACE in 33 CFR 334. In these areas, vessels may transit but may not moor, anchor, fish, loiter, swim, or waterski in those area (NOAA, 2022). All vessels entering the restricted area must proceed across the area by the most direct route and without unnecessary delay (Navy, 2011).

The Navy has further designated specific training areas in San Diego Bay. Figure 3-5 depicts Navy-designated training areas in San Diego Bay and the proposed eelgrass expansion sites. The Navy uses these training areas for a variety of activities as analyzed and approved under existing environmental planning documentation, agency agreements, and as pertinent, resource agency consultations.

The Port, or formally in this context, the San Diego Unified Port District, is a public corporation and regional government entity created in 1962 through the California State Legislature's adoption of the San Diego Unified Port District Act (Port Act). The Governor of California signed Senate Bill 507 (SB 507) in 2019, which granted approximately 8,300 acres of submerged lands within San Diego Bay to the Port District's management from the California State Lands Commission

Through this legislation, the Port District was granted the state tidelands and submerged lands in and around San Diego Bay. The Port was also entrusted with operating and managing the public trust in a manner that is consistent with the Public Trust Doctrine, which aims to promote and balance navigation, commerce, fisheries, recreation, and environmental stewardship.

Pursuant to SB 507, the Port District is in the process of preparing a Trust Lands Use Plan for the recently granted submerged lands (see Figure 3-5). The Trust Lands Use Plan will identify bay-wide policies, use designations, and allowable use types, among other long-range planning goals and objectives for these submerged lands.

3.3.2 Affected Environment

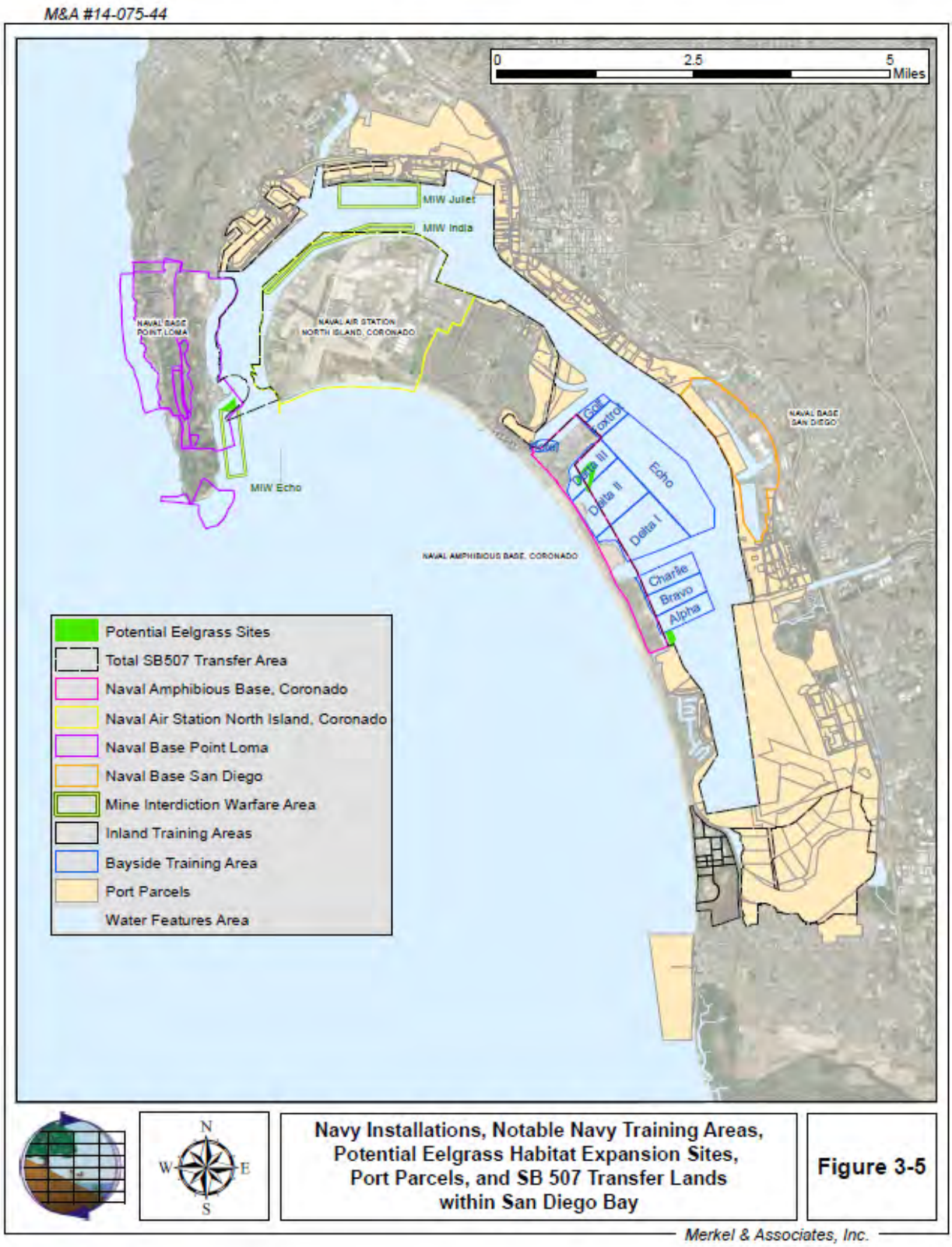
The following discussions provide a general description of Navy and public uses of San Diego Bay and for each of the site alternatives. The discussion for each site alternative provides ownership information and description of current Navy and public uses, as applicable for each site alternative.

San Diego Bay

The San Diego Bay is a natural harbor adjacent to downtown San Diego. San Diego Bay is frequently used by recreational boaters from surrounding marinas and mooring areas. The City of San Diego, City of Coronado, City of Imperial Beach, City of Chula Vista, and National City all surround, and have an interest in activities within San Diego Bay. Further south in San Diego Bay is the Chula Vista Marina. The marinas provide recreational boating access points to San Diego Bay (Navy, 2015).

The bay accommodates a wide range of year-round boating activities. It supports Navy ships, small boat activity, commercial ship traffic, and various forms of recreational boating. Studies conducted to characterize the boat traffic patterns in the bay demonstrate that most of the bay's boating activity takes place to the north of the Sweetwater Flood Control Channel (east of the Alpha Training Area depicted on Figure 3-5). This is due in large part to the shallow water depths in the south bay. In the south bay, deep water channels have been constructed along the east and west sides of the bay to facilitate the passage of larger boats into and out of the Chula Vista Marina and the Coronado Cays (Navy and Port, 2013).

Figure 3-5. Navy Installations, Notable Navy Training Areas, Potential Eelgrass Habitat Expansion Sites, Port Parcels, and SB 507 Transfer Lands within San Diego Bay



The north and north central regions of the bay have generally been heavily urbanized and developed with waterfront commercial, industrial, and military uses. Within the south central region, the eastern shoreline of the bay is developed to military uses, while the western side of the bay remains relatively natural and is principally used for military training and recreational purposes. The south region supports expansive natural shallows with a few dredged navigation channels primarily serving recreational vessels. The waters of this region are surrounded by a combination of conservation, residential, and commercial uses (Navy and Port, 2013).

Navy Uses

Training areas used for Navy training include Delta North and South beaches located south of the Silver Strand Training Complex-North piers; the Delta I, II, and III training areas located directly off the Delta North and South beaches; and the beach and bay training areas of Alpha, Bravo, and Charlie located adjacent to Navy housing north of Fiddler's Cove (see Figure 3-5).

Four other training areas are also located in San Diego Bay (Echo, Foxtrot, Golf, and Hotel). A fence parallel to Silver Strand Boulevard from the Rendova housing area to Fiddler's Cove prevents public access from the land to training areas (Navy, 2011).

Public Uses

San Diego Bay is widely used for a variety of commercial and recreational activities, including commercial shipping, recreational boating, sailing, and sport fishing. There are several yacht clubs in San Diego Bay in addition to a large number of public and private marinas. Formal sailboat regattas and informal racing are conducted throughout San Diego Bay and in the ocean year-round (Navy, 2011). Recreational boaters in the San Diego/Mission Bay area are estimated at 200,000. Marinas inside San Diego harbor are located at Shelter Island, Harbor Island, Marriott Hotel, Chula Vista Harbor, Coronado Cays, Glorietta Bay, and Sweetwater Channel (Office of Spill Prevention and Response, 2022).

Sport fishing in the bay is a minor component of effort compared to deep sea fishing in the ocean for yellowtail, yellowfin, albacore, and rockfish species. Inside the bay, fishermen use hoop nets to catch lobster. Sport fishing from personal boats and from piers occurs around the bay. Public fishing piers are found at the Embarcadero, Pepper Park, Bayside Park, Shelter Island, and the Coronado Ferry landing (Navy and Port, 2013)

Ballast Point

Ownership

The Navy owns the underlying submerged lands at the Ballast Point site as well as those submerged lands within the 300-yard boundary extending from the Navy-owned shoreline.

Navy Uses

As shown on Figure 3-4, the Ballast Point site is located within a Restricted Area. As shown on Figure 3-5, the site is also adjacent to an existing Navy training area – Mine Interdiction Warfare (MIW) ECHO. Navy craft regularly transit the area. Navy testing and training also regularly occurs within ECHO both above and below the water. The activities primarily consist of training in mine countermeasures, including the use of marine mammals, divers, and underwater unmanned vessels and the test and evaluation of new equipment (Navy, 2011).

Public Uses

Because the site is located within a Restricted Area, all public vessels entering the restricted area must proceed through the area by the most direct route and without unnecessary delay. Thus, public use is limited to transitory activities.

Delta Beach to Homeport Island and Homeport Island Submerged Plateau

Ownership

The underlying submerged lands at the Delta Beach to Homeport Island and Homeport Island Submerged Plateau sites are under the management of the Port District as granted by SB 507 (see Figure 3-5). The Port District is currently preparing their Trust Lands Use Plan, which will consider existing and future Navy activities in the bay, to include these two sites.

Navy Uses

These two sites are located within the Silver Strand Training Complex-North Delta II and Delta III training areas (see Figure 3-5). These sites are also located within a Restricted Area (see Figure 3-4). Navy training activities in these areas consist primarily of hydrographic reconnaissance, beach insertions via shallow-draft vessels, helicopter-based rappelling and recovery, motorized and paddle-powered small craft and boat navigation, communications training, swimmer and diver training, physical readiness training, autonomous underwater vehicle training/testing, and other relatively low-impact and shallow-draft activities (Navy, 2011).

Public Uses

Because both sites are located within a Restricted Area, all public vessels entering the Restricted Area must proceed through the area by the most direct route and without unnecessary delay. Thus, public use is limited to transitory activities. Public boats rarely transit the waters between Homeport Island and Delta Beach whereas boats occasionally transit the waters offshore of the eastern shore of Homeport Island.

South Silver Strand

Ownership

The underlying submerged land at the South Silver Strand site is under the management of the Port District as granted by SB 507 (see Figure 3-5). The Port District is currently preparing their Trust Lands Use Plan, which will consider existing and future Navy activities in the bay, to include this site.

Navy Uses

Navy activities transit the South Silver Strand site but do not typically use the area for training or testing. The site is adjacent to the Silver Sand Training Complex-Alpha training area (see Figure 3-5). The Navy uses the Alpha training area water training activity only including mine countermeasure activities, helicopter rope suspension training/cast and recovery training, physical fitness training, diver training, and small boat training (Navy, 2011).

Public Uses

The South Silver Strand site is located in waters open to unrestricted public use. While land access is restricted (as the land is owned by the Navy), fishing, boating, and other recreational activities occur in

the waters. Crown Cove, located just south and west of the site, is a popular destination for recreational boaters. Crown Cove provides an anchorage. In addition, the Crown Cove Aquatic Center is located on the shores of Crown Cove and offers recreational activities to include sailing and paddling.

3.3.3 Environmental Consequences

The location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. Factors affecting a proposed action in terms of land use include its compatibility with on-site and adjacent land uses, restrictions on public access to land, or change in an existing land use that is valued by the community. Other considerations are given to proximity to a proposed action, the duration of a proposed activity, and its permanence.

3.3.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to land use. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.3.3.2 Alternative 1 – Ballast Point

Establishment

Under Alternative 1, small boats would transport divers and eelgrass shoots to and from the Ballast Point site to plant eelgrass shoots. Prior to entering the site boundaries and Restricted Area, the contractors would coordinate and schedule with Navy security for access and to avoid or minimize any impacts to any on-going Navy training in the area.

Post-Establishment

The waters over the eelgrass sites would not be closed to on-going navigation or training activities. Existing Navy and recreational activities would continue to occur as described in Section 3.3.2. Early engagement with Navy planners resulted in adjusting the site boundaries to avoid incompatible impacts from higher density eelgrass on testing and training activities in MIW Echo. Thus, the eelgrass habitat expansion would be compatible with existing Navy testing and training activities at the site. Therefore, implementation of Alternative 1 would not result in significant impacts to land use.

3.3.3.3 Alternative 2 – Delta Beach to Homeport Island (2A) and Homeport Island Submerged Plateau (2B) Channel

The underlying submerged lands at these sites are under the management of the Port District as granted by SB 507 and the Port District is currently preparing their Trust Lands Use Plan. The Navy continues to coordinate with the Port on these sites. This section of the EA will be updated to reflect the outcome of coordination, as needed.

Establishment

Under Alternative 2, barges, scows, tugs, and small boats would be used to transport and place suitable dredged material at the site. Prior to entering the Restricted Area the contractors would coordinate and schedule with Navy security for access and to avoid or minimize impacts to any on-going Navy training in the area. Once on-site, the vessels would be temporarily situated in the area while placing and

contouring the material. On-going uses in the area could continue, though the contractors may establish small temporary exclusion areas for safety reasons while work is on-going. The contractor would coordinate with the Navy to ensure there are no conflicts of uses. Any recreational activities would continue to proceed through the area by the most direct route and without unnecessary delay.

Alternative 2 would raise the bottom from an average depth of approximately -10 ft MLLW to an average depth of approximately -5 ft MLLW. The Navy would inform NOAA and U.S. Coast Guard of the changes in depth. The Navy would install and maintain up to two mariner notification/navigation signs on pilings along the eastern slope of the proposed site. The signage would notify boaters of shallow water.

Post-Establishment

The Alternative 2 sites are located within a Restricted Area so recreational boaters are already excluded from the area, unless transiting. No impacts to recreational boaters would occur.

Dense stands of eelgrass have potential to interfere with transponder electronic signals as acoustic transmission through eelgrass is impaired. Some of the current testing and training that occurs within Delta II and Delta III includes transponders. Navy operators have indicated that they can place transponders above the eelgrass canopy (about 1 meter off the bottom) or in areas and at depths to minimize potential signal degradation in Delta II to avoid any signal degradation for the types of current activities that occur in these specific training areas. The new depth would still allow for on-going training/testing activities to occur with minimal impacts because existing activities are primarily shallow water in the Delta II and Delta III training areas.

Navy testing and training personnel indicated that future Navy testing and training activities in the Delta II and Delta III training areas are likely to be incompatible with higher density eelgrass. As such, planners adjusted the Alternative 2A boundaries. The resulting adjustment in site boundaries reduces the potential for impacts to future Navy testing and training activities in this area. Therefore, implementation of Alternative 2 would not result in significant impacts to land use.

3.3.3.4 Alternative 3 – South Silver Strand

The underlying submerged land at this site is under the management of the Port District as granted by SB 507 and the Port District is currently preparing their Trust Lands Use Plan. The Navy continues to coordinate with the Port on this site. This section of the EA will be updated to reflect the outcome of coordination, as needed.

Establishment

Under Alternative 3, barges, scows, tugs, and small boats would be used to transport and place suitable dredged material at the site. Once on-site, the vessels would be temporarily situated in the area while placing and contouring the material. On-going uses in the area could continue, though the contractors may establish small temporary exclusion areas for safety reasons while work is on-going. Existing activities would continue to occur as described in Section 3.3.2. The impacts to existing uses would be temporary.

Alternative 3 would raise the bottom from an average depth of approximately -10 ft MLLW to an average depth of approximately -5 ft MLLW. The Navy would inform NOAA and U.S. Coast Guard of the

changes in depth. As the site is located near Crown Cove (an area used by recreational boaters), the Navy would install up to two mariner notification/navigation signs along the southern side of the site. The signage would notify public boaters of shallow water.

Post-Establishment

The new depth would still allow for on-going recreational activities to occur within the site, though deeper draft vessels would have to heed the mariner notifications and avoid depths that would be too shallow for their craft. Early engagement with Navy planners resulted in adjusting the site boundaries to avoid incompatible impacts from higher density eelgrass on training and testing activities in the Alpha training area. There would be no impact to Navy activities in the area. Thus, the eelgrass habitat expansion would be compatible with existing uses. Therefore, implementation of Alternative 3 would not result in significant impacts to land use.

3.4 Summary of Potential Impacts to Resources and Impact Avoidance and Minimization

A summary of the potential impacts associated with each of the action alternatives and impact avoidance and minimization measures are presented in Tables 3-3 and 3-4, respectively.

Table 3-3. Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*Alternative 1*	*Alternative 2*	*Alternative 3*
Marine Water Resources and Bathymetry	*No impact.*	*Overall Beneficial Impact.* • Long-term beneficial impact to marine water quality, marine sediments, and shoreline; no impact to bathymetry.	*Overall Beneficial Impact.* • Periodic and localized increase in turbidity during site establishment. • Long-term beneficial impact to marine water quality, marine sediments, shorelines, and bathymetry.	*Overall Beneficial Impact.* • Periodic and localized increase in turbidity during site establishment. • Long-term beneficial impact to marine water quality, marine sediments, shorelines, and bathymetry.
Marine Biological Resources	*No impact.*	*Overall Beneficial Impact.* • Short-term and minor adverse impact to existing eelgrass at donor sites. • Long-term beneficial impact to marine habitat, wildlife, and threatened and endangered species from creation of approximately 8.5 acres of eelgrass habitat.	*Overall Beneficial Impact.* • Short-term and minor adverse impact to existing eelgrass at donor sites and expansion sites. • Loss of benthic invertebrates and demersal fish and negligible impact to threatened and endangered species during site establishment. • Long-term beneficial impact to marine habitat, wildlife, and threatened and endangered species through creation of approximately 7.0/12.6 acres of eelgrass habitat for 2A and 2B, respectively.	*Overall Beneficial Impact.* • Short-term and minor adverse impact to existing eelgrass at donor sites and expansion sites. • Loss of benthic invertebrates and demersal fish and negligible impact to threatened and endangered species during site establishment. • Long-term beneficial impact to marine habitat, wildlife, and threatened and endangered species through creation of approximately 9.8 acres of eelgrass habitat.
Land Use	*No impact.*	*No significant impact.* • Compatible with existing land ownership and public land uses and Navy testing and training activities.	*No significant impact.* • Compatible with public land use and Navy testing and training activities.	*No significant impact.* • Temporary exclusion of public water craft during suitable dredged material placement. • Compatible with public land use and Navy testing and training activities.

Table 3-4. Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit/ Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
Alternatives 1, 2, and 3				
The Navy and its contractors shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or marine mammals, which are protected under the Endangered Species Act and the Marine Mammal Protection Act.	Protection of sea turtles and marine mammals.	During all phases of work.	Contractor	Completion of project activities.
If any potential cultural resources are identified on the bay bottom, their locations should be noted and not moved to accommodate eelgrass shoots. Any potential cultural resources identified would be reported to the project archaeologist at NAVFAC SW.	Protection of potential cultural resources until they could be evaluated.	During all phases of work.	Contractor	Completion of project activities.
All project-related vessels would be marked and lighted in accordance with U.S. Coast Guard regulations, and notices would be published in a Local Notice to Mariners notifying boaters of the times, durations, and locations of activities.	Worker and personnel safety.	Prior to site access.	Contractor	Completion of project activities.
Prior to entering an eelgrass habitat expansion site to perform work, contractors would coordinate with Navy security for approved access.	Worker and personnel safety.	Prior to site access.	Contractor	Completion of project activities.
Prior to entering an eelgrass habitat expansion site to perform work, contractors would schedule access through DCAST to deconflict with any on-going Navy testing and/or training activities.	Worker and personnel safety.	Prior to site access.	Contractor	Completion of project activities.
A survey for the invasive alga *Caulerpa* would be conducted before initiating bottom-disturbing activities, consistent with *Caulerpa* Control Protocol (Version 5, October 2021; NOAA Fisheries, 2021). If *Caulerpa* is found during this survey, NOAA Fisheries-approved *Caulerpa* Control Protocols would be followed.	Minimize the potential spread of *Caulerpa*.	Prior to placement of suitable dredged material and planting of eelgrass shoots.	Navy via contractor	Prior to placement of suitable dredged material and planting of eelgrass shoots.
Eelgrass harvest from donor sites will be conducted at a 10 percent level based on pre-harvest shoot counts and bed areas calculations. Following completion of the transplant, post-harvest surveys will be repeated to verify harvesting has not resulted in a reduction in bed area or density.	Sustained health of donor eelgrass bed(s).	Pre- and post-extraction of eelgrass shoots from donor beds.	Navy via contractor	Completion of donor shoot extraction.
All construction and environmental monitoring vessels at the alternative sites would adhere to a 5 mph speed limit and shall observe waters in the vessel path for potential green sea turtle surfacing or basking.	Avoid striking a green sea turtle.	During all phases of work.	Navy via contractor	Completion of project activities and monitoring.
Eelgrass within 50 meters of an expansion site (being filled, between suitable dredged material placement phases, during grading, and for over two years following planting) will be monitored annually to determine if any indirect impacts to eelgrass occurs. These impacts will	Accurate accounting of impacts to eelgrass.	Pre- and post-surveys.	Navy via contractor	Two years following planting.

Measure	*Anticipated Benefit/ Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
be mitigated based on offsetting temporal losses by extraction of mitigation credit from established bank sites as appropriate.				
If any sick, injured, or dead marine mammals or green sea turtles are identified, the NOAA Fisheries West Coast Stranding Coordinator will be notified, and the Sea World Rescue and Rehabilitation Program will be contacted for rescue or collection.	Rescue/rehabilitation of sick/injured species and accounting for dead mammals/turtles.	During all phases of work.	Navy via contractor	Completion of project activities and monitoring.
Impacts to eelgrass within the project footprint will be addressed by discounting credit returns after inserting an existing pre-project eelgrass value using King & Price (2004).	Accurate accounting of impacts to eelgrass.	Pre- and post-surveys.	Navy via contractor	At the end of each phase until project activities are complete.
Additional Measures Pertaining to Alternatives 2 and 3 Only (in addition to all those previously identified)				
The Navy would apply for and implement the terms and conditions identified in USACE Section 404/Section 10 permit and San Diego RWQCB Section 401 Water Quality Certification. The Navy would implement any precautionary measures identified in the permit/certification to alleviate turbidity associated with placement of the suitable dredged material.	Protection of marine water and biological resources.	Prior to site establishment and monitoring for effectiveness.	Navy via contractor	Completion of project activities.
Prior to placement, the suitable dredged material will be screened for potential pollutants and potential unexploded ordnance so that only clean and safe material would be deposited at the site(s). Dredged material delivered to the eelgrass expansion site(s) would be limited to that material determined by USACE and USEPA to be physically, chemically, and biologically suitable for unconfined aquatic disposal under Inland Testing Manual criteria (USEPA and U.S. Department of the Army, 1998).	Protection to natural resources and people.	Prior to site establishment.	Navy via contractor	Prior to placement of suitable dredged material.
Pre- and post-site expansion eelgrass surveys would be conducted in accordance with the CEMP (NOAA Fisheries, 2014). Losses of eelgrass beyond the project footprint will be mitigated in accordance with the CEMP through extraction of eelgrass credits from an established NEMS.	Accurate record keeping of pre- and post-project eelgrass.	Pre- and post-project implementation either as one event or for each phase.	Navy via contractor	At the end of each phase until project activities are complete.
In the event a green sea turtle is identified within the placement area, placement will cease until the turtle moves away or 15 minutes time has passed since the last observation of a turtle.	Avoidance of impacts to green sea turtle.	During placement of suitable dredged material.	Navy via contractor	Once all suitable dredged material is placed on-site.

Measure	*Anticipated Benefit/ Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
Limit turbidity generation by timing suitable dredged material placement to occur at higher tides and controlling turbidity spread by avoiding placement during high tidal exchanges.	Minimization of impacts to aquatic habitat and species.	During placement of suitable dredged material.	Navy via contractor	Once all suitable dredged material is placed on-site.
Vessels would be moored with sufficient room left in the main navigation channels for other vessels to pass to include appropriate lighting at night.	Boater and worker safety.	During project implementation	Navy via contractor	Once all suitable dredged material is placed on-site.
The Navy would inform and coordinate with NOAA and U.S. Coast Guard to report depth changes to bay navigation charts as a result of placement of suitable material.	Boater safety.	Following final site establishment	Navy	Updated charts are published.
Ensure contractor staging is restricted to appropriate developed sites or sites within prior environmental clearances to confirm absence of sensitive habitats or species.	Avoid impacts to California least tern.	During placement of suitable dredged material	Navy via contractor	Once all suitable dredged material is placed on-site.
Restrict shoreline access and staging.	Avoid impacts to California least tern.	During placement of suitable dredged material	Navy via contractor	Once all suitable dredged material is placed on-site.
Installation of a mariner notification/navigation sign on a day marker piling off the site boundary as needed.	Boater safety.	Post-site establishment	Navy	Completion of project activities.
In accordance with the Programmatic Consultation for waterfront structure maintenance and new construction projects occurring in San Diego Bay conducted by the Navy (NOAA Fisheries, 2022), if a sea turtle or marine mammal is seen within 130 meters of the active daily construction/dredge disposal operation or vessel movement (the monitoring zone), all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 20 meters of a sea turtle or marine mammal. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or marine mammal is seen within a 20-meter radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition, or has not been sighted for 15 minutes.	Avoid impacts to green sea turtle and marine mammals.	During installation of navigation signs.	Navy via contractor	Once navigation sign piles are installed.
All work included under this assessment will occur during daylight hours that allow for sighting of protected species within all project areas and defined monitoring zones.	Avoid impacts to green sea turtle and marine mammals.	During installation of navigation signs.	Navy via contractor	Once navigation sign piles are installed.

Measure	*Anticipated Benefit/ Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
A dedicated monitor will be required for all pile driving activities.	Avoid impacts to green sea turtle and marine mammals.	During installation of navigation signs.	Navy via contractor	Once navigation sign piles are installed.
Based on the expected maximum underwater acoustic levels that may be produced from pile driving activities, a standard monitoring distance of 130 meters will be implemented through dedicated monitoring before and during all pile driving activity, and after a break in pile driving of more than 30 minutes.	Avoid impacts to green sea turtle and marine mammals.	During installation of navigation signs.	Navy via contractor	Once navigation sign piles are installed.
Monitoring will commence at least 15 minutes before pile driving commences.	Avoid impacts to green sea turtle and marine mammals.	During installation of navigation signs.	Navy via contractor	Once navigation sign piles are installed.
If a sea turtle is seen in the project area out to a distance of 130 meters prior to or during pile driving, the activity will not commence until the animal has moved out of the area or at least 15 minutes has passed since the last sighting.	Avoid impacts to green sea turtle and marine mammals.	During installation of navigation signs.	Navy via contractor	Once navigation sign piles are installed.
If a sea turtle is seen within the 130 meter zone after pile driving has commenced at full intensity, the Navy may continue driving that pile to completion, as long as that turtle is not within 20 meters of the project work area. The Navy may not initiate the driving of another pile until at least 15 minutes has passed since the last sighting.	Avoid impacts to green sea turtle and marine mammals.	During installation of navigation signs.	Navy via contractor	Once navigation sign piles are installed.
Ramp-up procedures will be implemented to slowly increase the intensity of pile driving to allow undetected turtles in the area an opportunity to move away. Prior to the start of impact pile driving each day, or after each break of more than 30 minutes, a "soft-start" procedure will be used (i.e., three reduced energy hammer blows separated by 30 seconds). The procedure allows any animals in the area to voluntarily depart after brief exposures to project-related noise.	Avoid impacts to green sea turtle and marine mammals.	During installation of navigation signs.	Navy via contractor	Once navigation sign piles are installed.
Additional Measure Pertaining to Alternative 2 Only (in addition to all those previously identified)				
No suitable dredged material would be placed between April 1 and September 15 to avoid the California least tern nesting season.	Avoid impacts to California least tern	During placement of suitable dredged material	Navy via contractor	Once all suitable dredged material is placed on-site.

Note: This table will be updated to reflect and additional measures identified through resource agency coordination/consultation.
M=meters, USACE= U.S. Army Corps of Engineers, NOAA=National Oceanic and Atmospheric Administration, Port=Port of San Diego, NAVFAC SW= Naval Facilities Engineering Systems Command Southwest

4 Cumulative Impacts

This section (1) defines cumulative impacts, (2) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, (3) analyzes the incremental interaction the Proposed Action may have with other actions, and (4) evaluates cumulative impacts potentially resulting from these interactions.

4.1 Definition of Cumulative Impacts

Cumulative impacts are defined in the 2022 NEPA updates, under 40 CFR section 1508.1(g)(3) as "*effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time*."

CEQ and USEPA have published guidance addressing implementation of cumulative impact analyses—*Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (CEQ, 2005) and *Consideration of Cumulative Impacts in EPA Review of NEPA Documents* (USEPA, 1999). CEQ guidance entitled *Considering Cumulative Impacts Under NEPA* (1997) states that cumulative impact analyses should

"*…determine the magnitude and significance of the environmental consequences of the Proposed Action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts…[and]…focus on truly meaningful impacts*."

Cumulative impacts are most likely to arise when a relationship or synergism exists between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts.

4.2 Scope of Cumulative Impacts Analysis

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this EA, the study area delimits the geographic extent of the cumulative impacts analysis. In general, the study area will include those areas previously identified in Chapter 3 for the respective resource areas. The time frame for cumulative impacts centers on the timing of the Proposed Action.

Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to consider. Beyond determining that the geographic scope and time frame for the actions interrelate to the Proposed Action, the analysis employs the measure of "reasonably foreseeable" to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include notices of intent for EISs and EAs, management plans, land use plans, and other planning related studies.

4.3 Past, Present, and Reasonably Foreseeable Actions

This section focuses on past, present, and reasonably foreseeable future projects at and near the Proposed Action locale. In determining which projects to include in the cumulative impacts analysis, a preliminary determination was made regarding the past, present, or reasonably foreseeable action. Projects included in this cumulative impacts analysis are listed in Table 4-1 and briefly described in the following subsections.

Table 4-1. Cumulative Action Evaluation

Past Actions	
Action	**Level of NEPA Analysis Completed and Project Start Date (year)**
NBSD Pier 12 Replacement and Dredging (P-327)	EA (2016)
NBSD Maintenance Dredging Various Piers (Piers 2, 6, 7, 13 and 14) and in Chollas Creek	EA (2017)
U.S. Coast Guard Ballast Point Maintenance Dredging	EA (2016)
South San Diego Harbor Maintenance Federal Channel Maintenance Dredging	2019-2020
Ballast Point to Approach Federal Channel Maintenance Dredging	2019-2020
NBSD Graving Dock Approach Maintenance Dredging	2019-2020
NBPL Floating Dry Dock (ARCO) Dredging	2019-2020
Fleet Logistics Center Fuel Pier Dredging	2019-2020
NBSD Pier 8 Replacement and Dredging (P-440)	2020
Energy Security and Resilience Project	2018
NBPL Pier 5000 North Side Outer Berth and Pier Approach Dredging	2019
NBPL Smuggler's Cove Fish - Eelgrass, Intertidal, Subtidal Habitat Reef and Enhancement Project	2022
University of San Diego Scripps Nimitz Marine Facility Maintenance Dredging	2022-2023
Present and Reasonably Foreseeable Future Actions	
Action	**Estimated Project Start Date**
BAE Systems Waterfront Improvement Project	2023+
Floating Dry Dock Replacement	2023+
Pier 6 Replacement Project at NBSD	2023+
Replacement of Pier 302 at NBPL	2024+
Port District Master Plan Update	2024+
Port District State Trust Lands Use Plan	2024+
Port of San Diego Redevelopment and Community Infrastructure Projects	2023+
Supplemental Environmental Impact Statement for Improving Homeport Facilities for Three NIMITZ-Class Aircraft Carriers at NAS North Island	2025+

4.3.1 Past Actions

A variety of in-water projects within the San Diego Bay have been completed. These projects include maintenance dredging and pier repair/maintenance projects (Table 4-1). Descriptions of these projects follow.

4.3.1.1 NBSD Pier 12 Replacement and Dredging (P-327)

This project consisted of the demolition and replacement of Pier 12. This project also included dredging to meet the -37 ft (11 m) MLLW requirement for deep draft vessels. The Navy completed this project in July 2016 (NAVFAC SW, 2011).

4.3.1.2 NBSD Maintenance Dredging Various Piers (Piers 2, 6, 7, 13 and 14) and in Chollas Creek

These maintenance dredging activities began in 2016 and were completed shortly thereafter

4.3.1.3 U.S. Coast Guard Ballast Point Maintenance Dredging

This project involved dredging of the Coast Guard berths to restore navigational requirements. The dredged clean sand was provided for beneficial reuse as part of the neighboring Smugglers Cove Fish, Eelgrass, Intertidal, Subtidal Habitat Reef and Enhancement Project.

4.3.1.4 South San Diego Harbor Federal Channel Maintenance Dredging

The Los Angeles District of the USACE, as part of its Operations and Maintenance Program, performed maintenance dredging in South San Diego Harbor Federal Channel to re-establish authorized channel depths (-35 ft MLLW, with a 2 ft allowable overdepth to -37 ft MLLW) (USACE, 2019).

4.3.1.5 Ballast Point to Approach Federal Channel Maintenance Dredging

The USACE, as part of its Operations and Maintenance Program, performed maintenance dredging from the federal navigation channel seaward of Ballast Point to the approach. The USACE dredges at Ballast Point approximately every seven years (USACE, 2019). The last dredging event was in 2012.

4.3.1.6 NBSD Graving Dock Approach Maintenance Dredging

This maintenance dredging project in the approach area of the NBSD Graving Dock provided appropriate operational depths to support the continued use of the site by ensuring appropriate depths for transit and maneuvering vessels at NBSD.

4.3.1.7 NBPL Floating Dry Dock (ARCO) Dredging

Dredging in the vicinity of the ARCO floating dry dock at NBPL was done to ensure appropriate operational depths for the dry dock and client vessels in the project vicinity.

4.3.1.8 Fleet Logistics Center Fuel Pier Dredging

The project dredged the fuel pier vicinity to support the continued use of the site by ensuring appropriate depths for fueling operations and client vessels.

4.3.1.9 NBSD Pier 8 Replacement and Dredging (P-440)

This project consisted of demolishing and replacing Pier 8. The Navy prepared an EA for this project in 2016 (NAVFAC SW, 2016) and started the project in 2020.

4.3.1.10 Energy Security and Resilience Project

This Navy-led project included the construction and operation of an energy security and resilience project and installation of grid-integrated battery storage and other energy assets at NBSD.

4.3.1.11 NBPL Pier 5000 North Side Outer Berth and Pier Approach Dredging

This project dredged NBPL to meet new submarine water depth requirements for the navigation and berthing of large submarines to support continued Navy submarine fleet operations. The Navy prepared a Final EA and Finding of No Significant Impact (FONSI) for this project in April 2019.

4.3.1.12 NBPL Smuggler's Cove Fish - Eelgrass, Intertidal, Subtidal Habitat Reef and Enhancement Project

The goal of this proposed project was to restore intertidal and subtidal beach and habitat at Smugglers Cove at NBPL. The project created an artificial reef using broken concrete and piles salvaged from the Fuel Pier Replacement project to create a berm to hold sand and create new shallow beach and eelgrass habitat. Clean sand dredged as part of the U.S. Coast Guard Station Ballast Point Maintenance Dredge provided sand material for this project, which was completed in 2022.

4.3.1.13 University of San Diego Scripps Nimitz Marine Facility Maintenance Dredging

The University of California, San Diego conducted maintenance dredging of approximately 10,200 CYs at the Scripps Institution of Oceanography's Nimitz Marine Facility. Suitable dredged material from the project was used for nearshore sand replenishment and placed offshore of the Navy beach along the Coronado Peninsula (Scripps, 2023).

4.3.2 Present and Reasonably Foreseeable Actions

A variety of in-water projects within the San Diego Bay are occurring or are anticipated to occur within the next several years. These projects include pier replacement, maintenance dredging, pier repairs, construction of new static and floating docks, commercial development, and habitat enhancement projects (Table 4-1). Descriptions of these projects follow.

4.3.2.1 BAE Systems Waterfront Improvement Project

This proposed project would replace aging structures, improve existing infrastructure, increase space utilization, and increase efficiency of operations at the existing BAE Systems San Diego Ship Repair Yard, located adjacent to NBSD. Construction of various project elements would last through 2024.

4.3.2.2 Floating Dry Dock Replacement at NBSD

The Navy proposes dredging, demolition, and construction in support of the emplacement and operation of floating dry dock space at NBSD. The proposal also includes the disposal of dredged sediments at nearshore replenishment sites, offshore disposal sites, or upland disposal sites. The Navy prepared and Final EA and FONSI for this project in May 2020.

4.3.2.3 Pier 6 Replacement at NBSD

The Navy plans to demolish the aging and inadequate Pier 6 at NBSD and replace it with a new general purpose pier having the infrastructure necessary to support modern Navy ships. The Navy prepared a Final EA and signed a FONSI for this project in March 2021 (NAVFAC SW, 2021).

4.3.2.4 Replacement of Pier 302 at NBPL

The U.S. Navy plans to replace Pier 302 at the Naval Information Warfare Center Pacific Bayside Complex on NBPL. The Navy is in the process of completing a Final EA for this project.

4.3.2.5 Port District Master Plan Update

The Port is updating their Port Master Plan, a water and land use plan that designates specific areas of San Diego Bay and the surrounding waterfront for maritime, fishing, visitor-serving commercial, recreational, conservation, and institutional uses. The plan determines where port activities should take place, where recreational amenities should be located, and where commercial uses like hotels, restaurants, and visitor-serving retail may be built (Port, 2023a).

4.3.2.6 Port District State Trust Lands Use Plan

In accordance with SB 507, the Port is preparing a Trust Lands Use Plan for the recently granted submerged lands. The plan will identify bay-wide policies, use designations, and allowable use types, among other long-range planning goals and objectives for the submerged lands.

4.3.2.7 Port of San Diego Redevelopment and Community Infrastructure Projects

The Port has listed 11 current or future redevelopment or community infrastructure projects in San Diego Bay. The projects collectively aim to generate thousands of jobs and millions of dollars for the regional economy each year while the projects and the Port's environmental initiatives help to ensure that San Diego Bay remains a vital resource (Port, 2023b).

The one notable project is the Chula Vista Bayfront Redevelopment Project partnership between the Port and City of Chula Vista, the 535-acre Chula Vista Bayfront redevelopment envisions a world-class destination in the South Bay – a unique place for people to live, work and play. It is designed to create new public parks and recreational adventures, improve the natural habitat, offer new dining and shopping options, provide a world-class hotel and convention center, and more (Port, 2023b).

4.3.2.8 Supplemental Environmental Impact Statement for Improving Homeport Facilities for Three NIMITZ-Class Aircraft Carriers at NAS North Island

The Navy has initiated preparation of a Supplemental Environmental Impact Statement that will address current mission objectives, routing pier-side maintenance activities, and proposed electrical power infrastructure. This may result in three aircraft carriers being in port at the same time at NAS North Island for more days per year than analyzed in previous NEPA documents (Navy, 2023). The Navy is hosting public scoping meetings in the San Diego area in June 2023.

4.4 Cumulative Impact Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data is not available, and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA where possible. The analytical methodology presented in Chapter 3, which was used to determine potential impacts to the various resources analyzed in this document, was also used to determine cumulative impacts.

4.4.1 Marine Water Resources and Bathymetry

4.4.1.1 Description of Geographic Study Area

The Region of Impact (ROI) for marine water resources and bathymetry is San Diego Bay.

4.4.1.2 Relevant Past, Present, and Future Actions

All of the projects as presented in Table 4-1 are relevant to marine water resources and bathymetry.

4.4.1.3 Cumulative Impact Analysis

Cumulative marine water resource and bathymetry impacts from past, present, and future actions within the ROI would be beneficial to marine water resources and bathymetry. Collectively the identified projects would address existing infrastructure and operational needs in the bay while also improving marine water resources. Suitable dredged material from reasonably foreseeable dredge projects could be used as source material for the eelgrass expansion sites. The expansion of eelgrass in San Diego Bay would be consistent with the goals and objectives as identified in the INRMP and the collective Navy mission and Port vision for improving environmental conditions in the bay.

If more than one potential eelgrass habitat expansion site is developed, the cumulative benefits to marine water resources and bathymetry would further increase, as more beneficial habitat would be created. Therefore, implementation of the Proposed Action combined with the past, present, and reasonably foreseeable future projects, would result in beneficial cumulative impacts to marine water resources and bathymetry within the ROI.

4.4.2 Marine Biological Resources

4.4.2.1 Description of Geographic Study Area

The ROI for marine biological resources is San Diego Bay.

4.4.2.2 Relevant Past, Present, and Future Actions

All of the projects as presented in Table 4-1 are relevant to marine biological resources.

4.4.2.3 Cumulative Impact Analysis

Cumulative marine biological resource impacts from past, present, and future actions within the ROI would be beneficial to marine biological resources. Collectively, the identified projects would address

existing infrastructure and operational needs in the bay while also improving marine biological resources, or in the instances of unavoidable impacts, mitigate for the impact with the creation or additional habitat. The Navy and Port would continue to manage and improve the marine biological health of the bay and its habitat and species per the INRMP (Navy and Port, 2013).

If all alternative sites were constructed and fully planted, nearly 38 acres of eelgrass would be added to the Bank. While expanding eelgrass habitat in San Diego Bay helps meet future Navy mitigation requirements, it also serves the larger goal of the Navy's continued commitment to conservation of the San Diego Bay ecosystem. The recognition that the Navy will continue to require eelgrass mitigation, and that subtidal eelgrass habitat will be lost due to sea level rise, has prompted the Navy to begin identifying and planning opportunistic suitable dredged material reuse sites in San Diego Bay to curtail the export of material to offshore disposal as it is being increasingly recognized as a valuable asset for resource management in the future. Therefore, implementation of the Proposed Action, combined with the past, present, and reasonably foreseeable future projects, would result in beneficial cumulative impacts to marine biological resources within the ROI.

4.4.3 Land Use

4.4.3.1 Description of Geographic Study Area

The ROI for land use is San Diego Bay.

4.4.3.2 Relevant Past, Present, and Future Actions

All of the projects as presented in Table 4-1 are relevant to land use.

4.4.3.3 Cumulative Impact Analysis

Cumulative land use from past, present, and future actions within the ROI would be less than significant to land use. Collectively the identified projects would result in compatible land uses within the bay. The Navy, Port, and other stakeholders coordinate and plan for the continued implementation of the extensive range of commercial, military, and public activities in San Diego Bay. The Port's Master Plan Update and Trust Lands Use Plan in particular are anticipated to further facilitate the continued compatibility of these various activities.

The expansion of eelgrass in San Diego Bay would also help offset the impacts from the land use changes from some of the identified cumulative projects (e.g., pier replacements, commercial development). If more than one potential eelgrass habitat expansion site is developed, there would be no significant cumulative negative impact to land use. This is because the sites are spread out in San Diego Bay and have been demonstrated to have individually negligible impacts to land use. Furthermore, the Navy would continue to coordinate with the Port regarding their Trust Lands Use Plan to ensure compatible activities. Therefore, implementation of the Proposed Action, combined with the past, present, and reasonably foreseeable future projects, would result in less than significant cumulative impacts to land use within the ROI.

5 Other Considerations Required by NEPA

5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 CFR section 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state, and local land use plans, policies, and controls. Table 5-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

Table 5-1. Principal Plans, Policies, and Regulations Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	Status of Compliance
NEPA; CEQ NEPA implementing regulations; Navy procedures for Implementing NEPA	This EA has been prepared in accordance with NEPA, CEQ regulations implementing NEPA, and Navy NEPA procedures.
CAA	Implementation of the Proposed Action would generate emissions below *de minimis* levels and not exceed air quality standards. As such, the Navy has prepared a Record of Non-Applicability demonstrating CAA conformity (Appendix B).
CWA	The Navy would comply with the CWA by obtaining all relevant CWA permits and abiding by permit conditions.
Rivers and Harbors Act	The Navy would comply with the Rivers and Harbors Act by obtaining all a permit and abiding by permit conditions.
CZMA	The Navy is preparing a Coastal Consistency Determination to demonstrate compliance with the Coastal Zone Management Act, subject to California Coastal Commission review for consistency with the state's Coastal Management Plan.
NHPA	The Navy has determined that implementation of the Proposed Action would result in "no historic properties affected" because no properties protected under the NHPA are located within the project area.
ESA	The Navy has initiated ESA consultation with NOAA Fisheries and USFWS and will update this section after completing consultation.
Magnuson-Stevens Fishery Conservation and Management Reauthorization Act	The Navy is complying with this act as demonstrated by the preparation of an Essential Fisheries Habitat Assessment (Appendix C).
MMPA	The Navy has determined that implementation of the Proposed Action would not impact marine mammals due to their low density in the project area, the limited amount of underwater noise generated, and the implementation of avoidance and minimization measures.
MBTA	The Proposed Action would comply with the MBTA by avoiding impacts to habitat during the breeding season, as applicable at each site.
EO 11988, Floodplain Management	No floodplains would be impacted because the project would occur in-water.

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	Status of Compliance
EO 12088, Federal Compliance with Pollution Control Standards	The Proposed Action would include standard measures to reduce the potential for an accidental spill and comply with federal pollution control standards
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations because no such populations are in the area and impacts would be negligible.
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	The Proposed Action would not result in environmental health risks and safety risks that may disproportionately affect children because children are not located in the area and impacts would be negligible.
EO 13175, Consultation and Coordination with Indian Tribal Governments	The Navy will notify Tribal Governments of the Proposed Action and update this section after completing outreach.
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds	The Proposed Action would avoid impacts to habitat used by migratory birds.
EO 13990, Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis	This EA is guided by best science and the Proposed Action avoids or minimizes potential impacts to all resource areas to ensure compliance with this order.
EO 14008, Tackling the Climate Crisis at Home and Abroad	This EA considers the impact to the Proposed Action on climate change.

5.1 Coastal Zone Management

The federal CZMA of 1972 establishes a federal-state partnership to provide for the comprehensive management of coastal resources. Coastal states and territories develop site-specific coastal management programs based on enforceable policies and mechanisms to balance resource protection and coastal development needs.

The California Coastal Commission lays out the policy to guide the use, protection, and development of land and ocean resources within the state's coastal zone. Under the Act, federal activity in, or affecting, a coastal zone requires preparation of a Coastal Zone Consistency Determination or a Negative Determination. In other words, any federal agency proposing to conduct or support an activity within or outside the coastal zone that would affect any land or water use, or natural resource of the coastal zone must do so in a manner consistent with the CZMA or applicable state coastal zone program to the maximum extent practicable.

Federal lands, which are "lands the use of which is by law subject solely to the discretion of…the Federal Government, its officers, or agents," are statutorily excluded from the State's "coastal zone." If, however, the proposed federal activity affects coastal resources or uses beyond the boundaries of the federal property (i.e., has spillover effects), the CZMA Section 307 federal consistency requirement applies. As a federal agency, the Navy must determine whether its proposed activities would affect the coastal zone. This takes the form of either a Negative Determination or a Consistency Determination.

The Navy analyzed the impacts of the Proposed Action on the coastal zone by looking at reasonably foreseeable direct and indirect effects on the coastal use or resources and reviewing relevant

management program enforceable policies (15 CFR 930.33[a][1]) and the Coastal Resources Planning and Management Policies.

The Navy is preparing a Coastal Consistency Determination to demonstrate compliance with the Coastal Zone Management Act, subject to California Coastal Commission review for consistency with the state's Coastal Management Plan. This section will be updated to reflect the outcome of the coordination.

5.2 Climate Change

The USEPA developed a "State of Knowledge" website following the 2007 Intergovernmental Panel on Climate Change report. The USEPA affirms that while the contribution is uncertain, human activities are substantially increasing GHG emissions, which, in turn, are contributing to a global warming trend. The U.S. Global Change Research Program (USGCRP) is a working group coordinating the efforts of 13 different federal agencies, including the U.S. Department of Agriculture, the Department of the Interior, the DoD, and the Department of Energy. The USGCRP releases regular reports presenting the most current scientific consensus of predicted changes associated with global climate change. The 2018 National Climate Assessment report is the most recent complete report (USGCRP, 2018). This report summarizes the science of climate change and the impacts of climate change on the U.S., now and in the future.

5.2.1 Predicted Future Conditions

Relevant to the location of the Proposed Action, the "southwest" section of the 2018 National Climate Assessment report describes how many coastal resources in the Southwest have been affected by sea level rise, ocean warming, and reduced ocean oxygen—all impacts of human-caused climate change—and ocean acidification resulting from human emissions of carbon dioxide. Between 1906 and 2016, the sea level in San Diego rose 9.5 inches (USGCRP, 2018).

Projected changes in long-term climate predict more frequent extreme events such as heat waves and droughts. Current simulations predict decreasing precipitation, snowpack, runoff, and soil moisture for the region into the future. While simulations predict that total precipitation would decrease, they also predict the frequency of extreme rain events with a high potential for flooding would increase. At the same time, the scenarios predict that extreme heat events are expected to increase in frequency and magnitude, resulting in increased heat-associated deaths and illnesses, vulnerabilities to chronic disease, and other health risks to people in the southwest (USGCRP, 2018).

In San Diego Bay, *common* eelgrass beds range in depths from 0 MLLW to depths of at least 23 ft below MLLW, depending on levels of light and water turbidity. In south bay the range is from 0 to –7 ft MLLW, in the central bay the range is 0 to –10 ft MLLW, and in the north bay the range is from 0 to –13 ft MLLW. Near the mouth in north bay (i.e., Ballast Point), *pacifica* eelgrass grows down to –23 ft MLLW (Navy and Port, 2013).

With 0.8 ft of projected sea level rise, which may occur by year 2030, eelgrass that exists at lower elevations may not be able to persist as the depth of water increases. However, eelgrass may be able to move upslope and occupy available area between 0.8 and 1.6 ft. If the higher elevation to which eelgrass can expand to is greater in area compared to the area lost at the lowest elevations (between -10.7 and -9.9 ft), then eelgrass can increase its distribution. Eelgrass has a unique trend, with increasing

acreage in the moderate projected sea level rise scenarios, but then a sharp decline in the 4.9 ft projected sea level rise scenario. With 4.9 ft of projected sea level rise, a loss of acres for eelgrass is driven by a reduction in available area coupled with a larger reduction in the preferred range, with more of the available habitat occurring in the deeper range where occupancy rates are lower (Port 2019).

Over the past several decades, effluent discharges have been curtailed and stormwater quality has been improved to a point that eelgrass has been in a recent state of expansion. Eelgrass has generally expanded under conditions of long-term drought leading to improving bay water quality and resource management and restoration actions. Climate change and sea level rise projections threaten to reverse this trend as deeper water may not allow for enough light penetration for eelgrass to survive. By raising the bay floor with suitable dredged materials, the shallower water enables suitable light environments to support eelgrass.

5.2.2 Impact of the Proposed Action on Climate Change

Guidance from CEQ dated August 1, 2016, recommends that agencies consider both the potential effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the implications of climate change for the environmental effects of a proposed action. In the December 18, 2014, fact sheet on considering climate change in NEPA reviews, CEQ recommended that agencies consider 25,000 metric tons of CO_2e emissions on an annual basis as a reference point below which a quantitative analysis of GHG is not recommended unless it is easily accomplished based on available tools and data.

As shown in Appendix B, estimated emissions from implementation of Alternative 3 (approximately 1,212 metric tons of carbon dioxide equivalents or less) would be well below 25,000 metric tons of carbon dioxide equivalents. Because Alternative 3 represents the largest potential generator of emissions, Alternatives 1, 2A, and 2B would generate fewer emissions. The 25,000 metric tons is considered a viable threshold warranting a more substantial evaluation of—but not necessarily a determination of—significance of climate change impact. Furthermore, even though the Proposed Action would represent a fractional percentage of US baseline carbon dioxide equivalent emissions (estimated to be 5,742,600,000 metric tons in 2017), the Navy would continue to make attempts to minimize contributions to GHG emissions. Thus, the Proposed Action would not contribute significantly to global climate change.

Sea grasses (eelgrass), mangroves, and salt marshes along the coast "capture and hold" carbon, acting as something called a carbon sink. Blue carbon is the term for carbon captured by the world's ocean and coastal ecosystems. Recent studies have shown that eelgrass meadows in coastal waters capture and store carbon from outside sources, increasing the potential amount of carbon they are able to sequester. The carbon is coming from both the eelgrass plants themselves and from phytoplankton and other floating particles in the water (NOAA Sea Grant, 2016; Port, 2022).

Recently the Port undertook a study to assess how much carbon is stored in the bay's eelgrass beds and how much carbon eelgrass may continue to sequester into the future. According to the study, the 2,600 acres of eelgrass in San Diego Bay sequester more than 170,000 million metric tons of carbon dioxide — equivalent to the same amount emitted by more than 37,000 cars annually (Port, 2022).

The Navy collaborates with the Port and Maritime Administration on this and other projects to further eelgrass research and management while successfully balancing the DoD mission and sustainability goals. To this end, the Proposed Action would have a beneficial impact on climate change.

5.2.3 Impact of Climate Change on the Proposed Action

Climate change has the potential to impact San Diego Bay, primarily via sea level rise. The addition of suitable dredged material to raise the bottom would greatly enhance the ability for eelgrass to grow in San Diego Bay. Based on the identified depths of the eelgrass habitat expansion sites, new eelgrass habitat would persist under the sea level rise scenarios. Thus, placing suitable dredged material and planting eelgrass shoots would help offset potential future impacts from sea level rise on deeper eelgrass communities.

5.3 Irreversible or Irretrievable Commitments of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of the Proposed Action would involve an insignificant amount of human labor and consumption of fuel, oil, and lubricants for maritime vessels. The Proposed Action would add natural resources through the expansion of eelgrass habitat in San Diego Bay, enhancing the range of potential uses and benefits to San Diego Bay. Therefore, implementing the Proposed Action would not result in significant irreversible or irretrievable commitment of resources.

5.4 Unavoidable Adverse Impacts

This EA has determined that implementation of one or more of the action alternatives would not result in any significant impacts. Conversely, overall the implementation of the Proposed Action would result in beneficial impacts to San Diego Bay.

5.5 Relationship between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources often eliminates the possibility of other uses at that site.

In the short-term, effects to the human environment with implementation of the Proposed Action would primarily relate to the placement of suitable dredged material for eelgrass habitat expansion. Air quality and noise would be impacted in the short-term. In the long-term, beneficial impacts to marine water quality and marine biological resources would occur. The implementation of the Proposed Action would enhance the long-term natural resource productivity of San Diego Bay. The Proposed Action

would increase environmental productivity and expand the range of beneficial uses of the environment in San Diego Bay.

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This EA was prepared collaboratively between the Navy and contractor preparers.

U.S. Department of the Navy

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Appendix A
Public Involvement

I ♥ NADO COLORING CONTEST

COLOR THIS PICTURE AND YOU COULD WIN! COURTESY OF OUR SPONSOR: *Milberg Orthodontics*

1ST, 2ND AND 3RD PLACE WINNERS WILL RECEIVE A PRIZE!

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2. Contestants may use crayons, colored pencils or markers. Adults may assist in completing the contest entry form, but not in the coloring.
3. Limit one entry per child. Entries will not be returned..
4. All entries postmarked by 01-31-2023
5. Submissions are considered property of this newspaper and may be printed in this newspaper.
6. Decisions of judges are final.

Name:

Age: M/F Phone:

Address:

City: Email:

Please send I ♥ NADO Coloring contest entry to:
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Thank you to our sponsor: Dr. Milberg Orthodontics

PUBLIC NOTICE
SCOPING FOR AN ENVIRONMENTAL ASSESSMENT
DEPARTMENT OF THE NAVY
Navy Region Southwest
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Since its celebrated establishment in 2008, the Navy has used credits in the Navy Region Southwest San Diego Bay Eelgrass Mitigation Bank (the Bank) to offset unavoidable impacts from infrastructure projects and testing and training activities in San Diego Bay. While the Navy strives to avoid or minimize impacts to eelgrass and other resources, sometimes impacts to eelgrass from Navy actions are unavoidable. Adding acreage to the Bank would increase the Navy's ability to offset unavoidable impacts to eelgrass habitat within the Bay from future Navy projects and activities.

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Public comments must be submitted by the close of the scoping period on January 27, 2023. All timely and substantive comments will be considered in preparation of the Draft Environmental Assessment. Comments can be submitted to:

Naval Facilities Engineering Systems Command Southwest Attention: Code EV26.SVR
750 Pacific Highway (12th Floor, Environmental)
San Diego, CA 92132-5190 Email address: navfac_sw_eelgrass_ea_public_outreach@us.navy.mil

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SDG&E To Make $1 Million Available To Help Customers With Utility Bills

San Diego Gas & Electric (SDG&E) announced today it will make $1 million in customer assistance available via Neighbor-to-Neighbor (N2N), a program that provides up to $300 in one-time grants to help offset past due bills for SDG&E customers experiencing financial hardship who aren't eligible for the federally funded Low-Income Home Energy Assistance Program (LIHEAP). N2N is entirely funded by shareholder dollars, not ratepayer dollars.

"While SDG&E doesn't control the natural gas market, we feel it's very important for us as a company to dedicate shareholder dollars to help our customers who are struggling to absorb significant increases in winter energy bills due to extreme commodity market conditions in the West," said SDG&E CEO Caroline Winn. "We are committed to make every effort to help our customers prepare and take action to manage their energy use and provide access to programs and services. Additionally, as a company, we want to contribute financially to those in need in the communities we serve."

Who Qualifies

N2N provides up to $300 per household in assistance for qualifying customers, and up to $400 for qualifying customers enrolled in the Medical Baseline program.

SDG&E customers who reside in the company's service territory in San Diego and southern Orange counties qualify to apply for N2N if they do not qualify for LIHEAP funding, and if they certify they are experiencing serious illness, temporary unemployment, disability or unusual hardship.

Customers do not have to be low income to qualify for N2N assistance, but in order to receive assistance, they must be at least three months past due on their SDG&E bill and unable to pay.

How to Apply

Customers should call 2-1-1 San Diego or 2-1-1 Orange County, which will direct them to community-based organizations collaborating with SDG&E on the N2N program. SDG&E validates customer eligibility and applies N2N funds as credits to customers' accounts to offset overdue bills.

Ongoing Customer Communications

SDG&E started alerting customers a few months ago to expect higher energy bills due to rising natural gas prices, which have reached historic levels in recent months in the West. The U.S. Energy Information Administration cited widespread cold temperatures, pipeline constraints affecting gas flow to the West, high energy consumption and low energy storage levels in the Pacific region as reasons why gas prices are substantially higher on the West Coast than the rest of the country. SDG&E does not set the price of natural gas, or mark it up, meaning the company does not profit from rising gas commodity prices.

Customer Resources

SDG&E customers are encouraged to visit sdge.com/assistance to see if they are eligible for other programs and services including debt forgiveness, monthly discounts and payment arrangements. Tips on how to conserve energy during colder winter months are available at sdge.com/myenergy. Customers who wish to have more predictable bills – even out high-bill months with low-bill months – are encouraged sign up for Level Pay.

SDG&E is an innovative San Diego-based energy company that provides clean, safe and reliable energy to better the lives of the people it serves in San Diego and southern Orange counties. The company is committed to creating a sustainable future by providing its electricity from renewable sources; modernizing natural gas pipelines; accelerating the adoption of electric vehicles; supporting numerous non-profit partners; and, investing in innovative technologies to ensure the reliable operation of the region's infrastructure for generations to come. SDG&E is a subsidiary of Sempra (NYSE: SRE).

For more information, visit SDGEnews.com or connect with SDG&E on Twitter (@SDGE), Instagram (@SDGE) and Facebook.

Affidavit of Publication:

The Peninsula Beacon 1621 Grand Ave. Suite C San Diego, CA. 92109

I am a citizen of the United States and a resident of the county aforesaid. I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of the printer of the Beach & Bay Press, Peninsula Beacon, and La Jolla Village News which are weekly newspapers of general circulation within the provisions of the Government Code of the State of California, printed and published in the County of San Diego, State of California; this

PROOF OF PUBLICATION

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DEPARTMENT OF THE NAVY
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To which this certificate is annexed is a true and correct copy published in said newspaper on January 13 I certify under penalty of perjury that the foregoing is true and correct at 1621 Grand Ave Suite C, San Diego, California.

Heather Long Advertising Director

The San Diego Union-Tribune

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LIBRO DA TIPS PARA DESACTIVAR TRAMPAS DE LA MENTE

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IVAN SAMKOW/PEXELS EFE

Pensar sin prisas y con calma.

Pensar demasiado rápido o de modo superficial; no confiar en nosotros mismos ni en nuestras posibilidades; dar importancia a lo irrelevante; limitar nuestras alternativas mentalmente; creer todo lo que pensamos; sacar conclusiones, tomar decisiones cuando no estamos bien y generalizar, son nuestros errores de pensamiento más frecuentes, según el psicólogo Tomás Navarro.

Navarro (https://tomasnavarro.net) es psicólogo, consultor y escritor, ha fundado una consultoría y un centro de bienestar emocional, y actualmente reparte su tiempo entre la escritura técnica, la formación, la consultoría, las conferencias y los procesos de asesoramiento personal y profesional.

En su libro más reciente, *Piensa Bonito*, este especialista describe los errores de pensamiento que debemos evitar para liberar nuestra mente y lograr la vida que deseamos.

Navarro explica como detectar esos errores, y nos acerca a un nuevo estilo de pensamiento más abierto, expansivo, creativo y resistente ante los contratiempos, algo a lo que denomina "pensar bonito" y que asegura que puede depararnos una vida más plena.

Es que "nuestros pensamientos rigen la relación que tenemos con nosotros mismos y con las personas que nos rodean. Pueden ayudarnos a expandir nuestra vida, o por el contrario, limitarla", advierte.

Por ello considera fundamental "aprender a pensar bien y a saber distinguir los pensamientos racionales de aquellos que nos perjudican y no nos dejan crecer", según explica.

"Pensar bonito es nuestro mejor aliado para poder vivir la vida según nuestros deseos y prioridades; nos permite ver oportunidades donde otras personas no pueden verlas; nos ayuda a gestionar la adversidad sin sufrir más de lo necesario y a ser compasivos con quienes nos rodean", enumera.

Esto "es mucho más que una actitud vital, es una manera de pensar que se puede aprender y ejercitar" enfatiza.

"Vivimos unos tiempos en los que queremos que todo sea rápido: amar, comer, leer, hacer deporte y también pensar", señala.

"No tenemos tiempo y debido a esa falta de tiempo, detrás de la cual surge la prisa, acabamos comiendo mal, descansando mal y también pensando mal", asegura.

Las distorsiones de la mente

Según Navarro, tenemos básicamente dos tipos de procesos de pensamiento: "uno es rápido, inconsciente y automático; el otro es bastante más lento, consciente y controlado, reclamándonos muchos más recursos, y costándonos y cansándonos más".

El pensamiento consciente puede ser "conexionista", dependiendo de nuestra experiencia y consistiendo en una asociación, como sucede cuando vemos una luz encendida y la apagamos, o "analítico", el cual depende del contenido de lo que tenemos que analizar, el contexto en que estamos y nuestras metas, objetivos, prioridades, valores y necesidades, añade.

"Cuando nos ponemos a analizar, podemos hacerlo bien o equivocarnos y hacerlo mal. Por ejemplo, si tenemos que catar diferentes platos, y efectuamos ese análisis teniendo hambre, todos los platos nos parecerán estupendos. Nuestra valoración será menos objetiva que si nos centráramos en las características de cada plato teniendo el estómago lleno", según Navarro.

Esto es así, porque "nuestro análisis no es puro. Nuestro estado emocional, miedos, deseos, objetivos, limitaciones, metas y entorno pueden provocar una serie de inferencias en nuestro análisis. E inferir, o sea sacar una consecuencia o deducir algo de otra cosa, no es lo mismo que analizar", puntualiza.

Explica que "cuando inferimos estamos interpretando, con lo que el margen de error que estamos asumiendo es muy elevado" y que "a mayor nivel de inferencias será más alta la probabilidad de que cometamos un error en nuestro proceso de análisis".

"No basta con tener información, aunque sea muy válida y fiable, ya que para poder tomar buenas decisiones tenemos que procesar esa información de manera adecuada, conectarla con los datos y la experiencia que tenemos, analizarla sin distorsiones ni sesgos, y extraer conclusiones que nos sean válidas y útiles", recalca.

Navarro asegura que a veces cometemos errores porque nuestro punto de partida no es el correcto y carecemos de información de calidad, fiable o válida. "Otras veces tenemos todo lo que necesitamos para realizar un buen proceso de análisis, pero cometemos errores durante el proceso", prosigue.

Estos errores de pensamiento engloban decenas de sesgos cognitivos o interpretaciones erróneas sistemáticas de la información, como el de subestimar el tiempo que necesitamos para hacer algo.

"¿Les resultan familiares los pensamientos del estilo En un minuto lo hago, me cinco minutos y lo acabo solo será un momento. Finalmente esos cinco minutos acaban siendo dos horas. Este es uno de los sesgos o trampas de nuestra mente, más habituales que tenemos los seres humanos", señala.

El psicólogo Navarro ofrece tres ejemplos de trampas de nuestra mente, que nos conducen a pensar equivocadamente y que limitan nuestras opciones de vivir una vida más feliz, y propone, una manera de "pensar bonito", que nos permite desmontar y desactivar cada una de estas distorsiones cognitivas.

La trampa de la comparación

Esta distorsión del pensamiento se refleja en ideas del estilo "lo hago más o mejor".

"Nos comparamos continuamente, pero solo para salir beneficiados de esa comparación. Si creemos que no vamos a salir beneficiados, rechazamos la comparación y preferimos elegir otra opción que sea mejor para nosotros", según Navarro.

"Cuando te compares con otras personas no olvides que hay personas que lo hacen más que tú, pero también hay quien lo hace menos que tú. También hay personas que están peor que tú, los hay que están mejor", recomienda.

La trampa de la visión limitada

Pensamientos como "tiene que estar aquí o ser así" pueden ser limitantes, según el autor de *Piensa Bonito*.

A veces "nos obcecamos con una opción o alternativa y descartamos el resto. Olvídate de seguir buscando eso que has perdido en el mismo cajón y piensa diferente. Busca en lugares no habituales, abre tu mente y explora. Si estuviera donde crees que debería estar, ya lo habrías encontrado", sugiere.

La trampa de la prueba innecesaria

Las ideas del estilo "por probarlo no pasa nada" pueden llevarnos a pensar equivocadamente, según Navarro.

"Este es uno de los sesgos más recurrentes en situaciones en las que nos debatimos entre lo que queremos hacer y lo que creemos que podemos hacer. Esa prueba es la excusa perfecta para dar el paso hacia lo prohibido y lo desconocido" advierte.

Recalca que "no hace falta probarlo todo. Esto se ve claramente cuando hablamos de cianuro. Entonces ¿por qué nos olvidamos de esta máxima ante una incipiente infidelidad, un robo o un acto poco ético...?", nos invita a reflexionar.

Notificación Pública
Ámbito de Aplicación para una Valoración Medioambiental
Departamento del Navy de los EEUU

Región del Navy del Suroeste
Propuesta sobre la expansión del hábitat de la hierba de anguila

El Navy de los EEUU está preparando una Valoración Medioambiental según El Acto de Sistema Medioambiental (NEPA) para analizar los impactos potenciales de extender el hábitat de la hierba anguila en San Diego, California. El Navy se trata de extender el hábito de la hierba de anguila en uno o más de cinco sitios potenciales de expansión en la bahía de San Diego.

Desde su establecimiento celebrado en 2008, el Navy ha usado créditos en La Región Suroeste de la Bahía de San Diego del Banco para la Mitigación de la Hierba Anguila (el Banco) para compensar los impactos inevitables resultados de proyectos de infraestructura y de actividades de prueba y entrenamiento en la Bahía de San Diego.

Mientras que el Navy se esfuerza por evitar o minimizar impactos a la hierba de anguila y a otros recursos, a veces ocurren impactos a la hierba de anguila. Añadiendo acres al Banco aumentaría la habilidad del Navy para compensar los impactos inevitables en el hábitat de la hierba de anguila dentro de la Bahía de proyectos y actividades del Navy en futuro.

El objetivo de la Acción Propuesta es extender el hábitat de la hierba de anguila en la Bahía de San Diego para apoyar los requisitos de la misión del Navy mientras se asegura la obligación de continuar conservando el ecosistema de la Bahía de San Diego. La necesidad para la Acción Propuesta es asegurar la obligación de continuar conservando y manejando la Bahía de San Diego y sus recursos naturales mientras se facilita la implementación de proyectos y actividades del Navy en el futuro que quizás tengan el potencial de impactar la hierba de anguila.

El Navy solicita comentarios públicos en la etapa más temprano del proceso de NEPA para asegurar que las preocupaciones públicas se consideren y registren correctamente en la Valoración Medioambiental. El público puede participar ayudando a identificar preocupaciones medioambientales y alternativas viables adicionales para ser analizadas en la Valoración Medioambiental. Más información y un folleto informativo para revisar están disponibles en https://www.cnic.navy.mil/navy-southwestprojects.

Comentarios públicos deben ser presentados hasta la terminación del período de ámbito de aplicación, el 27 de enero de 2023. Todos comentarios oportunos y sustanciales serán considerados en la preparación del Borrador Valoración Medioambiental. Comentarios pueden ser mandados a:

Naval Facilities Engineering Systems Command Southwest
Attention: Code EV26.SVR
750 Pacific Highway
(12th Floor, Environmental)
San Diego, CA, 92132-5190
Correo electrónico: navfac_sw_eelgrass_ea_public_outreach@us.navy.mil

Será otra oportunidad para el comentario público cuando el Borrador de Evaluación Ambiental esté disponible para su revisión y comentarios públicos, lo que se espera para el verano de 2023.

AFFP
126567 SCOUT SCOPING ASSESS

Affidavit of Publication

STATE OF CALIFORNIA } SS
COUNTY OF SAN DIEGO }

I am a citizen of the United States and a resident of the county aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principle clerk of the printer of THE STAR-NEWS, a newspaper of general circulation, published ONCE WEEKLY in the city of Chula Vista and the South Bay Judicial District, County of San Diego, which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of San Diego, State of California, under the date of January 18, 1973, Case Number 71752; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

January 06, 2023

That said newspaper was regularly issued and circulated on those dates.
SIGNED:

Subscribed to and sworn by me this 6th day of January 2023.

Chula Vista, San Diego County, California

00008246 00126567

CV- PPR NEW STAR NEWS
296 THIRD AVE.
CHULA VISTA, CA 91910

PUBLIC NOTICE
SCOPING FOR AN ENVIRONMENTAL ASSESSMENT
DEPARTMENT OF THE NAVY
Navy Region Southwest
Proposed Eelgrass Habitat Expansion
The U.S. Navy is preparing an Environmental Assessment pursuant to the National Environmental Policy Act (NEPA) to analyze the potential impacts of expanding eelgrass habitat in San Diego Bay, California. The Navy is seeking to expand eelgrass habitat at one or more of five potential eelgrass habitat expansion sites in San Diego Bay.
Since its celebrated establishment in 2008, the Navy has used credits in the Navy Region Southwest San Diego Bay Eelgrass Mitigation Bank (the Bank) to offset unavoidable impacts from infrastructure projects and testing and training activities in San Diego Bay. While the Navy strives to avoid or minimize impacts to eelgrass and other resources, sometimes impacts to eelgrass from Navy actions are unavoidable. Adding acreage to the Bank would increase the Navy's ability to offset unavoidable impacts to eelgrass habitat within the Bay from future Navy projects and activities. The purpose of the Proposed Action is to expand eelgrass habitat in San Diego Bay to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem. The need for the Proposed Action is to ensure the continued commitment to the conservation and management of San Diego Bay and its natural resources while facilitating the implementation of future Navy projects and activities in San Diego Bay that may have the potential to impact eelgrass.
The Navy is requesting public input at the earliest stage of the NEPA process to ensure that public concerns are considered and appropriately addressed in the Environmental Assessment. The public can participate by helping to identify environmental issues and potential additional viable alternatives to be analyzed in the Environmental Assessment. Additional information including a fact sheet is available to review online at: https://www.cnic.navy.mil/navysouthwestprojects.
Public comments must be submitted by the close of the scoping period on January 27, 2023. All timely and substantive comments will be considered in preparation of the Draft Environmental Assessment. Comments can be submitted to:
Naval Facilities Engineering Systems Command Southwest
Attention: Code EV26.SVR
750 Pacific Highway (12th Floor, Environmental)
San Diego, CA 92132-5190
Email address: navfac_sw_eelgrass_ea_public_outreach@us.navy.mil
There will be another public comment opportunity when the Draft Environmental Assessment is available for public review and comment, which is expected to be in Summer 2023.
Chula Vista Star- News 1/6/2020 126567

DEPARTMENT OF THE NAVY
COMMANDER NAVY REGION SOUTHWEST
750 PACIFIC HIGHWAY
SAN DIEGO CA 92132-0058

5090
N40
29 Dec 2022

Dear Sir or Madam:

SUBJECT: SCOPING FOR AN ENVIRONMENTAL ASSESSMENT FOR EELGRASS HABITAT EXPANSION IN SAN DIEGO BAY, CALIFORNIA

In accordance with the National Environmental Policy Act (NEPA) of 1969, the U.S. Navy is preparing an Environmental Assessment to analyze the potential impacts of expanding eelgrass habitat in San Diego Bay, California. The Navy is requesting public input at the earliest stage of the NEPA process to ensure that community concerns are considered and appropriately addressed. The public can participate by helping to identify environmental issues and potential additional viable alternatives to be analyzed in the Environmental Assessment.

Public comments are requested by the close of the scoping comment period on January 27, 2023. All timely and substantive comments will be considered in preparation of the Draft Environmental Assessment.

Background

Eelgrass is an important and productive benthic habitat in San Diego Bay. Since its celebrated establishment in 2008, the Navy has used credits in the Navy Region Southwest San Diego Bay Eelgrass Mitigation Bank (Bank) to offset unavoidable impacts from infrastructure projects and testing and training activities in San Diego Bay. The Navy anticipates future projects and activities will continue to occur in San Diego Bay. With the implementation of mission-critical projects and activities, the Navy anticipates unavoidable impacts to eelgrass habitat may occur.

The purpose of the Proposed Action is to expand eelgrass habitat in San Diego Bay to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem. The need for the Proposed Action is to ensure the continued commitment to the conservation and management of San Diego Bay and its resources while facilitating the implementation of future Navy projects and activities in San Diego Bay that may have the potential to impact eelgrass.

Proposed Action

Under the Proposed Action, the Navy proposes to add to the existing Bank by expanding eelgrass habitat in San Diego Bay, California. Expanding eelgrass habitat would provide substantial ecological benefits and meet future Navy eelgrass mitigation requirements in San Diego Bay.

Environmental Assessment

The Environmental Assessment will consider all resource areas that may potentially be impacted. The Navy requests you provide input on these resource areas: land use and coastal zone management; transportation and circulation; visual resources; biological resources; utilities; noise; cultural resources; geological resources and sediments; air quality; water resources; hazardous materials and wastes; public health and safety; and environmental justice/socioeconomics.

Potential Alternatives

As depicted in Enclosure 1, the Navy is considering four action alternatives that meet the purpose of and need for the Proposed Action and a No Action Alternative. The Navy would create additional eelgrass habitat in San Diego Bay at one or more of five sites grouped into four alternatives:

- Alternative 1: Outside Ballast Point
- Alternative 2: Naval Training Center (NTC) Channel
- Alternative 3A/3B: Delta Beach to Homeport Island and Homeport Island Submerged Plateau
- Alternative 4: South Silver Strand

NEPA Process

The scoping period is from January 6, 2023, through January 27, 2023. Comments must be postmarked by January 27, 2023. All comments submitted by the due date will be considered in preparation of the Draft Environmental Assessment.

There will be another public comment opportunity when the Draft Environmental Assessment is available for public review and comment, which is anticipated to be Summer 2023. The Navy may hold an information session at that time to inform the public about the Environmental Assessment and solicit comments.

How to Provide Comments

The Navy requests and welcomes your comments on the alternatives and scope of analysis. Written comments may be submitted via email to navfac_sw_eelgrass_ea_public_outreach@us.navy.mil, or via mail to:

Naval Facilities Engineering Systems Command Southwest
Attention: Code EV26.SVR
750 Pacific Highway (12th Floor, Environmental)
San Diego, CA 92132-5190

Additional Information

Additional information including a fact sheet is available to review online at this website: https://www.cnic.navy.mil/navysouthwestprojects. For more information, please visit the website or contact the Navy Region Southwest Beach Public Affairs Officer, Ms. Helen Haase, at 619-532-3496 or helen.k.haase.civ@us.navy.mil.

Sincerely,

J. C. GOLUMBFSKIE-JONES
By Direction
of the Commander

Enclosure: 1. Project Location

3

M&A #14-075-38


0 0.5 1 2
Miles
NTC Channel
Inside Ballast Point
Homeport Island Submerged Plateau
Delta Beach to Homeport Island
South Silver Strand
Potential Eelgrass Site to be Analyzed in the EA
N
W
E
S
Potential Eelgrass Expansion Sites
San Diego Bay, CA
Enclosure 1
Merkel & Associates, Inc.

ENVIRONMENTAL ASSESSMENT FOR EELGRASS HABITAT EXPANSION SAN DIEGO BAY, CA

Public Scoping Fact Sheet

Introduction

Since its celebrated establishment in 2008, the Navy has used credits in the Navy Region Southwest San Diego Bay Eelgrass Mitigation Bank (Bank) to offset unavoidable impacts from Navy infrastructure projects and testing and training activities in San Diego Bay.

While the Navy strives to avoid or minimize impacts to eelgrass and other resources, sometimes impacts to eelgrass from Navy actions are unavoidable. With the implementation of mission-critical projects and activities, the Navy anticipates unavoidable impacts to eelgrass habitat may occur. Adding acreage to the Bank would increase the Navy's ability to offset unavoidable impacts to eelgrass habitat within the Bay from future Navy projects and activities.

The purpose of the Proposed Action is to expand eelgrass habitat in San Diego Bay to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem. The need for the Proposed Action is to ensure the continued commitment to the conservation and management of San Diego Bay and its natural resources while facilitating the implementation of future Navy projects and activities in San Diego Bay that may have the potential to impact eelgrass.

The U.S. Navy is preparing an Environmental Assessment pursuant to the National Environmental Policy Act (NEPA) to analyze the potential impacts of expanding eelgrass habitat in San Diego Bay.

The Navy is requesting public input to ensure that community concerns are considered and appropriately addressed. This fact sheet describes the proposed project and how the public can be involved in the environmental review process.

About the Project

The Navy has identified five potential alternative sites for expanding eelgrass in San Diego Bay (shown on the right):

- Inside Ballast Point
- NTC Channel
- Delta Beach to Homeport Island
- Homeport Island Submerged Plateau
- South Silver Strand

Environmental Assessment

The Navy will evaluate the alternative sites and the No Action Alternative in the Environmental Assessment. The public can participate in the NEPA process by identifying issues and potential alternatives at this time.

Location of the potential eelgrass expansion site alternatives. Note that the two Homeport Island sites are distinct sites.

The Environmental Assessment will consider all resource areas that may potentially be impacted. The Navy requests you to provide input on these resource areas: Land use and coastal zone management; transportation and circulation; visual resources; biological resources; utilities; noise; cultural resources; geological resources and sediments; air quality; water resources; hazardous materials and wastes; public health and safety; and environmental justice/socioeconomics.

The NEPA Process & Public Involvement

The National Environmental Policy Act (NEPA) requires federal agencies to consider the potential environmental impacts of their actions before making a decision. The public has an opportunity to provide input at key phases of the NEPA process:

- **During the public scoping phase**

The public helps to identify environmental issues and potential alternatives to be analyzed in the Environmental Assessment.

- **When the Draft Environmental Assessment is completed**

The public evaluates and comments on the analysis of the Proposed Action and Alternatives.

The Navy is committed to a transparent and thorough environmental review. The public's input helps to ensure all relevant issues are appropriately addressed.

The Navy will use the findings of the Environmental Assessment to determine the next steps in the NEPA process. If it is found that significant environmental impacts would result from the proposed action, which could not be mitigated to less than significant levels, then the preparation of an Environmental Impact Statement would be needed. If the findings indicate that environmental impacts would not be significant, the Navy would prepare a Finding of No Significant Impact, which would describe how the Navy determined the Proposed Action would have no significant impacts. The Navy could then proceed with the selected alternative.

National Environmental Policy Act Process and Estimated Timeline

This schedule is tentative and may be updated.

A type of seagrass, eelgrass is an important and productive benthic habitat in San Diego Bay. Eelgrass habitats rank among the most productive habitats in the ocean and are an important component of the Bay's food web.

How to Submit Comments

Submit written comments to:

Naval Facilities Engineering Systems Command Southwest
Attention: Code EV26.SVR
750 Pacific Highway (12th Floor, Environmental)
San Diego, CA 92132-5190
e-mail: navfac_sw_eelgrass_ea_public_outreach@us.navy.mil

For more information

Contact the Navy Region Southwest Public Affairs Office
619-705-5242
helen.k.haase.civ@us.navy.mil

Comments are requested by the close of the public scoping period on January 27, 2023. All timely and substantive comments will be considered in preparation of the Draft Environmental Assessment.

There will be another public comment opportunity when the Draft Environmental Assessment is available for public review and comment, which is expected to be in Summer 2023.

For additional project information, visit: https://www.cnic.navy.mil/navysouthwestprojects

SCOPING NOTICE FOR EELGRASS HABITAT EXPANSION ENVIRONMENTAL ASSESSMENT
SAN DIEGO BAY, CA

The Navy is conducting public scoping

The U.S. Navy is preparing an Environmental Assessment pursuant to the National Environmental Policy Act to analyze the potential impacts of expanding eelgrass habitat in San Diego Bay, California. Expanding eelgrass habitat would provide ecological benefits and help meet future Navy eelgrass mitigation needs in San Diego Bay.

The Navy is requesting the public provide input to ensure that community concerns are considered and appropriately addressed in the Environmental Assessment. During development of the Environmental Assessment, the Navy will evaluate the potential impacts associated with implementing the Proposed Action and Alternatives.

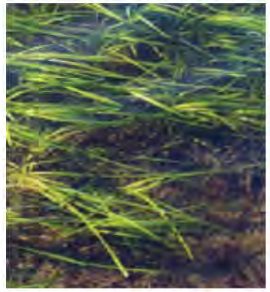
The Navy invites you to provide input

Submit written comments via e-mail to:
navfac_sw_eelgrass_ea_public_outreach@us.navy.mil
Or mail to:
Naval Facilities Engineering Systems Command Southwest
Attention: Code EV26.SVR
750 Pacific Highway (12th Floor, Environmental)
San Diego, CA 92132-5190

For more information visit:
https://www.cnic.navy.mil/navysouthwestprojects
or contact the Navy Region Southwest Public Affairs Officer at:
619-705-5242
helen.k.haase.civ@us.navy.mil

The purpose of the Proposed Action is to expand eelgrass habitat in San Diego Bay to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem.

The need for the Proposed Action is to ensure the continued commitment to the conservation and management of San Diego Bay and its natural resources while facilitating the implementation of future Navy projects and activities in San Diego Bay that may have the potential to impact eelgrass.



Eelgrass is an important and productive benthic habitat in San Diego Bay. Photo: Eelgrass in San Diego Bay. Navy photo

Scoping comments must be submitted by January 27, 2023.

About the Project: The Navy has identified five potential alternative sites for expanding eelgrass habitat in San Diego Bay. The potential sites include Inside Ballast Point, NTC Channel, Delta Beach to Homeport Island, Homeport Island Submerged Plateau, and South Silver Strand. Note that the two Homeport Island area sites are distinct sites located near each other. The Environmental Assessment will analyze these five site alternatives and the No Action Alternative.

For additional information visit: https://www.cnic.navy.mil/navysouthwestprojects

Location of the potential eelgrass expansion site alternatives to be analyzed in the Environmental Assessment

Return Address:
Naval Facilities Engineering Systems Command Southwest
Attention: EV26.SVR
750 Pacific Highway (12th Floor, Environmental)
San Diego, CA 92132-5190

Appendix B
Air Quality Methodology and Calculations

RECORD OF NON-APPLICABILITY (RONA) FOR CLEAN AIR ACT CONFORMITY

ENVIRONMENTAL ASSESSMENT FOR EELGRASS HABITAT EXPANSION IN SAN DIEGO BAY, SAN DIEGO, CALIFORNIA

SAN DIEGO AIR BASIN

INTRODUCTION

The U.S. Environmental Protection Agency (USEPA) published *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule* in the 30 November 1993, Federal Register (40 Code of Federal Regulations [CFR] Parts 6, 51, and 93). The U.S. Department of the Navy (Navy) published *Clean Air Act (CAA) General Conformity Guidance* in OPNAVINST 5090.1E, dated 3 September 2019 and the Navy guidance for compliance with the CAA General Conformity Rule, dated 30 July 2013. These publications provide implementing guidance to document CAA Conformity Determination requirements.

Federal regulations state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way, or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable implementation plan. It is the responsibility of the Federal agency to determine whether a Federal action conforms to the applicable implementation plan, before the action is taken (40 CFR Part 1, Section 51.850[a]).

The General Conformity rule applies to federal actions proposed within areas which are designated as either nonattainment or maintenance areas for a National Ambient Air Quality Standard (NAAQS) for any of the criteria pollutants. Former nonattainment areas that have attained a NAAQS are designated as maintenance areas. Emissions of pollutants for which an area is in attainment are exempt from conformity analyses.

The project would occur within the San Diego Air Basin (SDAB). This portion of the SDAB is currently in severe nonattainment of the 2015 8-hour ozone (O_3) NAAQS and is a maintenance area for carbon monoxide (CO) NAAQS. The SDAB attains the NAAQS for all other criteria pollutants. Therefore, only project emissions of CO and O_3 (or its precursors, volatile organic compounds [VOCs] and oxides of nitrogen [NOx]) are analyzed for conformity rule applicability.

The annual *de minimis* levels for this region are 25 tons of VOC, NOx, and 100 tons of CO, as listed in Table 1. Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* levels (40 CFR Part 1, Section 51.853[b]) and are not regionally significant (totals less than 10 percent of projected regional emissions for that pollutant) (40 CFR Part 1, Section 93.153[b]).

Table 1. Conformity *de minimum* Levels for Criteria Pollutants in the San Diego Air Basin

Criteria Pollutant	*de minimis* Level (tons/year)
Carbon Monoxide (CO)	100
Volatile Organic Compounds (VOC)	25
Oxides of Nitrogen (NO_x)	25

PROPOSED ACTION

Action Proponent: U.S. Navy

Location: San Diego Bay, San Diego, California

Proposed Action Name: Eelgrass Habitat Expansion.

Proposed Action & Emissions Summary: The Proposed Action involves expansion of eelgrass habitat in San Diego Bay to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem. Three alternatives were considered. The alternatives were chosen based on evaluating screening factors to select possible areas for eelgrass habitat expansion. The proposed action includes placement of fill for Alternatives 2 and 3 and hand planting of eelgrass for all alternatives. If the selected alternative requires fill, the fill may be places all at once or in phases. The Proposed Action does not consider nor evaluate the potential impacts associated with dredging suitable material. Separate past, present, and future dredging projects must undergo their own separate sediment testing, disposal permitting, and NEPA analysis prior to placement at the site.

Table 2. Summary of Alternatives

Alt. #	*Site Name*	*Est. Site Size (Acres)*	*Est. Fill Volume (CY)*	*Type of Eelgrass*	*Anticipated Max. Eelgrass Yield (acres)*
1	Ballast Point	10.0	0	*Pacifica*	8.5
2A	Delta Beach to Homeport Island	9.0	63,000	*Common*	7.0
2B	Homeport Island Submerged Plateau	13.0	95,000	*Common*	12.6
3	South Silver Strand	10.0	130,000	*Common*	9.8
Total		**42**	**288,000**		**37.9**

Project Emissions:

This air quality analysis assumes that all emissions related to the proposed action would occur within one year and models estimated emissions for Alternative 3 as the largest project. These emissions represent estimated emissions of all alternatives because the alternatives are very similar in size and scope. This analysis also represents the upper limit of estimated associated emissions, as the project is

unlikely to be completed from start to finish in one year. Therefore, estimated emissions using this approach indicate that any multi-year phasing or would emit less pollutants than estimated.

Table 2 presents the estimated demolition and construction emissions due to implementation of the Proposed Action. Maximum estimated emissions would be below conformity *de minimis* levels. If the project emissions are considered over a multi-year period, the emissions would be even further below the applicable *de minimis* levels.

Table 3. Estimated Emissions Resulting from Implementation of the Proposed Action – Alternative 1

Component	Emissions (tons/year)		
	CO[1]	VOC[2]	NOx[2]
Fill placement and eelgrass planting	9.84	3.56	4.22
de minimis Threshold for GCR (tons/year)	100	25	25

Notes: [1] SDAB is considered a maintenance area for the federal CO standard and is in attainment of the federal SO_2, NO_2, Lead, PM_{10}, and $PM_{2.5}$ standards.
[2] SDAB is a severe nonattainment area for the 8-hour federal Ozone (O_3) standard as of June 1, 2021 (84 FR 29522); VOCs and NO_x are precursors to the formation of ozone.

PROPOSED ACTION EXEMPTION(S)

The Proposed Action is located within a nonattainment and maintenance area; therefore, the Proposed Action is **not** exempt from General Conformity Rule Requirements.

ATTAINMENT AREA STATUS AND EMISSIONS EVALUATION CONCLUSION

The SDAB is a severe nonattainment area for the 8-hour federal O_3 standard; VOCs and NO_x are precursors to the formation of O_3. The SDAB is considered a maintenance area for the federal CO standard.

Emissions associated with the proposed actions were calculated using data presented in Chapter 2 of the EA, general air quality assumptions, and emission factors compiled from the following sources: -

- Emissions calculated based on methodology and data published in U.S. Environmental Protection Agency's (EPA) Motor Vehicle Emission Simulator, 2017,
- CALEE MOD 2020.0.4, an emissions modeling software published by the California Air Resources Board and San Diego County Air Pollution Control District, and
- the International Council on Clean Transportation's Working Paper 16-4, Non- Road emission inventory model methodology.
- CO, VOC, NOx vessel emissions factors from Category 3 engine limits, 40 CFR 1042 Control of Emissions from New and In-Use Marine Compression-Ignition Engines and Vessels. Specifically, 40 CFR § 1042.104 - Exhaust emission standards for Category 3 engines.

The U.S. Navy concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded nor would the project be regionally significant (i.e., greater than 10 percent of the air basins' emission budgets) as a result of implementation of the Proposed Action. Therefore, the Navy concludes that further Conformity Determination procedures are not required, resulting in this Record of Non-Applicability.

RONA APPROVAL

To the best of my knowledge, the information presented in this RONA is correct and accurate, and I concur in the finding that implementation of the eelgrass habitat proposed action does not require a formal CAA Conformity Determination.

Signature: _____ **Date:** _____

4

Emissions Summary Criteria Pollutants
Eelgrass EA

Upper Limit Emission Estimate - Fill Placement and Planting in One Year	Emissions (tons/year)					
	CO	VOC	NOx	SOx	PM10	PM2.5
Fill Placement	0.23	0.06	0.68	0.00	0.04	0.03
Worker Trips	0.97	0.04	0.08	0.00	0.01	0.01
Support Vessels	8.64	3.46	3.46	0.94	0.43	0.39
Total (One Year)	9.84	3.56	4.22	0.94	0.48	0.43
de minimis Threshold for GCR	100	25	25	--	--	--

Note to reviewers: The No Action Alternative would not result in any change in air quality impacts from baseline. Numbers may not add precisely by hand if calculated from this table due to rounding and decimal values not shown. Values are shown in the table rounded to the nearest 100th. The actual calculation result may include values in the 1000th place, and may summarize to a value with a result in the 100th place.
The upper limit of emissions estimated assume all activity occurs in one year.

Emissions Summary Heavy Equipment Usage
Eelgrass EA Upper Limit - All placement in one year

Equipment				Emission Factors (lb/bhp-hr)						Operations			Emissions (lbs/day)						Emissions (tons/year)					
Equipment	Fuel Type	Horsepower (hp)	Load Factor	CO	VOC	NOx	SOx	PM10	PM2.5	Pieces of Equipment	Hours per day	Days in Service	CO	VOC	NOx	SOx	PM10	PM2.5	CO	VOC	NOx	SOx	PM10	PM2.5
Fill Placement																								
Air Compressor	Diesel	50	48	7.69E-03	2.18E-03	1.93E-02	1.08E-05	1.52E-03	--	2	4	62	1.48	0.42	3.71	0.00	0.29	0.26	0.05	0.01	0.11	0.00	0.01	0.01
Barge Crane - 250 ton	Diesel	314	41	5.95E-03	1.50E-03	1.80E-02	1.08E-05	8.38E-04	--	2	4	62	6.13	1.54	18.54	0.01	0.86	0.78	0.19	0.05	0.57	0.00	0.03	0.02
												Total Fill Placement	7.60	1.96	22.24	0.01	1.15	1.04	**0.23**	**0.06**	**0.68**	**0.00**	**0.04**	**0.03**

Assumptions:
- Emissions calculated based on methodology and data published in U.S. Environmental Protection Agency's (EPA) Motor Vehicle Emission Simulator, 2017, CALEE MOD, an emissions modeling software published by the California Air Resources Board and San Diego County Air Pollution Control District, and the International Council on Clean Transportation's Working Paper 16-4, Non-road emission inventory model methodology.

Emissions Summary Onroad Vehicles Trips for Workers
Eelgrass EA

Phase	Vehicle Class	No. of Vehicles Trips (per day)	Speed (mph)	VMT (mi/vehicle-day)	CO		VOCs						NOx		SOx		PM10				Emissions (lbs/day)						Days of Work	Emissions (tons/year)						
					Running Exhaust (g/mi)	Start-up (g/start)	Running Exhaust (g/mi)	Start-up (g/start)	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diumal Evaporative (g/hr)	Running Exhaust (g/mi)	Start-up (g/start)	Running Exhaust (g/mi)	Start-up (g/start)	Running Exhaust (g/mi)	Start-up (g/start)	Tire Wear (g/mi)	Brake Wear (g/mi)	CO	VOC	NOx	SOx	PM10	PM2.5		CO	VOC	NOx	SOx	PM10	PM2.5
Worker Vehicle Trips	Light-duty truck with catalyst	25	35	30	3.019	11.792	0.056	0.867	0.177	0.026	0.047	0.061	0.27	0.586	0.004	0.002	0.01	0.015	0.008	0.013	6.29	0.28	0.51	0.01	0.05	0.05	307.5	0.9673	0.0424	0.0786	0.0011	0.0081	0.0073

mph = miles per hour
VMT = Vehicle Miles Traveled
Conversion of grams to pounds (lb) 453.592

Assumptions:
- Assuming Daily Average of 30 miles driven per worker.

Emissions Summary Marine Vessel Support
Eelgrass EA

								Emission Factors (g/kW-hr)						Emissions (lbs/day)						Emissions (tons/year)					
Equipment Type	Power Rating (kW)	Load (%)	No. of Units	Hours per day	Days/Year	hrs/year	Fuel Consumption (g/kW-hr)	CO	VOC	NOx	SOx	PM10	PM2.5	CO	VOC	NOx	SOx	PM10	PM2.5	CO	VOC	NOx	SOx	PM10	PM2.5
A Year with Dredge Placement and Planting - Estimated upper limit - all fill placement in one year.																									
Tugboats	3,183	85	1	4	43	172	222.33	5.00	2.00	2.00	0.53	0.25	–	140.35	56.14	56.14	14.81	7.02	6.32	3.02	1.21	1.21	0.32	0.15	0.14
Support Boat	1,500	50	1	8	85	680	233.96	5.00	2.00	2.00	0.56	0.25	–	132.28	52.91	52.91	14.69	6.61	5.95	5.62	2.25	2.25	0.62	0.28	0.25
													Demolition Total	272.62	109.05	109.05	29.50	13.63	12.27	**8.64**	**3.46**	**3.46**	**0.94**	**0.43**	**0.39**

Notes:
Conversion of grams to pounds (lb) 453.592

Assumptions:
- All vessels certified for use in California, and operate within 3 nautical miles of the San Diego Air Pollution Control District Boundaries
- Emission Factors further described in supplement tables in this Appendix
- The fractional sulfur content of the fuel is 0.10%
  - Sulfur content of fuel is based on maximum sulfur content of marine diesel fuel for oceangoing vessels promulgated by California Air Resources Board, effective January 2014. (ABS 2018)
- CO, VOC, NOx emissions factors from Category 3 engine limits, 40 CFR 1042 Control of Emissions from New and In-Use Marine Compression-Ignition Engines and Vessels. Specifically 40 CFR § 1042.104 - Exhaust emission standards for Category 3 engines.
- Assume model year 2016 and later engine, over 2000 RPM.
- Assume support vessels are diesel as that provides for the upper maximum of emissions of NOx, a critical chemical to evaluate for air quality impacts due to severe nonattainment.

Emissions Summary: Emission Factor Support for Marine Vessels

Marine Engine Emission Factor and Fuel Consumption Algorithms (in g/kW-hr, for all marine engines)
Taken from EPA420-R-00-002, U.S. Environmental Protection Agency Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data, Table 5-1

Pollutant	Exponent (x)	Intercept (b)	Coefficient (a)
PM	1.5	0.2551	0.0059
NOX	Use 40 CFR § 1042.104 Category 3 Engine limits (see note)		
NO2			
SO2	n/a	n/s	2.3735
CO	Use 40 CFR § 1042.104 Category 3 Engine limits (see note)		
HC (VOC)			
CO2	1	648.6	44.1

Notes:
- n/a is not applicable
- n/s is not statistically significant
- All emission factor (except for SO2) equations (regressions) are in the form of
  Emissions Rate (g/kW-hr) = a * (Fractional Load of Engine Power)-x + b
- SO2 regression equation is:
  Emissions Rate (g/kW-hr) = a * (Fuel Sulfur Flow in g/kW-hr) + b = a * (fuel consumption in g/kW-hr) * (% sulfur in fuel/100) + b (Requires an estimate of the % sulfur in the fuel.)
- Fuel Consumption Estimation Equation is
  Fuel Consumption (g/kW-hr) = 14.12/(Fractional Load) + 205.717
  Where Fractional Load is equal to actual engine output divided by rated engine output (provided in Table 5-2 of EPA420-R-00-002)
  - Non-ocean going vessels do not have separate auxiliary loads (non-engine power) of significance and auxiliary power for the tugs used to complete pier construction are not evaluated).
- CO, VOC, NOx emissions factors from Category 3 engine limits, 40 CFR 1042 Control of Emissions from New and In-Use Marine Compression-Ignition Engines and Vessels. Specifically 40 CFR § 1042.104 - Exhaust emission standards for Category 3 engines.

GHG Emissions Summary
Eelgrass EA

Upper Limit Emission Estimate - Fill Placement and Planting in One Year	Emissions (metric tons/year)			CO2e (metric tons/year)
	CO2	CH4	N2O	
Fill Placement	15.02	0.00	0.01	19.56
Worker Trips	92.14	0.01	0.01	94.38
Support Vessels	1,097.99	0.00	0.00	1,097.99
Total (year)	1,205.15	0.01	0.02	1,211.93
			Draft NEPA Threshold	25,000
			U.S. 2017 Baseline	5,742,600,000
			Construction as a Percent of U.S. Emissions	0.000021%

Notes:

- Note to reviewers: The No Action Alternative would not result in any change in air quality impacts from baseline.
- Numbers may not add precisely by hand if calculated from this table due to rounding and decimal values not shown. Values are shown in the table rounded to the nearest 100th. The actual calculation result may include values in the 1000th place, and may summarize to a value with a result in the 100th place.
- Conversion to metric tons = 1 short ton (2000 lbs) = 0.90718474 metric tons
- CO2e = CO2 equivalents = (CO2 *1)+(CH4*21)+(N2O*310)
- 2017 U.S. Baseline CO2e emissions from EPA 2017. U.S. EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017 https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks
- All work completed in one year

GHG Emissions Summary Heavy Equipment Demolition
Eelgrass EA Upper Limit - All placement in one year

Equipment				Emission Factors (lb/hr)			Operations			Emissions (lbs/day)			Emissions (metric tons/year)		
Equipment	Fuel Type	Horsepower (hp)	Load Factor	CO2	CH4	N2O	Pieces of Equipment	Hours per day	Days in Service	CO2	CH4	N2O	CO2	CH4	N2O
Piling Removal															
Air Compressor	Diesel	50	48	2.23E+01	1.05E-02	2.27E-02	2	4	62	178.40	0.08	0.18	4.98	0.00	0.01
Barge Crane - 250 ton	Diesel	314	41	1.80E+02	1.64E-02	1.68E-01	1	2	62	360.00	0.03	0.34	10.04	0.00	0.01
									Total	538.40	0.12	0.52	**15.02**	**0.00**	**0.01**

Assumptions:

See Emission Summary Heavy Equipment Demolition table for more information.
- Conversion to metric tons = 1 short ton (2000 lbs) = 0.9071847 metric tons

Emissions Summary Onroad Vehicles Trips
Eelgrass EA

Phase	Vehicle Class	No. of Vehicles Trips (per day)	Speed (mph)	VMT (mi/vehicle-day)	CO2		CH4		N2O		Emissions (lbs/day)			Days of Work	Emissions (metric tons/year)		
					Running Exhaust (g/mi)	Start-up (g/start)	Running Exhaust (g/mi)	Start-up (g/start)	Running Exhaust (g/mi)	Start-up (g/start)	CO2	CH4	N2O		CO2	CH4	N2O
Demolition (YEAR 1)																	
Worker Vehicle Trips	Light-duty truck with catalyst	25	35	30	385.95	203.87	0.03	0.05	0.03	0.06	660.63	0.05	0.05	308	92.14	0.01	0.01

mph = miles per hour
VMT = Vehicle Miles Traveled
Conversion of grams to pounds (lb) 453.592

Demolition Assumptions:
- See Emissions Summary Onroad Vehicles Trips Demolition and Construction table for more information.
- Conversion to metric tons = 1 short ton (2000 lbs) = 0.907185 metric tons

Emissions Summary Marine Vessel Support
Eelgrass EA

Equipment Type	Power Rating (kW)	Load (%)	No. of Units	Hours per day	Days/Year	hrs/year	Fuel Consumption (g/kW-hr)	Emission Factors (g/kW-hr) CO2	Emissions (lbs/day) CO2	Emissions (metric tons/year) CO2
A Year with Dredge Placement and Planting - Estimated upper limit - all fill placement in one year.										
Tugboats	3,183	85	1	4	43	172	222.33	700.48	19,662.03	383.50
Support Boat	1,500	85	1	8	85	680	222.33	700.48	18,531.61	714.49
							Demolition (YEAR 1) Total		38,193.64	**1,097.99**

Notes:
Conversion of grams to pounds (lb) 453.592

Assumptions:
- See Emissions Summary Marine Vessel Support Conventional Pier Demolition and Construction table for more information.
- Conversion to metric tons = 1 short ton (2000 lbs) = 0.907185 metric tons

Appendix C
Essential Fish Habitat Assessment

FINAL ESSENTIAL FISH HABITAT ASSESSMENT FOR THE EELGRASS HABITAT EXPANSION IN SAN DIEGO BAY PROJECT

Prepared for:

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Submitted to:

NOAA National Marine Fisheries Service
West Coast Region Protected Resources Division
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June 2023

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ABBREVIATIONS AND ACRONYMS

CEMP	California Eelgrass Mitigation Policy
CFR	Code of Federal Regulations
EFH	Essential Fish Habitat
FMP	Fisheries Management Plan
ft	feet
ft^2	square feet
HAPC	habitat areas of particular concern
m	meters
m^2	square meters
M&A	Merkel & Associates, Inc.
MLLW	Mean Lower Low Water
NAVFAC SW	Naval Facilities Engineering Systems Command Southwest
NBPL	Naval Base Point Loma
NEMS	Navy Eelgrass Mitigation Site
NIWC	Naval Information Warfare Center Pacific
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
SDUPD	San Diego Unified Port District
U.S.C.	United States Code
VRG	Vantuna Research Group

INTRODUCTION

PURPOSE

The U.S. Navy (Navy) is proposing to expand eelgrass habitat in San Diego Bay in order to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem. This action will have effects on Essential Fish Habitat (EFH). The Navy seeks to consult with National Ocean and Atmospheric Administration (NOAA's) National Marine Fisheries Service (NMFS) under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This document provides the required EFH Assessment for use by the Navy, as the lead federal agency, to support consultation with NMFS regarding effects of that action on EFH and federally managed species.

ESSENTIAL FISH HABITAT BACKGROUND INFORMATION

The Magnuson-Stevens Act requires Federal action agencies to consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). The EFH Guidelines (50 CFR 600.05 - 600.930) outline the process for Federal agencies, NMFS and the Fishery Management Councils to satisfy the EFH consultation requirement under Section 305(b(2)-(4)) of the Magnuson-Stevens Act. As part of the EFH consultation process, the guidelines require Federal action agencies to prepare a written EFH Assessment describing the effects of that action on EFH and federally managed species (50 CFR 600.920(e)(1)). The EFH assessment (EFHA) is a necessary component for efficient and effective consultations between a federal action agency and NMFS.

Definitions

EFH consist of those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity (16 U.S.C. 1802(10)). The following definitions apply to the sections of this document that address potential project impacts and protective measures:

- Waters - Aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate (50 CFR 600.10).
- Substrate - Sediment, hard bottom, structures underlying the waters, and associated biological communities (50 CFR 600.10).
- Necessary - The habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem (50 CFR 600.10).
- Healthy ecosystem - An ecosystem where ecological productive capacity is maintained, diversity of the flora and fauna is preserved, and the ecosystem retains the ability to regulate itself. Such an ecosystem should be similar to comparable, undisturbed ecosystems with regard to standing crop, productivity, nutrient dynamics, trophic structure, species richness, stability, resilience, contamination levels, and the frequency of diseased organisms (50 CFR 600.810(a)).
- Adverse effect - Any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810(a)).

Essential Fish Habitat within the Action Area

The waters of San Diego Bay within which the proposed action occurs have been designated as EFH under the Pacific Groundfish Fishery Management Plan (Groundfish FMP) and the Coastal Pelagic Species Fishery Management Plan (Coastal Pelagic FMP).

Habitat Areas of Particular Concern within the Action Area

EFH guidelines published in Federal regulations identify habitat areas of particular concern (HAPC) as types or areas of habitat within EFH that are identified based on one or more of the following considerations (50 CFR 600.815(a)(8)):

- The importance of the ecological function provided by the habitat;
- The extent to which the habitat is sensitive to human-induced environmental degradation;
- Whether, and to what extent, development activities are or will be stressing the habitat type; and
- The rarity of the habitat type.

Under the Groundfish FMP HAPC has been designated (Pacific Fishery Management Council [PFMC] 2022). Pacific Groundfish HAPCs potentially occurring within the project area include estuarine and seagrass habitat.

Estuaries are protected nearshore areas such as bays, sounds, inlets, and river mouths, influenced by ocean and freshwater. Because of tidal cycles and freshwater runoff, salinity varies within estuaries and results in great diversity, offering freshwater, brackish and marine habitats within close proximity (PFMC 2022). Given the large scale of San Diego Bay combined with the low rainfall environment resulting in limited freshwater influence associated with creeks and drainage, the regions of the bay within which the action sites are located are fully marine year-round and do not meet the estuary definition. However, drainages entering San Diego Bay (e.g., Sweetwater River, Otay River) are considered to be estuaries but are not located near the action area alternatives.

The Groundfish FMP has designated EFH that includes San Diego Bay and has designated seagrass as HAPC (Pacific Fishery Management Council [PFMC] 2022). Eelgrass is a seagrass that forms marine meadows supporting multiple ecological functions including sediment stabilization, wave dampening, carbon cycling, nutrient uptake, and habitat structuring. Eelgrass beds provide unique nursery and adult fish and invertebrate habitat within and adjacent to meadows due to both the three-dimensional architecture of beds, but also detrital enrichment of the surrounding area.

San Diego Bay supports two seagrass species, common eelgrass (*Zostera marina*) and Pacific eelgrass (*Z. pacifica*). Pacific eelgrass is found in the outer bay from Ballast Point seaward while common eelgrass is found within shallows within the inner bay ecoregions. Eelgrass is found on soft-bottom substrates in intertidal and shallow subtidal areas of the bay. The distribution of eelgrass is tracked through regular baywide eelgrass surveys conducted under commitments within the San Diego Bay Integrated Natural Resource Management Plan (INRMP, Navy and Port 2013). The most recent eelgrass survey was completed in 2020 (Merkel & Associates 2020).

PROPOSED ACTION

The purpose of the proposed action is to expand eelgrass habitat in San Diego Bay to support Navy mission requirements while ensuring the continued commitment to conservation of the San Diego Bay ecosystem. The creation of additional eelgrass habitat in San Diego Bay would provide ecological benefits and add eelgrass mitigation credits to the existing Navy Region Southwest San Diego Bay Eelgrass Mitigation Bank

(Bank). Presently the Bank includes six Navy Eelgrass Mitigation Sites (NEMS), NEMS 1, 2, 4, 5, 6, and 7 (Figure 1). Since the establishment of the Bank, the Navy has used credits in the Bank to offset unavoidable impacts to eelgrass and other habitats from infrastructure projects and testing and training activities in San Diego Bay. The Navy anticipates future projects and activities will continue to occur in San Diego Bay. With the implementation of mission-critical projects and activities, the Navy anticipates unavoidable impacts to eelgrass habitat may occur.

Under the Proposed Action, the Navy would create additional eelgrass habitat in San Diego Bay at one or more of the identified sites grouped into three alternatives as follows (Figure 1):

- Alternative 1: Ballast Point
- Alternative 2:
    - Delta Beach to Homeport Island (2A), and;
    - Homeport Island Submerged Plateau (2B)
- Alternative 3: South Silver Strand

Table 1 summarizes the proposed sites and their respective size, fill volume, and anticipated eelgrass yield characteristics. Of the five potential sites, four are sites that would support common eelgrass (*Zostera marina*) and would involve placement of dredge material fill to raise the bay floor to elevations suited to support eelgrass and accommodate predicted sea level rise. These raised plateaus would then be planted with bareroot eelgrass planting units. One site (Alternative 1 - Ballast Point) would support Pacific eelgrass (*Z. pacifica*) and would not be filled but rather would only be planted, as this site supported Pacific eelgrass up to between 2004 and 2008 but has since been devoid of eelgrass and recruitment of eelgrass back to the area has not occurred.

Table 1. Potential Eelgrass Expansion Site Alternatives and Key Characteristics

Alt. #	Site Name	Est. Site Size (Acres)	Est. Fill Volume (CY)	Type of Eelgrass	Anticipated Max. Eelgrass Yield (acres)*
1	Ballast Point	10.1	0	*Pacific*	8.5
2A	Delta Beach to Homeport Island	9.0	63,000	*Common*	7.0
2B	Homeport Island Submerged Plateau	13.0	95,000	*Common*	12.6
3	South Silver Strand	10.0	130,000	*Common*	9.8
Total		**42.0**	**288,000**		**37.9**

*Maximum yield of a site reflects a value discounting related to the intermittent presence of some eelgrass within the alternative site.

At all sites, long-term baywide surveys conducted under the San Diego Bay Integrated Natural Resources Management Plan (INRMP, Navy and Port 2013) have demonstrated some minor presence of eelgrass plants within the eelgrass expansion sites that occur on an infrequent basis. While this ephemeral presence of eelgrass is expected to diminish with sea level rise, due to increasing water depth and diminishing light within the areas to be raised, the partial value of the unrestored sites to eelgrass habitat must be accounted for in the eelgrass yield of the site. To do this, the spatial and temporal frequency of eelgrass occurrence has been derived from multiple baywide eelgrass surveys. The maximum eelgrass credit yield was then determined using the Five-Step Wetland Mitigation Ratio Calculator (King & Price 2004) that has been incorporated into the California Eelgrass Mitigation Policy (CEMP, National Marine Fisheries Service 2014).


M&A #14-075-44
0 0.5 1 2 Miles
NORTH
San Diego
NORTH CENTRAL
NEMS-5
NEMS-2
Coronado
NEMS-7
San Diego Bay
National City
Ballast Point
Homeport Island Submerged Plateau
NEMS-6
OUTER BAY
Delta Beach to Homeport Island
NEMS-4
NEMS-1
SOUTH CENTRAL
South Silver Strand
Chula Vista
SOUTH
Imperial Beach
Existing NEMS Site
Potential Aquatic Habitat Enhancement Sites
Note: There is no NEMS-3 and the process for establishing NEMS-7 is underway.
N
W
E
S
Alternative Eelgrass Expansion SIte
Eelgrass Habitat Expansion in San Diego Bay
San Diego Bay, CA
Figure 1
Merkel & Associates, Inc.

By multiplying the percent of the site area that has previously supported eelgrass by the percent of prior baywide surveys (1993-2020) that have detected eelgrass at the occupancy locations within the site (Merkel & Associates 2020), the level of habitat function for eelgrass, prior to restoration, is determined. This value is then entered into the mitigation ratio calculator and has a diluting yield effect on the total resulting eelgrass value produced at the site.

The calculated site yield does not consider potential eelgrass growing down shallow side slopes of a filled site. As a result, the ultimate yield of the restoration may vary in the post-restoration condition; however, the discount of pre-existing eelgrass will be considered in the overall site yield. Under the Proposed Action, the Navy would establish and plant the site, maintain, and monitor the site, and then use the site's created credits to offset future unavoidable impacts to eelgrass from future Navy projects.

SITE ESTABLISHMENT AND PLANTING ACTIVITIES

In the first phase of project work, physically and chemically suitable dredged material derived from San Diego Bay maintenance dredging or new excavation projects would be deposited at the proposed common eelgrass site(s) as needed.[1] Dredge material delivered to the eelgrass expansion site(s) would be limited to that material determined by U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA) to be physically and chemically suitable for unconfined aquatic disposal under Inland Testing Manual criteria (USEPA and U.S. Department of the Army 1998). Barges, scows, and/or other vessels would transport the material to the selected site whereupon the material would be placed within the designated site boundaries.

Suitable material could be delivered in multiple phases or all at once. The duration of the site preparation activities would depend upon how many different dredging projects the site would need to eventually contribute enough suitable material to reach the site's intended size. On average, the Navy anticipates that one or two projects per year might have suitable material with an approximate annualized, but highly variable, diversion rate of 50,000 cubic yards of sediment being sent to the San Diego (LA-5) Ocean Dredged Material Disposal Site. Naval Base San Diego, Naval Base Coronado, and Naval Base Point Loma have recurring maintenance dredging projects. In addition, there are occasional in-water construction projects that could be candidates for providing material for the eelgrass habitat expansion site, as needed. Once sufficient substrate exists at the eelgrass expansion site, the Navy would smooth/grade the area and prepare it for planting. This may be completed under the final fill contract, or separate contract and is expected to be performed by clamshell redistribution of sediment within the sites as may be necessary and sweeping the site with a clamshell dredge bucket or excavator on a deck barge to flatten high points and fill low points. A shallow draft barge would be navigated over the fill and the bottom would be systematically flattened to the desired site elevations. This final grading work effort is generally expected to require a few days to a few weeks to complete depending on the overall degree of variance in the height of the original fill placement events. Final site preparation for planting may be conducted with each fill placement over a portion of the site, or at the end of the placement.

Because of the potential phased nature of fill material delivery, it is anticipated that some portions of the site would likely support naturally recruiting eelgrass as an interim condition while the site continues to be filled. When this happens, an increased function of the partially complete site would develop; however, until the site is finished, the developed eelgrass would not be considered as either mitigation credit or impacted habitat until the site is completed. This would be considered an acceptable and temporary impact of the Proposed Action.

[1] The dredging activity would be subject to separate National Environmental Policy (NEPA) and EFH analysis.

For Alternative 1, Ballast Point, because the existing site already has sufficient depth to support eelgrass planting, no suitable material is needed to establish the site. The other alternatives would all require the placement of suitable sediment prior to planting.

After a site, or phase of the site, is brought to the desired final elevations, the site would be revegetated following established standard practices of transplanting eelgrass from natural donor beds as anchored bareroot planting units. Donor eelgrass beds are expected to be located within San Diego Bay. Diver biologists would hand-extract turions (leaf shoots and rhizomes) from existing donor eelgrass beds at a rate of 10 percent or less of the available shoots within the donor beds. The crews would then process planting units and then plant these into the expansion site at a density of 1 planting unit per square meter of the site. In cases where eelgrass beds are to be impacted by separate project activities elsewhere in the bay, harvesting may be raised from 10 percent to as much as 100 percent in an eelgrass material salvage to be used in the habitat restoration.

SITE USES FOLLOWING RESTORATION

None of the alternative sites being considered are expected to require placement of hard substrate (e.g., rock buttresses) to anchor or stabilize the sites. For common eelgrass sites where the bay floor elevations would be raised, the Navy would coordinate with the NOAA and U.S. Coast Guard to add the site(s) to bay navigation charts. Although not currently anticipated, additional shoal markers may be required. Should it be determined that shoal markers are necessary to accommodate navigation needs, this would include the placement of one to three piles and shoal signage.

Under present conditions, waters over the proposed eelgrass expansion sites are subject to various surface and in-water activities by the public and military users; these include boating, navy training, and fishing. With the Project Action, no changes are proposed. The waters over the eelgrass sites are not proposed to be closed and on-going navigation and training operations are not proposed to be modified as a result of the eelgrass expansion. Eelgrass sites were specifically selected based on avoiding incompatibility with existing and future site uses.

ESSENTIAL FISH HABITAT

GEOGRAPHIC EXTENT OF EFH

The overall extent of groundfish EFH is identified as all waters and substrate within depths less than or equal to 3,500 m to mean higher high water level (MHHW) or the upriver extent of saltwater intrusion, defined as upstream and landward to where ocean-derived salts measure less than 0.5 ppt during the period of average annual low flow, seamounts in depths greater than 3,500 m as mapped in the EFH Assessment geographic information system (GIS), and areas designated as HAPCs not already identified by prior criteria (PFMC 2022).

Under the Coastal Pelagic Species FMP, EFH is defined to be all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington offshore to the limits of the EEZ and above the thermocline where sea surface temperatures range between 10°C to 26°C. The southern boundary of EFH is the United States-Mexico maritime boundary while the northern boundary is defined as the position of the 10°C isotherm, which varies seasonally and annually (PFMC 2021).

As a result of the broad EFH definitions under the groundfish FMP and coastal pelagic FMP, all tidal waters of San Diego Bay to MHHW are EFH under both plans. All the alternative sites in this assessment occur fully within EFH.

PHYSICAL SITE CONDITIONS

San Diego Bay is a naturally formed, elongated embayment that was historically formed at lower sea levels by confluent river valleys of the Otay River and Sweetwater Rivers that enter into the southern end of the bay and were joined by multiple small coastal drainages (e.g., Telegraph Creek, Paradise Creek, Paleta Creek, Chollas Creek, and Maple Canyon) as the rivers flowed towards the north within the bay. The coastal valley orientation was defined by the sand beach strand of the Silver Strand peninsula that separated the valley from the Pacific Ocean in the lee of the prominent Point Loma headlands. As sea level rose, Silver Strand built up with littoral sand deposits and the coastal valley was flooded creating San Diego Bay. San Diego Bay is a 10,994-acre bay located between the City of San Diego to the north and east, the cities of National City, Chula Vista, and Imperial Beach to the east and south, and the City of Coronado to the south and west. San Diego Bay represents the largest marine embayment in southern California. It is approximately 15.5 miles in length and contains 54 miles of shoreline. The bay ranges in depth from intertidal flats to approximately 74 feet in a scour hole at the tip of Ballast Point at the mouth of the bay. Historic dredging and filling have occurred over much of the bay with the only natural shallow bay bathymetry occurring in the southern portion of the bay south of the Sweetwater River and a shallow subtidal plateau to the west of the Naval Amphibious Base in Coronado (Navy and Port 2013). About half of the Bay is less than 15 ft deep and most of it is less than 50 ft deep (Merkel & Associates, Inc. 2009).

The San Diego Bay Integrated Natural Resources Management Plan (INRMP) differentiates habitats by depth, with intertidal habitat encompassing the area between +7.8 to -2.2 ft (+2.4 m to -0.7 m) mean lower low water (MLLW), shallow subtidal habitat between -2.2 and -12 ft (-0.7 and -3.6 m) MLLW, moderately deep subtidal habitat between -12 and -20 ft (-3.6 and -6.1 m) MLLW, and deep subtidal habitat deeper than -20 ft (-6.1 m) MLLW [Navy and San Diego Unified Port District (SDUPD) 2013]. Deep and moderately deep habitats maintain similar biological functions, while shallow habitat has the potential to support greater primary productivity, and overall greater diversity of habitats and ecological communities. Due to the rapidly diminishing ecological function with increasing depth in the shallow subtidal, there has been some movement towards splitting the waters at a depth of -6 feet to create a new very shallow subtidal habitat class due to recognition that this very shallow band tends to be notably more productive even than the slightly deeper waters in the shallow subtidal habitat zone.

Due to the large size of San Diego Bay and differences in characteristics within the bay (e.g., bathymetric, hydrologic, thermal, biological) the bay has been subdivided into ecoregions with shared characteristics. These ecoregions extend from the mouth of the bay to the southern end of the bay and are identified as follows within the INRMP (Outer, North, North-Central, South-Central, and South) (Figure 1).

The Outer Bay is exposed to oceanic conditions with swell and wave climates emanating from the south and southwest. The North and North Central Ecoregions of the bay have generally been heavily urbanized and developed with waterfront commercial, industrial, and military uses. Within the South-Central Ecoregion, the eastern shoreline of the bay is developed to heavy military uses, while the western side of the bay remains relatively natural and is principally used for military training and recreational purposes. The South Ecoregion supports expansive natural shallows with few dredged navigation channels primarily

serving recreational vessels. The waters of this ecoregion are surrounded by a combination of conservation, residential, and commercial uses.

The proposed eelgrass expansion sites are distributed within three bay ecoregions: Outer Bay, North Bay, and South-Central Bay. These areas are located within areas in which the Navy has the greatest presence in the bay relative to both developed infrastructure and training activities that may affect eelgrass.

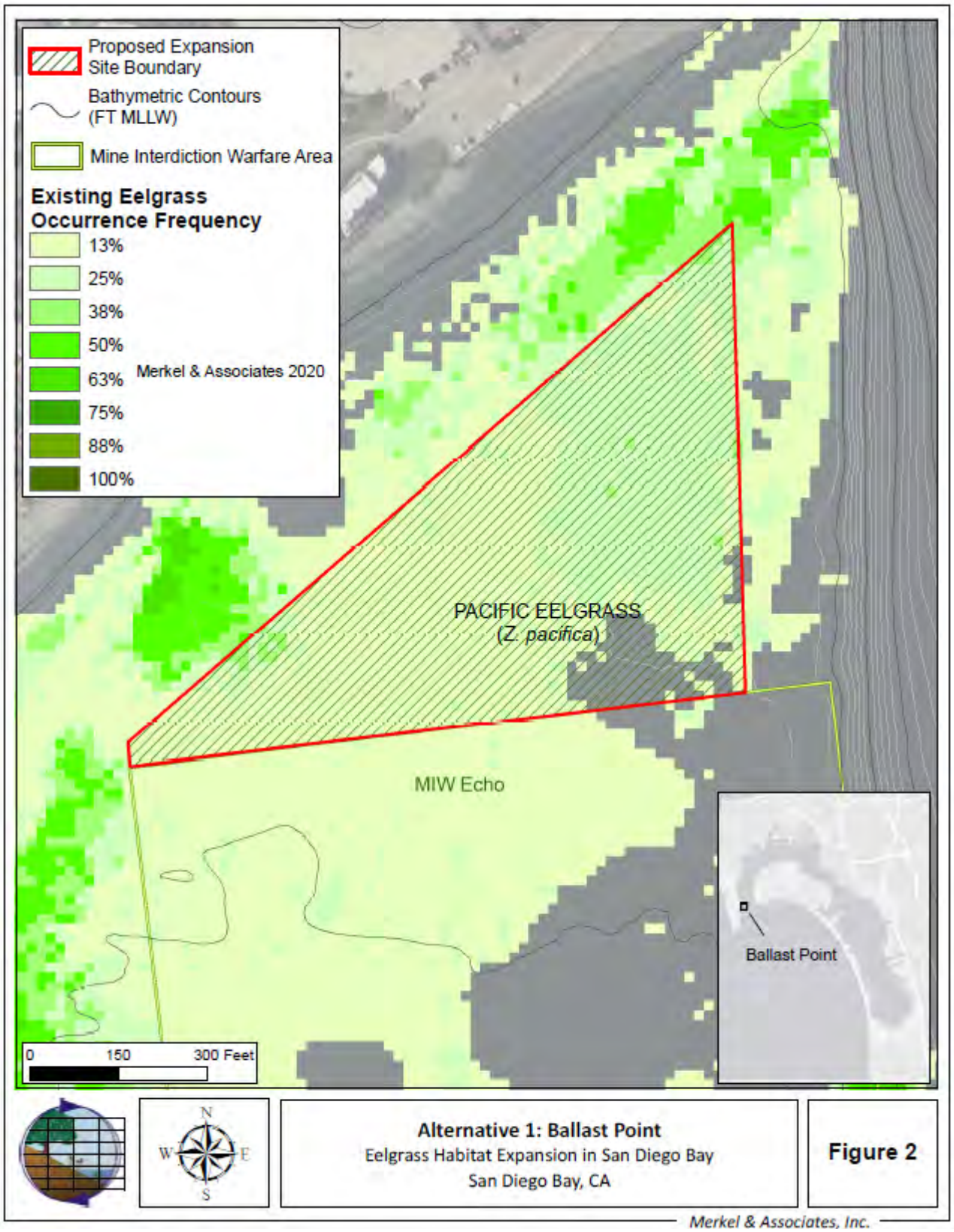
Individual Alternative sites are described below with tabular summaries of habitat areas by depth zone following the summaries.

ALTERNATIVE 1 – BALLAST POINT

Alternative 1 is a proposed restoration site for Pacific eelgrass and is located to the south of Ballast Point in the Outer Bay (Figure 2). This area is a 10.0-acre site located in waters ranging from -7 to -10 feet MLLW. This is a shallow depth for Pacific eelgrass. This area off of Ballast Point historically supported healthy beds of Pacific eelgrass in the early to mid-1990s. The beds declined dramatically between 2004 and 2008 and beds have not recovered since. High surf and surges from Hurricane Marie in August 2014 further scoured the site and reduced the amount of eelgrass present in the area. It is believed that Pacific eelgrass has not recovered in the area due to difficulty in recruiting seed into the area because of the presence of the San Diego Bay entrance channel, Zuniga Jetty, and prevailing swell direction coupled with low overall natural recruitment by this species.

The site is proposed to be unmodified by fills and to be planted using eelgrass harvested from Pacific eelgrass beds located to the east of Zuniga Jetty. The history of prior eelgrass presence at the site both promotes the likelihood of restoration success and discounts the net mitigation value due to a discounting of the ecological lift using the wetland mitigation calculator. As a result, this site would yield a mitigation credit value of 85 percent of the established eelgrass area.

At present, the Ballast Point site supports shallow subtidal unvegetated soft bottom habitat (-2.2 to -12 feet MLLW). The substrate is sand with weathered long-period wave ripples suggesting prior damage from large wave events. This area is subjected to infrequent large storms that can adversely impact eelgrass habitat. As a result, eelgrass within this site may fluctuate over time based on storm damage. However, monitoring under the Navy's Eelgrass Bank, uses annual surveys of the NEMS to develop a running 4-point average to quantify available eelgrass credits within the Bank (i.e., the last four monitoring years are averaged to determine eelgrass credits within the site). This dampens the influence of natural perturbations within the site.


Proposed Expansion Site Boundary
Bathymetric Contours (FT MLLW)
Mine Interdiction Warfare Area
Existing Eelgrass Occurrence Frequency
13%
25%
38%
50%
63%
75%
88%
100%
Merkel & Associates 2020
PACIFIC EELGRASS
(Z. pacifica)
MIW Echo
Ballast Point
0
150
300 Feet
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Alternative 1: Ballast Point
Eelgrass Habitat Expansion in San Diego Bay
San Diego Bay, CA
Figure 2
Merkel & Associates, Inc.

ALTERNATIVE 2A/2B – DELTA BEACH TO HOMEPORT ISLAND AND HOMEPORT ISLAND SUBMERGED PLATEAU

Alternative 2 consists of two sites – Alternative 2A, Delta Beach to Homeport Island and Alternative 2B, Homeport Island Submerged Plateau (Figure 3). Because these two sites are located near each other and adjacent to the existing Homeport Island, they share many of the same existing environmental conditions. Therefore, this EFH Assessment evaluates both sites as one alternative.

Alternative 2A: Delta Beach to Homeport Island

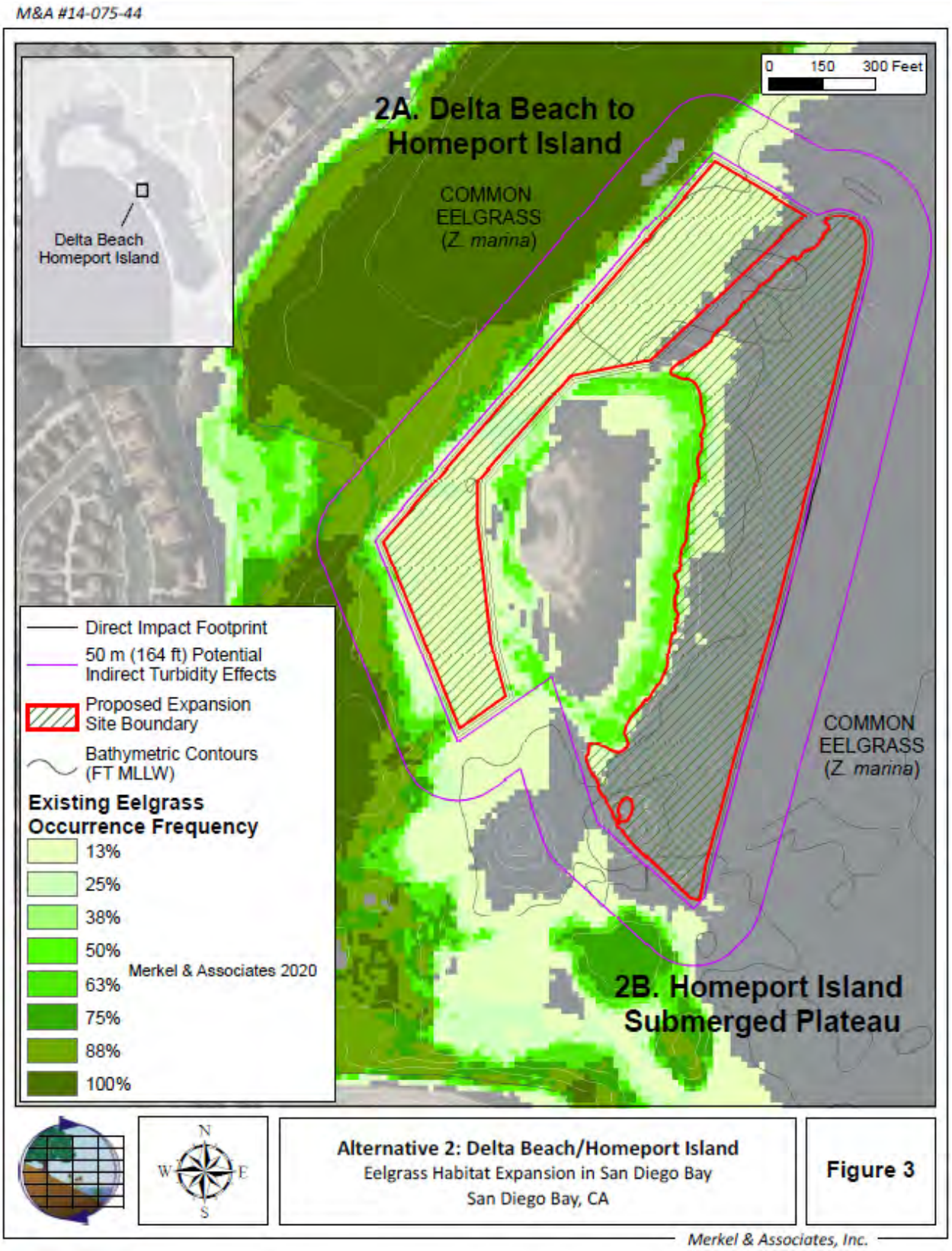
Delta Beach to Homeport Island is a 8.0-acre site located adjacent to Naval Amphibious Base Coronado shoreline to the west and Homeport Island to the south and east. North Delta Beach is located to the southwest of the southern end of this site. The anticipated maximum eelgrass yield for this site is approximately 7.0 acres of common eelgrass. To construct this site would require the import of suitable soft sediment material to raise the bay floor from an existing depth of approximately -10 feet MLLW to approximately -5 feet MLLW. The Navy would place suitable material (mud or sand fill) between the existing Homeport Island and the shoreline to shallow the gap between the shoreline and island. To fully construct this site would require the import of approximately 63,000 CY of sand and/or mud fill from one or more dredging projects. The Navy would place the fill opportunistically from one end of the site to the other. As the site is already located in a marked shallow zone, the Navy does not anticipate the need to install additional mariner notification/navigation signs.

This site is located within the Silver Strand Training Complex-North Delta II and Delta III training areas. Navy training activities in these areas consist primarily of hydrographic reconnaissance, beach insertion training via shallow-draft vessels, helicopter-based rappelling and recovery, motorized and paddle-powered small craft and boat navigation, communications training, swimmer and diver training, physical readiness training, and other relatively low-impact and shallow-draft activities (Navy 2011). The site construction at a crest elevation of -5 feet would provide adequate draft for on-going training operations that would not be altered by the eelgrass habitat development. The waters over the eelgrass sites are not proposed to be closed to on-going navigation or training operations.

This site presently supports a combination of unvegetated shallow subtidal soft bottom and vegetated shallow soft bottom with eelgrass extending into deeper waters of the site. The frequency of eelgrass occupancy within this alternative is a generally 13 percent, with areas of 0 percent and 25 percent. The bottom is soft mud with considerable evidence of benthic infaunal organisms.

Alternative 2B: Homeport Island to Submerged Plateau

Homeport Island Submerged Plateau is a 13.0-acre site also located adjacent to Naval Amphibious Base Coronado and within the originally contemplated Homeport Island footprint. This site is contained on the south and north ends by two submerged rock jetties extending from the island that forms the western containment. At the time Homeport Island was constructed sandy sediment dredged from the Naval Base Coronado aircraft carrier basin was pumped as a slurry down to the site and used to build up an intertidal island feature. The submerged jetties were used to contain the slurry placement. The volume of material was not realized in the project due to diversion of sediment to offshore disposal. As a result, the island was constructed to approximately one third of its original design size. At this site, sediment would be placed on the east side of Homeport Island between the containment jetties to create an east facing submerged plateau at an elevation of -5 feet MLLW. The fill would require approximately 95,000 CY of sand and/or mud fill. As the site is already located in a marked shallow zone with navigational signs, the Navy would not need to install additional mariner notification/navigation signs.


M&A #14-075-44
0 150 300 Feet
2A. Delta Beach to Homeport Island
COMMON EELGRASS (Z. marina)
Delta Beach
Homeport Island
Direct Impact Footprint
50 m (164 ft) Potential Indirect Turbidity Effects
Proposed Expansion Site Boundary
Bathymetric Contours (FT MLLW)
Existing Eelgrass Occurrence Frequency
13%
25%
38%
50%
63%
75%
88%
100%
Merkel & Associates 2020
COMMON EELGRASS (Z. marina)
2B. Homeport Island Submerged Plateau
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Alternative 2: Delta Beach/Homeport Island
Eelgrass Habitat Expansion in San Diego Bay
San Diego Bay, CA
Figure 3
Merkel & Associates, Inc.

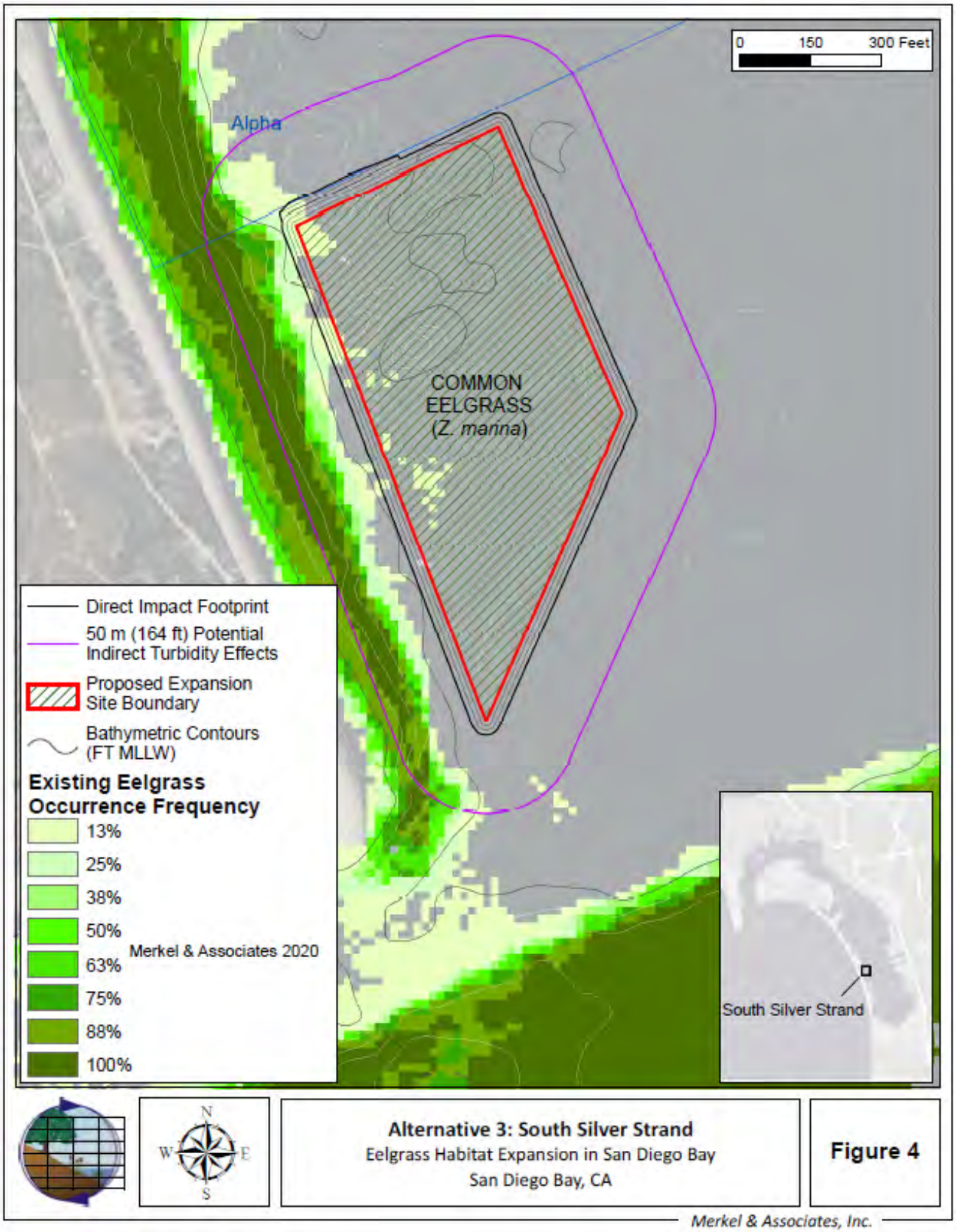
At the present time, the site predominantly supports unvegetated shallow soft bottom habitat at elevations between -10 and -12 feet MLLW. Along the east side of the island is a fringing eelgrass bed that extends into the proposed fill at a frequency of 13 percent presence. This results in a maximum potential yield of 12.6 acres of eelgrass credit. The site supports a substrate of soft mud bottom with considerable evidence of benthic invertebrate activity being present. On the west side of the proposed site, a steep sandy slope rises up the face of the hydraulically placed Homeport Island and would serve as a buttress to the fill placed here.

Homeport Island Submerged Plateau is located within the Silver Strand Training Complex-North Delta II and Delta III training areas. The same type of Navy training activities as presented above for Delta Beach to Homeport Island occur in and adjacent to this site. These activities would not be altered under the proposed eelgrass expansion alternative.

ALTERNATIVE 3 – SOUTH SILVER STRAND

Alternative 3 is a 10.0-acre site located along the Silver Strand just north of the entrance to Crown Cove (Figure 4). The anticipated maximum eelgrass yield for this site is approximately 9.8 acres of common eelgrass. For this site, an area would be filled to extend the shoreline fringe eelgrass beds bayward. The site would be raised from an existing depth of approximately -12 feet MLLW up to approximately -5 feet MLLW. Based on existing bathymetry, the Navy would need to import approximately 130,000 CY of sand and/or mud fill. The site is located near Crown Cove (an area used by recreational boaters); as a result, the Navy would install a mariner notification/navigation sign on a day marker piling off the southeastern tip of the fill plateau to demarcate the shallow water.

The site presently supports predominantly unvegetated shallow subtidal habitat with a very small number of eelgrass plants on the bay floor and a slight amount of low frequency eelgrass extending into the shoreward margin of the fill. The bottom is comprised of soft mud and shows considerable evidence of benthic infaunal activities.


0 150 300 Feet
Alpha
COMMON EELGRASS (Z. marina)
Direct Impact Footprint
50 m (164 ft) Potential Indirect Turbidity Effects
Proposed Expansion Site Boundary
Bathymetric Contours (FT MLLW)
Existing Eelgrass Occurrence Frequency
13%
25%
38%
50%
63%
75%
88%
100%
Merkel & Associates 2020
South Silver Strand
N
W
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Alternative 3: South Silver Strand
Eelgrass Habitat Expansion in San Diego Bay
San Diego Bay, CA
Figure 4
Merkel & Associates, Inc.

HABITAT SUMMARIES ACROSS ALTERNATIVE SITES

The project alternatives include both vegetated (eelgrass) and unvegetated bay floor habitats distributed across depth zones defined in the INRMP. Where eelgrass has been present, it has generally been limited to intermittent occurrence as scattered plants that occur at deeper bay depths during periods of particularly clear water, such as during prolonged drought. For unvegetated soft bottom and eelgrass habitat areas, the long-term eelgrass frequency of occurrence has been factored into each site in order to address reduced functional lift associated with expansion of eelgrass in areas with a history of intermittent presence of eelgrass over time.

To address intermittent eelgrass presence, the site eelgrass functional lift must be discounted. This is done based on the area and frequency of eelgrass occupancy through time. It is most appropriate to considering eelgrass occupancy within the sites as the area over which eelgrass has occurred times the frequency over which eelgrass has been present. This provides an eelgrass area equivalence of persistent eelgrass within the sites. For example, at Ballast Point, eelgrass was historically present within the project site over 5.67 acres in one of eight surveys (12.5 percent). Eelgrass was present over 3.59 acres of the site in two of eight surveys (25 percent), 0.13 acres during three of eight surveys (37.5 percent), and 0.001 acres in four of eight surveys (50 percent). When these are combined by multiplying each area times the corresponding frequency of occupancy and summing all results, the total eelgrass occupancy level is determined based on an equivalence of stable occupied area. In this case the areas would be 1.66 acres ((5.67 ac. * 0.125) +(3.59 ac. * 0.250) +(0.13 ac. * 0.375) + (0.001 acres * 0.500) = 1.66 acres). Note that the eelgrass occurrence within the planting area in 2020 was 0.03 acre, well below the frequency weighted extent of eelgrass occupancy.

Following the determination of the acres of eelgrass presence standardized to a 100 percent occupancy level, the level of habitat function for eelgrass, prior to restoration, was determined as a percent by dividing this eelgrass area by the total footprint area of the site and multiplying by 100. This resulting value was used in the Five-Step Wetland Mitigation Ratio Calculator (King & Price 2004) to determine the discounted credit yield that can be achieved within each site. The calculated discounted credit yield is necessary to ensure that pre-action eelgrass values are accounted for and subtracted from the functional lift value garnered from the site restoration.

The calculated persistent eelgrass equivalent at each site is presented in the habitat summary table that breaks down the distribution of the site area across subtidal habitat zones. All eelgrass occurs within the shallow subtidal zone at the proposed alternative sites. As a result, the calculated eelgrass coverage over time was subtracted from the total area of this zone to determine the unvegetated shallow subtidal area. Table 2 presents the habitat distribution results across all of the alternative sites. This table reflects the anticipated direct impact levels associated with the eelgrass expansion alternatives.

Table 2. Direct Habitat Impacts from Eelgrass Habitat Expansion in San Diego Bay

Subtidal Habitat Type	Subtidal Habitat Zone		
	Shallow (-2.2' to -12' MLLW)	Moderately Deep (-12' to -20' MLLW)	Total
	Acres		
Alternative 1 – Ballast Point			
Eelgrass (Vegetated)*	1.66		**1.66**
Unvegetated Soft Bottom	8.42		**8.42**
Total	10.08		**10.08**
Alternative 2A – Delta Beach to Homeport Island			
Eelgrass (Vegetated)*	1.10		**1.10**
Unvegetated Soft Bottom	8.71		**8.71**
Revetment Hard Bottom	0.10		**0.10**
Total	9.91		**9.91**
Alternative 2B – Homeport Island to Submerged Plateau			
Eelgrass (Vegetated)*	0.37		**0.37**
Unvegetated Soft Bottom	13.58		**13.58**
Revetment Hard Bottom	0.18		**0.18**
Total	14.13		**14.13**
Alternative 3 – South Silver Strand			
Eelgrass (Vegetated)*	0.03		**0.03**
Unvegetated Soft Bottom	11.16	1.11	**12.27**
Total	11.19	1.11	**12.30**
Cumulative Total All Sites			
Eelgrass (Vegetated)*	3.16		**3.16**
Unvegetated Soft Bottom	41.87	1.11	**42.98**
Revetment Hard Bottom	0.28		**0.28**
Total	**45.31**	**1.11**	**46.42**

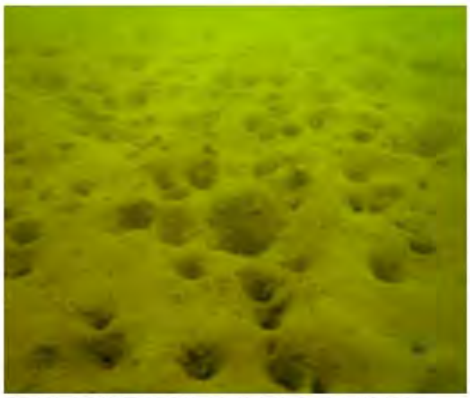
*Eelgrass vegetated habitat is determined as persistent coverage equivalency over 8 baywide survey periods from 1993-2020

Shallow Subtidal Rock Revetment

Alternative sites 2A and 2B utilize existing submerged rock berms to contain placed sediment fill for construction of the elevated eelgrass sites. These rock berms consist of a mixed rock size typified by 200-pound stone that is believed to have been derived from the shoreline revetment armoring that was removed to construct portions of the aircraft carrier basin improvements and NEMS 5 mitigation site when Homeport Island was constructed. The rock berms are heavily silted and support limited algal cover, principally comprised of the invasive *Sargassum musicum*. The berms extend out from Homeport Island on either side of the area creating a natural border between Alternatives 2A and B. The revetment is generally free of well-developed sessile macrofauna, although where invertebrate organisms are observed, they predominantly include the invasive spaghetti bryozoan (*Amathia verticillata*), formerly *Zoobotryon*. Proposed fills are not planned to bury the crest of this containment structure, but would fill against the sides of the structure and would be expected to add to the sedimenting in of the rock along the crest of the jetty structures. While the revetment of the berms does not support typical dense or diverse sessile invertebrates or macroalgal communities seen in clearer waters of the bay, they do support use by sessile and mobile invertebrate species including encrusting sponges (*Haliclona* sp.), *Navanax inermis*, native Olympia oyster (*Ostrea lurida*), and California spiny lobster (*Panulirus interruptus*). Fish species typically observed along the submerged jetties are round stingray (*Urobatis halleri*) and barred sand bass (*Paralabrax nebulifer*).

Subtidal Unvegetated Habitat

Unvegetated soft bottom habitat occurs throughout most of the action area, with depths ranging from -5 ft to approximately -13 ft MLLW. Much of the action area is considered to be shallow subtidal habitat (Table 2), with soft bottom consisting of sand, mud, and silt. Although primarily bare, this area can contain occassional clumps of red algae (*Gracilaria* spp*., Ceramium* spp.) and loose clumps of a green alga (*Ulva* spp.). Within the South-Central Ecoregion alternative sites, the spagehtti bryozoan is particularly abundant along the western bay margin during summer months. In addition there can also be a regular film of benthic diatoms forming mats over portions of the bottom. In shallow waters, the mud bottom gives way to sandy substrate with much less evidence of biogenic activities of infauna due to sediment instability and dominance by mobile organism instead of sessile benthos that dominate in muddy sediments.



UNVEGETATED SOFT BOTTOM HABITAT WITH EVIDENCE OF BURROWING INVERTEBRATES, LIKELY SOLITARY TUBE-DWELLING ANEMONES, AMPHIPODS, AND MOLLUSCS.

Common invertebrates in this habitat include burrowing invertebrate such as bivalves (*Chione* spp., *Macoma nasuta*), the amphipod *Grandidierella japonica*, bay ghost shrimp (*Neotrypaea* spp.), burrowing anemones (*Harenactis attenuata*), and tube-dwelling anemones (*Pachycerianthus* spp.). Other invertebrates commonly observed include the opisthobranch (*Navanax inermis*). The slender sea pen (*Stylatula elongata*) is particularly abundant at the Alternative 1 - Ballast Point Site. Fish species typically found in this habitat include round stingrays, barred sand bass, spotted sand bass (*Paralabrax maculatofasciatus*), specklefin midshipman (*Porichthys myriaster*), black croaker (*Cheilotrema saturnum*), and gobies (Family Gobiidae).

Subtidal Vegetated Habitat

Eelgrass beds function as important habitat for a variety of invertebrate, fish, and avian species. For many species, eelgrass beds are an essential biological habitat component for at least a portion of their life cycle, providing resting and feeding sites along the Pacific Flyway for avian species, and nursery sites for numerous species of fish. The eelgrass can be interspersed with the red alga (*Gracilaria verrucosa*) and green alga (*Ulva* spp.) and contain epiphytes, primarily the commonly occurring, non-native anemone, *Bunodeopsis strumosa*. Fishes commonly observed within eelgrass beds include round stingray, pipefish (*Syngnathus* spp.), kelpfish (Family Clinidae), surfperch (Family Embiotocidae), as well as schooling fishes such as topsmelt (*Atherinops affinis*) and anchovies (*Engraulis* and *Anchoa* spp.).

*EELGRASS (*ZOSTERA MARINA*)*

The 2020 Baywide Eelgrass Survey (M&A 2020) indicated eelgrass is present in various regions of San Diego Bay and within portions of each of the Alternatives footprints. While baseline surveys have not been updated as of February 2023, a visual field inspection of the site revealed that eelgrass remains represented within and adjacent to each site.

NMFS MANAGED ICHTHYOFAUNA PRESENT IN SAN DIEGO BAY

The ichthyofauna in San Diego Bay has been previously studied (M&A 2000, Allen et al. 2002, Obaza et al., 2015). The first truly baywide seasonal study of fishes was published in April 1999, after five years of sampling (1994-1999). Since the five-year study, survey efforts using the same methodology have continued on an intermittent basis into present day (Allen et al., 2022). In 2005, a follow-up study to Allen's work was performed by Vantuna Research Group (VRG 2006, 2009), using identical methods. To date, these studies have identified a minimum of 109 species of fish in San Diego Bay (Navy and SDUPD 2013). The following analysis makes extensive use of Allen's and VRG's (2006, 2009) baywide survey data sets because they represent the best available comprehensive data sets (i.e., surveys were completed quarterly, at four stations throughout San Diego Bay, utilizing six sampling gear types). The other studies reviewed for this analysis are utilized primarily to confirm the presence of fish species and to identify any additional species not captured during the baywide surveys.

Long-term fishery data collection characterizing fish communities within San Diego Bay over a 25-year period have shown a dominance of fish abundance by a northern anchovy, followed by topsmelt, slough anchovy, shiner surfperch, and Pacific sardine (Allen et al. 2022). Biomass was dominated by round stingrays, followed by spotted sand bass, and northern anchovy. The fish species abundance distribution pattern through the bay are principally explained by temperature, distance from the mouth of the bay, and salinity. In the time series analyses (Allen et al. 2022). Abundance of eight of the top 35 species (including northern anchovy, topsmelt, slough anchovy, and shiner perch) has decreased over the period of the long-term monitoring program. While key changes in community composition have occurred over time, total abundance, total biomass, species richness, Shannon diversity, and the majority (71%) of species abundances did not significantly change over the 25-year period of the Allen study (Allen et al. 2002).

Of the 109 fish species known to have occurred in San Diego Bay through recent sampling, eleven are managed by the NMFS under two FMPs - the Coastal Pelagics and Pacific Groundfish Management Plans (Table 3) (NMFS 1998; PFMC 2022). Four of the five fish managed under the Coastal Pelagics FMP are represented in San Diego Bay. The northern anchovy and pacific sardine are the most abundant pelagics identified by Allen et al. (2002), ranking 1st and 4th in abundance, and 3rd and 10th in biomass, respectively (Table 3). Together, these two species accounted for 46.3% of the total abundance and 11.6% of the total biomass of fish enumerated by Allen et al. (2002). The pacific mackerel and jack mackerel are the other two coastal pelagics to potentially occur within the project area. These two species were much less abundant than the northern anchovy and pacific sardine and were ranked by Allen et al. (2002) as 32nd and 52nd in total abundance and 24th and 73rd in total biomass, respectively. Together the two species accounted for less than 1% of total abundance and biomass of fish captured in Allen et al. (2002).

Of the species managed under the Pacific Groundfish FMP (PFMC 2016), two have been found in San Diego Bay during the studies analyzed for this assessment: California scorpionfish and English sole. These species were observed only rarely in San Diego Bay during the five and a half years of Allen et al. (2002), ranking 41st and 76th by abundance and 24th and 73rd by biomass, respectively (Table 3). Together these two species accounted for less than 0.5% of the total abundance and biomass of fish captured (Allen et al. 2002). In addition to the species captured during Allen's study, the three managed species of shark and cabezon (*Scorpaenichthys marmoratus*) that were not captured by Allen, have also been reported for San Diego Bay; these species are also rarely encountered and have been reported primarily as species taken by recreational fisherman (Navy and SDUPD 2013). Finally, grass rockfish was represented by a single individual captured during baywide surveys in July 2005 (VRG 2006).

Table 3. NMFS Managed Fish Species Previously Found in San Diego Bay

Common Name	Scientific Name	Rank[1]	
		Abundance	Biomass
Coastal Pelagics FMP			
Northern Anchovy	*Engraulis mordax*	1st	3rd
Pacific Sardine	*Sardinops sagax*	4th	10th
Pacific Mackerel	*Scomber japonicus*	32nd	17th
Jack Mackerel	*Trachurus symmetricus*	52nd	29th
Pacific Groundfish FMP			
California Scorpionfish	*Scorpaena guttata*	41st	24th
English Sole	*Parophrys vetulus*	76th	73rd
Leopard Shark	*Triakis semifasciata*	NC[2]	NC
Soupfin Shark	*Galeorhinus galeus*	NC	NC
Spiny Dogfish	*Squalus acanthias*	NC	NC
Cabezon	*Scorpaenichthys marmoratus*	NC	NC
Grass Rockfish	*Sebastes rastrelliger*	NC	NC

Source: Data compiled from Allen et al. (2002), M&A (2000), Hoffman (2006), VRG (2006, 2009), and Navy and SDUPD (2013).

[1] Rank refers to the relative rankings among 78 fish species observed by Allen et al. (2002). Ranks are for total abundance and biomass, respectively.

[2] NC = Not Captured during Allen's 1994-1999 study but documented in the bay through other sources.

BIOLOGICAL DESCRIPTIONS FOR MANAGED SPECIES

The following descriptions of the life histories of the eleven managed species listed above provide the background information required to make a determination of the suitability of the project area to support and provide essential habitat for these species.

Northern Anchovy

Northern anchovy historically ranged from the Queen Charlotte Islands, British Columbia south to Cape San Lucas, Baja California. More recently, populations have moved into the Gulf of California, Mexico. Larvae and juveniles are often abundant in nearshore areas and estuaries with adults being more oceanic. However, adults can be abundant in shallow nearshore areas and estuaries and eggs and larvae have been found offshore. Northern anchovy are non-migratory but do make extensive inshore-offshore movements and along-shore movements. Spawning occurs throughout the year; in southern California, spawning occurs between January and May. Northern anchovy are one of the most abundant fish in the California current and are important prey for a variety of fish, birds, and marine mammals (Emmett et al. 1991). Northern anchovy occur commonly in San Diego Bay and are expected to occur as schooling aggregations with diminishing frequency from north to south bay.

Pacific Sardine

Pacific sardine is a pelagic species. Individuals can be found in estuaries but are most common in open coastal habitats and offshore. The Pacific sardine is wide ranging with sardines in the Alguhas, Benguela, California, Kuroshio, and Peru currents, and off New Zealand and Australia being considered the same species. Changes in distribution are common and linked to environmental conditions. In California, sardines are highly mobile and move seasonally. Older adults move from southern California and northern Baja spawning grounds to feeding grounds off the Pacific Northwest and Canada. Younger individuals (two to four years old) migrate to feeding grounds in central and northern California. Juveniles occur in nearshore habitats off northern Baja and southern California. Although numbers vary greatly, at times sardines are the most abundant fish species in the California current. In southern populations spawning occurs year-round with a peak from April to August between Point Conception and Magdalena Bay. Eggs and larva are found everywhere adults are found. Sardines are planktivores consuming both phytoplankton and zooplankton. They are themselves prey for a variety of predators. Eggs and larvae are consumed by numerous planktivores with juvenile and adults being consumed by a variety of fish, birds, and mammals (NMFS 1998). Less common in the Bay than northern anchovy, Pacific sardine are still very common in San Diego Bay and also exhibit diminishing occurrence from north to south.

Pacific Mackerel

Pacific mackerel is a pelagic species. In the northeastern Pacific, Pacific mackerel range from Banderas Bay, Mexico to southeastern Alaska and usually occur within 20 miles of shore. Local populations spawn from Eureka, California south to Cabo San Lucas, Baja California with peak spawning occurring between late April and July. However, fecundity is more closely tied to sufficient food and environmental conditions than to season. Pacific mackerel larvae are predated by numerous invertebrates and vertebrate planktivores. Juveniles and adults are important prey for many large fishes, marine mammals, and birds. Due to their larger size, they are likely less important as forage than Pacific sardine or northern anchovy which are available to a wider variety of predators and are more abundant (NMFS 1998). Pacific mackerel are uncommon in large aggregations but are regularly found in San Diego Bay.

Jack Mackerel

Jack mackerel is a schooling fish that ranges widely throughout the northeastern Pacific. Individuals are found along the mainland coasts to an offshore limit approximated by a line running from Cabo San Lucas,

Baja California, to the eastern Aleutian Islands, Alaska. Typically, small jack mackerel (< 6 years of age) are most abundant near the mainland coast and islands in the Southern California Bight. Older individuals fill out the geographic range and are generally found offshore in deep water and along the coastline north of Point Conception, California. Jack mackerel spawn between February and October in California, with peak spawning activity between March and July. Larvae eat primarily copepods with the small jack mackerel found off southern California consuming large zooplankton, juvenile squid, and anchovy. Jack mackerel are prey items for large predators such as tunas and billfish. They are likely only of minor significance as prey for marine birds because of the large size of adults and their deep schooling (NMFS 1998). Jack mackerel are rarely found in San Diego Bay but are most commonly collected in northern San Diego Bay.

California Scorpionfish

The California scorpionfish ranges from Santa Cruz, California south to Uncle Sam Bank, Baja California. It is a benthic species found in both sandy and rocky habitats. Individuals are predominantly solitary but are known to aggregate near prominent features both natural and human made. Young fish live in shallow habitats typically hidden within dense algae and bottom-encrusting organisms. Spawning occurs between May and September and peaks in July. Eggs are laid in a gelatinous mass that floats near the surface. The primary food items include juvenile crabs, small fishes (e.g., northern anchovy), octopus, isopods, and shrimps (NMFS 2008). This species is common in the northern portion of the Bay but uncommon further south to very rare in the extreme south Bay. California scorpionfish are regularly found on the Navy Eelgrass Mitigation Site (NEMS) 5 demonstration reefs constructed opportunistically by the Navy off North Island; however, further into the bay, the species is less commonly encountered on subtidal rocky habitat, including purposely constructed artificial fish habitat.

English Sole

English sole range from central Baja California to Unimak Island, Alaska. They occur in greatest numbers north of Point Conception, California. Juveniles are found in all Pacific coast estuaries from San Pedro Bay, California to Puget Sound with Elkhorn Slough, California being the southernmost estuary where they are abundant. Adults make limited movements with a northward migration in the spring to summer feeding grounds, returning in the fall. Spawning occurs over soft-bottom substrates at depths of 50-70 meters (m). Spawning occurs between December and April for southern stocks. Eggs are buoyant and larvae are pelagic. Adults and juveniles prefer soft sand and mud bottoms generally in less than 12 m (39 ft) of water (PFMC 2005). Larvae are likely eaten by larger fishes, with juveniles falling prey to larger fishes, marine mammals, and birds. Adults may be eaten by marine mammals, sharks, and other large fishes. English sole is very rare in San Diego Bay and almost always collected in northern San Diego Bay.

Leopard Shark

Leopard shark are found from southern Oregon to Baja California, Mexico including the Gulf of California. They are most common in northern California bays and estuaries and along southern California beaches. They are also common in enclosed, muddy bays, and also reside in flat, sandy areas, mud flats, sandy and muddy bottoms, strewn with rocks near rocky reefs, and kelp beds (PFMC 2005). Leopard sharks are most common on or near the bottom in waters less than 13 ft (4.0 m) deep but have been caught as deep as 300 ft (91.4 m). They spawn and pup in shallow water. Seasonally, pups are along sandy beaches and in protected bays. A large grouping of this species is known to occur during summer months at La Jolla Shores Beach, north of San Diego Bay. The maximum recorded length of a leopard shark is six feet (1.8 m), but most do not exceed five feet (1.5 m) in length. Females may take 10 to 15 years to reach maturity, while males may only take 7 to 13 years. The maximum age is reported to be 30 years. This species feeds on a variety of prey including crabs, clams, fish, and octopus. Leopard sharks are undoubtedly more common in San Diego Bay waters than capture data would suggest as this species commonly occurs in eelgrass beds

and quiescent shallows and a large aggregation of adult leopard sharks was observed along the Coronado First Avenue shoreline in 2005 (Merkel, pers. obs.). No other large aggregations within San Diego Bay are known and the aggregation off Coronado First Avenue has not been noted subsequently.

Soupfin Shark

Soupfin shark range from northern British Columbia to Abreojos Point, Baja California, and the Gulf of California. This shark is an abundant coastal-pelagic species of temperate continental and insular waters. They are often associated with the bottom, inhabiting bays, and muddy shallows. Males and females apparently segregate by gender, adult males occur in deeper water and adult females occur closer inshore. Females and young tend to be more common in southern California waters. Primary nursery grounds are in southern California inshore areas south of Point Conception, with females moving into bays to bear live young (PFMC 2005). Soupfin sharks are opportunistic carnivores, preying upon moderate-sized bony fishes, echinoderms, shrimp, invertebrates, and squid. This species is a rare species in San Diego Bay (Navy and SDUPD 2013) and has not recently been reported in capture data.

Spiny Dogfish

Spiny dogfish are found in temperate and subarctic latitudes in both the northern and southern hemispheres. In the northern and central Pacific Ocean, they occur from the Bering Sea to Baja California. Spiny dogfish typically inhabit waters less than 350 m (1,148 ft) deep and occur from the surface and intertidal areas to greater depths. The species is commonly found in inland seas, such as San Francisco Bay and Puget Sound, and in shallow bays from Alaska to central California (PFMC 2005). Mating with internal fertilization occurs on the ocean bottom between September and January. Adult females move inshore to shallow waters during the spring to release their young. Spiny dogfish are carnivorous scavengers. They are important predators on many commercial fishes and invertebrates. Their diet consists primarily of fish, especially sandlance, herring, smelts, cods, capelin, hake, and ratfish; and of invertebrates, particularly shrimp, crabs, worms, krill, squid, octopus, jellyfish, and sea cucumbers. Fish become a more important dietary source as the dogfish grow larger (PFMC 2005). Spiny dogfish sharks are likely uncommon to rare in San Diego Bay but would be expected to occur under piers and in deeper portions of the north and central bay if they occur.

Cabezon

Cabezon are found in southeast Alaska to as far south as Punta Abreojos in central Baja California. They dwell primarily on hard bottoms in shallow water from intertidal pools to depths of 76 m (249 ft; PFMC 2005). Cabezon are abundant all year in estuarine and subtidal areas, as well as to mid-depths along the continental shelf. They are most abundant in estuaries of the West Coast, where all life stages can be found. Juveniles first appear in kelp canopies, tide pools, and other shallow rocky habitats such as breakwaters from April to June. Cabezon do not migrate and spend most of their time sitting in holes on reefs, in pools, or on kelp blades beneath the canopy, but not actively swimming. In shallow water they move in and out with the tide to feed. Their habit of sitting can make them an easy target for recreational divers. The spawning season for cabezon runs from late October to March and peaks in January in southern California. Juveniles and adults are carnivorous, feeding opportunistically. Small juveniles depend mainly on amphipods, shrimp, crabs, and other small crustaceans while adults consume crabs, small lobsters, mollusks (abalone, squid, octopus), small fish (including rockfishes), and fish eggs. Cabezon would be expected to only occur in the northern San Diego Bay and would generally be rare in the bay.

Grass Rockfish

Grass rockfish is a common, shallow-water rockfish found from Playa Maria Bay, Baja California to Yaquina Bay, Oregon, although they are most common south of southern Oregon. Grass rockfish have become an

important component of the live-fish fishery. Among rockfishes, they have one of the shallowest and narrowest depth ranges. They are found from the intertidal zone to 184 ft (56.1 m) and are commonly found from the intertidal to 20 ft (6.1 m). Grass rockfish are common in nearshore rocky areas, along jetties, in kelp and in eelgrass. Around reef structures, adults may be found hiding in crevices (PFMC 2005). Larvae are released from January to March, with the peak release occurring in January (PFMC 2005). This species is expected to be very rare in San Diego Bay.

ASSESSMENT OF IMPACTS AND CONSERVATION MEASURES

POTENTIAL ADVERSE EFFECTS TO EFH AND MANAGED FISH SPECIES

Pursuant to 50 CFR 600.910(a), an "adverse effect" on EFH is defined as any impact that reduces the quality and/or quantity of EFH. Factors that were considered in this analysis include the duration, frequency, intensity, and spatial extent of the impact; the sensitivity/vulnerability of the habitat; the habitat functions that might be altered by the impact; and the timing of the impact relative to when the species or life stages may use or need the habitat.

The alternatives are anticipated to have short-term direct adverse effects as a result of habitat burial associated with raising the bay floor to achieve longer-term greater productivity and sea level rise resilience. Fills may be conducted in phases resulting in incomplete fills and extended periods of time between fill phases and ultimate final site grading and planting. As a result, it is anticipated that the incomplete site conditions may result in prolonged periods of elevated turbidity over the fill sites as water movement stimulates fine sediment resuspension from unconsolidated site conditions. This elevated turbidity over a large, constructed eelgrass site may affect both the light environment on the site, and that within the immediately adjacent areas. The placed fills may result in secondary indirect adverse impacts to adjacent habitats, particularly eelgrass as a result of prolonged turbidity exposure. Finally, minor losses of ephemeral eelgrass at deeper water depths is expected to occur in order to raise sites to elevations supporting more stable beds both under current and future conditions. In addition, temporary impact within donor eelgrass beds is expected to occur as a result of eelgrass harvest to support eelgrass expansion through transplanting. These potential adverse effects are discussed further below.

Direct Impacts to Managed Species

None of the proposed work areas are expected to have substantive direct impacts to managed species as a result of low abundance, unsuitable habitat conditions to support managed species, or an ability for managed fish species that may occur within the work areas to avoid the project activities.

Direct Habitat Impacts

The proposed action would generally fill unvegetated soft bottom (Alternatives 2A, 2B, and 3), shoulders of hard bottom revetment (Alternatives 2A and 2B), and intermittently vegetated eelgrass habitat (Alternatives 2A, 2B, and 3) to raise the bay floor at one or more alternative sites in order to expand the distribution of stable eelgrass at elevations that are resilient to sea level rise. This would be achieved through opportunistic reuse of chemically and physically compatible sediments derived from within San Diego Bay.

Direct adverse effects to EFH would occur as a result of the following elements:

- Delivery and placement of dredged material from San Diego Bay maintenance or new excavation projects for all sites except Alternative 1 – Ballast Point;

- Preparation of the site once sufficient substrate volume exists by smoothing the area to prepare it for planting at all sites except Alternative 1 – Ballast Point; and
- Planting of the site with eelgrass derived from donor eelgrass sites, at all sites.

The Project is expected to result in impacts to multiple habitats within the project footprint and impacts are discussed in the following sections.

Shallow Subtidal Rock Revetment

Alternative sites 2A and 2B utilize existing submerged rock jetties to contain placed sediment fill for construction of the elevated eelgrass plateaus. This rock presently supports considerable silt loading and does not function well as rocky reef habitat due to its presence in a high turbidity inner bay environment. The proposed work would result in permanent conversion of the rock jetty slopes to shallow soft bottom habitat to support eelgrass and is expected to further exacerbate siltation within the rock crest as a result of fills being brought to elevations equal to the rock crest heights. The result of this change is anticipated to be soft sediment overrun on portions of the rock and a conversion of up to 0.28 acre of the rock containment berm habitat to a mix of soft and hard substrate.

This change would result in a temporary displacement of fish and likely mortality of sessile invertebrates and algae present along the submerged jetties. Following the fills, the rock is expected to be reduced in exposed footprint with replacement habitat being a mix of vegetated and unvegetated soft bottom. The rock along the crest of the jetties will likely continue to provide low relief habitat suited to attracting return use by some fish and invertebrates, but the level of silt loading will further reduce the already limited function of this habitat. The habitat conversion anticipated is not expected to have long-term negative consequences given the character of this rock feature.

Subtidal Unvegetated Habitat

The alternative site options for eelgrass habitat expansion largely consist of subtidal unvegetated soft bottom habitat. This habitat falls within the shallow subtidal and with a small amount of moderately deep subtidal habitat in Alternative 3. These habitats provide lower productivity and ecological function than does vegetated habitat with overall productivity generally decreasing with increasing depth.

The proposed eelgrass expansion would result in the filling of these unvegetated habitats raising them to shallower elevations prior to conversion of the habitat to vegetated habitat. The total extent of subtidal by each alternative is provided in Table 2 as is the cumulative extent of these habitats across all fill alternatives. The scale of effect to subtidal unvegetated habitat would be defined by the final selected alternatives. As any combination of alternatives, up to including all alternatives could be adopted, the cumulative fill area of subtidal soft bottom habitat within Alternatives 2A, 2B, and 3 is considered to be potentially affected. This fill would be expected to occur over one or more seasons and could result in fills of up to 42.98 acres of unvegetated soft bottom subtidal habitat based on construction of all alternatives (Table 2).

During the site filling process, benthic invertebrate, and to a lesser extent, demersal fish would be buried or displaced from the project footprint. Studies conducted in San Diego Bay to evaluate the recovery of fish and invertebrate communities following benthic disturbance associated with dredging revealed a rapid recovery with the benthic infaunal community recovering dredged areas. This study demonstrated that benthic and demersal community disruption within the harbor environment were short lived following significant bottom impact from dredging. In this study benthic infaunal density and biomass recovered over a period of 5 to 11 months while community composition recovered between 17 and 24

months after impact. Epibenthic invertebrate communities recovered over a period between 29 and 35 months, while the fish community recovered over a period between 14- and 22-months following disturbance (Merkel & Associates 2009 and 2010).

As a result of rapid recovery of unvegetated soft bottom harbor habitats following disturbance impacts are considered to be adverse but temporary. However, such impacts may be prolonged due to fill phasing and redisturbance of the sites following the final fills. These direct impacts would still be considered to be temporary and of no long-term consequence being generally similar in scale and character to large maintenance dredging projects except that the final condition would result in shallowing the sites to elevations leading to increased light levels at the bay floor and increased productivity of the habitat, irrespective of vegetated cover by eelgrass. Within Alternative 3, 1.11 acres of moderately deep subtidal habitat would be raised to shallow subtidal habitat to support eelgrass (Table 2). All other habitat is shallow subtidal and would not shift from the depth-based habitat class defined in the INRMP.

The proposed action would restore eelgrass on the raised bay floor elevations with the objective of converting unvegetated to vegetated soft bottom habitat. This conversion to HAPC would increase the overall function of the habitat within areas of successful eelgrass restoration and is not considered to be adverse.

Subtidal Vegetated Habitat

Eelgrass beds function as important habitat for a variety of invertebrate, fish, and avian species. For many fish species, eelgrass beds are an essential biological habitat component for at least a portion of their life cycle, providing structured habitat and nursery sites for numerous species of fish. While the purpose of the proposed work is to increase eelgrass habitat in San Diego Bay, there are potential impacts to existing eelgrass beds during the completion of this project.

- **Eelgrass Impacts Inside Site Footprint**

Direct impacts are expected to occur to ephemeral eelgrass presence within the alternative site placement footprints. If all alternatives were to be exercised, the fill placement could adversely affect 1.50 acres of stable eelgrass equivalent within Alternatives 2A, 2b, and 3 (Table 2). An additional, 1.66 acre of stable eelgrass equivalent value occurs within Alternative 1 where no fill would be placed (Table 2). The direct impact adverse effect to eelgrass within the project footprint has been accommodated through calculation of reduced credit to be derived from the raised sites where more expansive and stable eelgrass cover is anticipated to be developed.

- **Construction Period Direct Eelgrass Impacts Adjacent to Sites**

Additional direct impacts to eelgrass may occur in the placement of sediment where fills are directly discharged beyond their design footprints and eelgrass outside of the placement template is buried, or otherwise damaged during placement and site grading. This would be considered a direct adverse impact and would require eelgrass to be mitigated through extraction of eelgrass credits at a 1:1 impact to mitigation ratio from an established bank site (i.e., NEMS 1, 4, 5, or 6). The losses would be determined based on pre- and post-construction site surveys to quantify any losses of eelgrass beyond the site limits associated with direct fill placements.

- **Donor Beds Eelgrass Harvest Impacts**

As part of the proposed action eelgrass will be transplanted from donor beds to the expansion sites as bareroot planting units. This will be performed by harvesting eelgrass at a 10 percent harvest level by

manually extracting rhizomes from donor sites for preparation of eelgrass planting units that will then be planted into the new sites. This approach to transplant material collection has become established practice with the harvest level being used to ensure that the donor beds are not subject to excessive damage. Scientific collecting permits (SCPs) issued by the California Department of Fish & Wildlife (CDFW) typically restrict donor bed harvest levels to 10 percent except for salvage harvests. Surveys are performed before harvest to determine the extent of the donor beds and the shoot density within the beds in order to determine the available harvestable eelgrass for transplant. Beds are then surveyed following the harvest to confirm bed area and densities have not been depressed beyond the allowable harvest levels.

If all alternative sites were constructed and fully planted, a total of 42.0 acres of eelgrass would be planted requiring 169,974 eelgrass planting units containing an average of approximately 6 shoots per planting unit. This would result in the need to harvest 1.00 million shoots from donor beds to support the transplant project. With an average shoot density within San Diego Bay eelgrass beds between 100 and 200 shoots/m^2 it is anticipated that approximately 13 to 26 acres (51,000 to 102,000 m^2) of donor bed area would be required.

The 10 percent harvest level from donor eelgrass beds has been adopted to protect natural eelgrass beds from harm associated with harvesting of eelgrass. Multiple investigations have been conducted to evaluate donor bed effects of harvesting over several years. These include studies in San Diego's Mission Bay (Merkel, 1986 unpublished data), at Bay Farm Island in San Francisco Bay (M&A 1999), and more recently at Point Molate in San Francisco Bay (Boyer et al. 2016). These studies have documented rapid recovery of donor beds from high harvest levels intended to develop impacts of a scale easily distinguished from baseline that could be tracked through a recovery period.

In the most recent study, harvesting was performed at 0, 50 and 80 percent turion extraction levels in a controlled field experiment. Plots were examined at 0-, 6- and 10-month intervals. At both 6- and 10-months following harvest, the 50 percent removal of eelgrass shoots did not result in differences in shoot densities or heights by winter of the harvest year. Conversely, the plots that experienced 80 percent harvest levels remained at performance levels below the unharvested beds for both the 6- and 10-month intervals. The study concluded that lower rates of shoot harvest resulted in short-term bed density depression, but severe harvest can result in slowed bed recovery lasting beyond the duration of the study (Boyer et al. 2016).

Based on the investigations of donor site harvest recovery, it is believed that the 10 percent harvest level proposed for the restoration program and limited by transplant SCPs is appropriate and poses no permanent adverse effect to the natural donor beds. However, harvest is anticipated to result in short-term, potentially measurable reduction in eelgrass turion density within the donor beds. This detectible reduction in density is expected to last substantially less than one growing season based on the recovery response observed for heavier harvesting bed recovery studies.

Indirect Habitat and Managed Species Impacts

The proposed eelgrass expansion is expected to occur within large scale sites. Multiple similar large scale eelgrass sites have been constructed by excavation of uplands (NEMS 5) or filling within bay waters (NEMS 1, 4, and 6, Port of San Diego's South Bay Borrow Pit, Port of Los Angeles Pier 300 Eelgrass Expansion Area) to achieve a suitable site elevations to support eelgrass. When this is done, it is common for a persistent turbidity cloud to develop over the restoration site while bottom sediments shed fine sediment fractions and stabilize over time. The turbidity plume can extend beyond the site margins over adjacent bay areas.

The scale, shape, and concentration of the plume is dependent upon a number of factors including the characteristics of the sediment, the elevation of the fill, and the energetics of waves and currents acting on the sites. In the case of the 2004 Port of San Diego restoration of 10.5 acres within the South Bay Borrow Pit in central south San Diego Bay, afternoon winds and shallow water maintained an observable localized turbidity plume condition over the site for over two years. However, when the similar sized 14.5 acre Port of Los Angeles Pier 300 Eelgrass Expansion Area was constructed in protected waters within Los Angeles Harbor, the scale and duration of detectible turbidity plume over the site was much less than that at the mid-bay borrow site. Similar observations were made with the construction of NEMS 4 and 6, as well as Homeport Island. In these cases, turbidity was limited in distribution due to low wave energy at site depths (K. Merkel, pers. obs.).

Given the location of all the alternative sites involving fill being in semi-protected waters with low wind fetch, and the design of the sites to be located at elevations between -5 and -6 feet MLLW, it is anticipated that persistent turbidity will be minimal. However, it is prudent to anticipate some degree of increased turbidity both within the fill sites as well as in areas adjacent to the fill sites. For this reason, it has been anticipated that concentrated and persistent turbidity may occur over the site and within 50 meters of the fill sites during the period over which the site is being filled, between phases when the site is not active, and during and after final site grading. The turbidity plume would be expected to decrease over time following site construction while eelgrass habitat becomes established.

Eelgrass occurs within 50 meters of all Alternative sites requiring fill and prolonged elevated water column turbidity may result in adverse impacts to eelgrass as a result of sedimentation on leaves and/or light reduction at canopy depths. Such impacts would be considered adverse should they occur. As a result, annual monitoring of eelgrass within 50-meters of fill site alternatives will be conducted during fill placement, between fill phases, during final site grading periods and over the first two years post planting to determine if adjacent beds have been damaged either through area or density reductions. Eelgrass beds will be monitored using CEMP protocols and unaffected reference sites. Impacts will be determined based on defined standards outlined in the CEMP, including a reduction in areal extent of beds, percent vegetated cover, or a 25 or more percent reduction in density of the beds.

Should indirect turbidity impacts occur in association with the project, the temporal extent of impact will be determined based on the time over which the adjacent beds declined as a result of project turbidity. This temporal impact will be mitigated by debiting credits from an established eelgrass bed equal to the value lost based on calculation using the Wetland Mitigation Calculator (King and Price 2004).

Indirect Impacts to Managed Species

Managed species anticipated to make use of the constructed action alternative areas (Alternatives 2 and 3) may be exposed to prolonged periods of locally elevated turbidity levels as the construction is completed and the sites stabilize. However, these sites would be expected to see limited use by most of the species managed under both the coastal pelagic and groundfish FMPs. Fish are not restricted to using these sites and would be voluntarily present within the elevated turbidity areas. This may occur to capitalize on foraging opportunities that can develop within disturbed sites where large fluxes of prey species occur due to absence of well-developed controls including predation and competition. The localized turbidity levels would not be expected to harm the mobile fish resources.

POST PLANTING EELGRASS MONITORING AND MITIGATION CREDIT DEVELOPMENT

Following planting, eelgrass expansion sites will be monitored for a 5-year period to ensure site establishment and to document site development conditions. This monitoring will be undertaken at 0-, 6-

, 12-, 24-, 36-, 48-, and 60-months post-planting and will document eelgrass spatial extent metrics and density pursuant to the standards of the CEMP.

Upon or before completion of the eelgrass establishment period, the site(s) will be moved into the Navy's eelgrass mitigation bank as new NEMS. Under bank monitoring protocols, the sites will be surveyed annually along with all of the existing NEMS sites to develop a running 4-point mean to quantify credits in the sites. The monitoring, debiting, and reporting will be in conformance with the banking agreement.

PROPOSED PROTECTIVE AND MITIGATION MEASURES

The proposed work is expected to have minor and temporary impacts to EFH. To minimize or mitigate anticipated impacts to EFH from the proposed work, the following protective measures associated with construction and operational activities should be incorporated into the proposed Project.

- A survey for the invasive alga *Caulerpa* would be conducted before initiating bottom-disturbing activities, consistent with *Caulerpa* Control Protocols (Version 5, October 2021; NMFS 2021). If *Caulerpa* is found in the Action Area during this survey, NMFS-approved *Caulerpa* Control Protocols would be followed.
- Pre- and post-construction eelgrass surveys would be conducted in accordance with the CEMP (NMFS 2014). Losses of eelgrass beyond the project footprint will be mitigated in accordance with the CEMP through extraction of eelgrass credits from an established NEMS.
- Impacts to eelgrass within the project footprint are to be addressed by discounting credit returns in accordance with calculations made in the wetland mitigation calculator after inserting an existing pre-restoration eelgrass value (King & Price 2004).
- Eelgrass harvest from donor sites to prepare planting units will be conducted at a 10 percent level based on pre-harvest shoot counts and bed areas calculations. Following completion of the transplant, post-harvest surveys will be repeated to verify harvesting has not resulted in a reduction in bed area or density.
- Eelgrass within 50 meters of an active restoration site (being filled, between fill phases, during grading, and over two years following planting) will be monitored annually to determine if any indirect impacts to eelgrass occurs. These impacts will be mitigated based on offsetting temporal losses by extraction of mitigation credit from established bank sites as appropriate in adjacent areas.

SUMMARY AND CONCLUSIONS

The proposed project could result in direct impacts to unvegetated soft bottom, vegetated soft bottom, and submerged rock revetment habitats. However, the impacts to these habitats are considered to be temporary and/or minimal and are not expected to have permanent or population-level impacts to EFH or managed fish species. Impacts to HAPC may occur to existing eelgrass habitat within the project area; however, this will be mitigated for by subtracting the loss of eelgrass habitat from the eelgrass credit yield assigned to the site where existing eelgrass was lost. Given the anticipated rapid recovery of impacted habitats, the Project with incorporated measures, would not be anticipated to result in permanent unmitigated adverse impacts to EFH or managed fish species.

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