

**FINAL
ENVIRONMENTAL ASSESSMENT
for the
FLOATING DRY DOCK PROJECT
at
NAVAL BASE SAN DIEGO, SAN DIEGO, CALIFORNIA**

May 2020



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Abstract

Designation: Final Environmental Assessment

Title of Proposed Action: NBSD Floating Dry Dock Project

Project Location: Naval Base San Diego

Lead Agency for the EA: U.S. Department of the Navy

Cooperating Agency: Not Applicable

Affected Region: San Diego County, California

Action Proponent: Naval Facilities Engineering Command Southwest

Point of Contact: NBSD Floating Dry Dock Project
Project Manager
U.S. Department of the Navy
Naval Facilities Engineering Command Southwest, Coastal
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Date: February 2020

Naval Facilities Engineering Command Southwest, a Command of the United States (U.S.) Department of the Navy (hereinafter, jointly referred to as the Navy), has prepared this Environmental Assessment (EA) on behalf of Naval Base San Diego (NBSD) in accordance with the National Environmental Policy Act (NEPA) (42 U.S. Code [U.S.C.] Sections 4321-4370h), the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508), and Navy Regulations for Implementing NEPA (32 CFR Part 775). The Proposed Action includes dredging and sediment disposal as well as demolition and construction activities in support of the emplacement and operation of two floating dry docks at NBSD. The Proposed Action is needed to address a current and projected shortfall of dry dock space at NBSD, which is necessary to support the U.S. Pacific Fleet's forecasted surface ship maintenance requirement. This EA evaluates potential impacts on the human and natural environment associated with three action alternatives: 1) emplacement of a floating dry dock at the south berth of the Mole Pier; 2) emplacement of a commercial outlease (COL) floating dry dock near the Marine Group Boat Works, LLC (MGBW) maintenance piers (Preferred Alternative); or 3) emplacement of floating dry docks at both locations. Environmental resource areas with the potential to be affected by the three actions alternatives include air quality/climate change, water resources, biological resources (including terrestrial and marine biological resources), noise, transportation, and hazardous materials and wastes. In addition to the three actions alternatives, consistent with CEQ's Regulations for Implementing NEPA, the EA also evaluates the No Action Alternative.

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EXECUTIVE SUMMARY

ES.1 Proposed Action

Naval Facilities Engineering Command Southwest, a Command of the United States (U.S.) Department of the Navy (hereinafter, jointly referred to as the Navy) proposes dredging as well as demolition and construction activities in support of the emplacement and operation of up to two floating dry docks at Naval Base San Diego (NBSD). The proposal also includes the disposal of dredged sediments at Nearshore Replenishment Sites, Ocean Disposal Sites, and/or Upland Disposal Sites.

ES.2 Purpose of and Need for the Proposed Action

The *purpose* of the Proposed Action is to provide dry dock space necessary to support the U.S. Pacific Fleet's forecasted surface ship maintenance requirement identified by the Commander of the U.S. Pacific Fleet (CPF) in a memorandum dated 16 January 2018.

Existing dry dock space available for surface ship maintenance in San Diego Bay consists of two floating docks owned and operated by British Aerospace Engineering San Diego (BAE); one floating dock owned and operated by National Steel and Shipbuilding Company (NASSCO); and one government-owned graving dock located on NBSD. The graving dock is capable of docking only the Avenger class Mine Counter Measure and the Freedom variant of the Littoral Combat Ship (LCS) and cannot support an Arleigh Burke class Guided Missile Destroyer (DDG) because of the draft of the ship's sonar dome compared with the depth of the dock.

The *need* for emplacement and operation of dry dock space is to ensure NBSD's capability to conduct berth-side complex repair and maintenance of vessels, furthering the Navy's ability to provide training and equipping of combat-capable Naval forces ready to deploy worldwide. Current and projected shortfalls of dry dock space have reduced overall surface ship maintenance capabilities at NBSD. The Proposed Action would address this shortfall and enhance the ability of the Navy to execute its congressionally mandated roles and responsibilities under 10 U.S. Code (U.S.C.) Section 5062.

A concept study was completed by the Naval Systems Engineering Directorate (Naval Sea Systems Command [NAVSEA] 05), which identified an average of 3.6 dry dockings per year between fiscal year (FY) 2017 and FY 2026 and a peak of 8 dry dockings during one month in FY 2022. The Navy cannot currently accommodate this need because it does not control the schedules for the existing dry docks owned by private companies (i.e., BAE and NASSCO). As described in the concept study, a conservative estimate of the average dry docks plus one standard deviation results in a requirement of five dry docks. (Although the Navy has determined that full time use of the fifth dry dock is not necessary, it could still be beneficial to enhance the commercial market with a fully capable dry dock.) Dry dock workload could then be appropriately managed through fleet scheduling actions. To achieve five dry docks, the Navy would need to add one floating dry dock in San Diego Bay and either upgrade the existing graving dock or add a second floating dock. The proposed dry dock space must support full docking reset availabilities for DDG-51, LCS-2, LSD-41, and LSD-49 class ships.

ES.3 Alternatives Considered

This Environmental Assessment (EA) addresses the potential environmental impacts of three action alternatives: 1) emplacement of a floating dry dock at the south berth of the Mole Pier; 2) emplacement of a Commercial Out Lease (COL) floating dry dock near the Marine Group Boat Works, LLC (MGBW)

maintenance piers (Preferred Alternative); or 3) emplacement of floating dry docks at both locations. Each action alternative includes the following options for disposal of dredged sediments: 1) Nearshore Replenishment Sites; 2) Ocean Disposal Sites; and/or 3) Upland Disposal Sites.

In addition to the three action alternatives, consistent with Council on Environmental Quality (CEQ) Regulations for Implementing the National Environmental Policy Act (NEPA) (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508), the EA also evaluates the No Action Alternative. Under the No Action Alternative, the proposed emplacement and operation of the proposed floating dry dock(s) would not be implemented.

ES.4 Summary of Environmental Resources Evaluated in the EA

NEPA, CEQ Regulations for Implementation NEPA, and Navy Regulations for Implementing NEPA (32 CFR Part 775) specify that an EA should address those resource areas that are potentially subject to environmental impacts. In addition, the level of analysis should be commensurate with the anticipated level of impact. Resource areas with the potential to be affected by the three actions alternatives include air quality/climate change, water resources, biological resources (including terrestrial and marine biological resources), noise, transportation, and hazardous materials and wastes.

ES.5 Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating Actions

Table ES-1 is a tabular summary of potential environmental impacts by resource area for each alternative carried forward for analysis, followed by a list of respective avoidance and minimization measures. As described in Table ES-1, neither implementation of the three action alternatives nor implementation of the No Action Alternative would result in significant impacts on any of the analyzed resource areas. Chapter 3 provides a detailed discussion of environmental impacts associated with each of the three action alternatives as well as the No Action Alternative.

ES.6 Public Involvement

The Navy published a Notice of Availability (NOA) for the Draft EA in the *San Diego Union-Tribune* on 10 October through 12 October 2019. The NOA described the Proposed Action, solicited public comments on the Draft EA, provided dates of the 15-day public comment period, and announced that a copy of the Draft EA would be available for review on the Naval Facilities Engineering Command Southwest website (https://www.cnmc.navy.mil/regions/cnrsw/om/environmental_support/Public_Review_of_Navy_Project_s.html) and at the San Diego Central Library, Logan Heights/San Diego Public Library, and Valencia Park/Malcolm X Branch Library. The Draft EA was made available for public review beginning on 10 October 2019 and ending on 25 October 2019.

No public comments were received on the Draft EA.

Table ES-1 Summary of Potential Impacts on Resource Areas

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
Air Quality/Climate Change	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at Naval Base San Diego (NBSD). Therefore, there would be no impacts to air quality. However, it is likely that major surface ship maintenance would be increasingly addressed at offsite shipyards, resulting in additional mobile emissions for vessels that could otherwise be maintained at NBSD. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of best management practices (BMPs) and avoidance and minimization measures would not be necessary.	Under Alternative 1, air quality impacts from dredging, transportation, and sediment disposal activities as well as demolition and construction activities would occur as a result of combustion emissions associated with fossil-fuel-powered equipment. Because of the nature of Alternative 1, landside grading would not be required; dredging activities would not generate fugitive dust since the marine sediments that would be dredged are wet, which prevents the sediments from becoming airborne. Estimated construction-related criteria pollutant emissions would be below the <i>de minimis</i> threshold levels for Clean Air Act conformity. Emissions associated with the floating dry dock would be evaluated by the San Diego Air Pollution Control District (SDAPCD) as a part of the issuance of a “Permit to Operate,” for which the Navy	Under Alternative 2, air quality impacts would be similar to those described for Alternative 1. However, the criteria pollutant emissions due to the greater dredge volume (i.e., 165,000 cubic yards [cy] under Alternative 2 compared with 86,121 cy under Alternative 1) and dredging duration (i.e., 27 weeks under Alternative 2 compared with 14 weeks under Alternative 1). However, similar to Alternative 1, estimated construction-related criteria pollutant emissions would be below the <i>de minimis</i> threshold levels for Clean Air Act conformity. As described for Alternative 1, emissions associated with the floating dry dock would be evaluated by the SDAPCD as a part of the issuance of a “Permit to Operate,” for which the Navy would apply and obtain prior to vessel maintenance. Therefore, implementation of Alternative 2 would result in	Air quality impacts under Alternative 3 would be the additive emissions from the emplacement of the proposed floating dry dock at the south berth of the Mole Pier under Alternative 1 as well as the Commercial Outlease (COL) floating dry dock at the Marine Group Boatworks, LLC (MGBW) maintenance piers locations under Alternative 2. Estimated emissions would be below the <i>de minimis</i> threshold levels for Clean Air Act conformity. As described for Alternative 1 and Alternative 2, emissions associated with the floating dry dock would be evaluated by the SDAPCD as a part of the issuance of a “Permit to Operate,” for which the Navy would apply and obtain prior to vessel maintenance. Avoidance and Minimization Measures Under Alternative 3, the Navy would comply with all applicable BMPs presented in

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		would apply and obtain prior to vessel maintenance. Therefore, implementation of Alternative 1 would result in less than significant impacts to air quality. Avoidance and Minimization Measures Under Alternative 1, the Navy would comply with all applicable BMPs presented in Table 2-3. Additional avoidance and minimization measures would not be required.	less than significant impacts to air quality. Avoidance and Minimization Measures Under Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additional avoidance and minimization measures would not be required.	Table 2-3. Additional avoidance and minimization measures would not be required.
Water Resources	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to water resources would occur under the No Action Alternative. Avoidance and Minimization Measures Under the No Action Alternative, the	Under Alternative 1, dredging activities would result in minor changes to bathymetry at the south berth of the Mole Pier; however, these changes would not be sufficient to affect circulation patterns in the San Diego Bay. Potential surface water quality impacts associated with Alternative 1 include spills and releases of hazardous and nonhazardous materials, including materials involved with dredging as well as demolition and construction.	Under Alternative 2, impacts to water quality would be similar in type to those described for Alternative 1, including, bathymetry and circulation, upland surface water quality, and marine water quality. Under Alternative 2, approximately 165,000 cy of sediment would be dredged. As described for Alternative 1, impacts to marine water quality, such as increased turbidity, decreased light penetration, and decreased dissolved oxygen, would occur from the barge-mounted	The implementation of Alternative 3 would result in the emplacement of two floating dry docks and associated impacts to water resources would be similar in type to those described for Alternative 1 and Alternative 2, but additive. For example, this alternative would introduce greater levels of turbidity over a larger area than described for Alternative 1 and Alternative 2 individually; however, as previously described for each of these alternatives, most sediments suspended by

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

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	implementation of BMPs and avoidance and minimization measures would not be necessary.	Potential sources of impacts on marine water quality associated with dredging as well as required demolition and construction activities include accidental release of vessel and equipment fuels or hydraulic fluids. The contractor would be required to develop, receive Navy approval of, and implement a site-specific construction Stormwater Pollution Prevention Plan (SWPPP) that specifies BMPs. The sediment to be dredged or disturbed by pile extraction/installation is estimated to be mostly sand and silts. Previous sampling conducted in the vicinity and at the south berth of the Mole Pier did not indicate elevated levels of contaminants. Therefore, it is unlikely that temporary turbidity associated with these activities would mobilize significant levels of dissolved-phase contaminants into the water column. Following emplacement, operation of the floating dry	clamshell bucket that would likely be used during dredging activities. However, most sediments resuspended by dredging settle out of the water column near the dredge within several hours, and only a small fraction take longer to resettle. As such, impacts to marine water quality due to increased turbidity, would be greater than those described for Alternative 1, but would remain less than significant. Construction activities – including the installation of piles with an impact pile driver – would also result in localized, short-term disturbances of bottom sediments. The scope of in-water construction under Alternative 2 would be much greater than Alternative 1, which is limited to minor modifications of the existing concrete wharf. Under Alternative 2, construction activities may also result in localized impacts to water quality from pouring of concrete associated with the access structures.	dredging would resettle within several hours, and only a small fraction would take longer to resettle. Additionally, all applicable permits would be obtained and all appropriate management plans and BMPs would be implemented to prevent impacts to water quality at the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Therefore, as described for Alternative 1 and Alternative 2, impacts water resources would remain less than significant. Avoidance and Minimization Measures As described for Alternative 1 and Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to water quality (e.g., spill control and

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

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		dock could result in potential water quality impacts. However, sediment resuspension would be minimal; dry docking evolutions (i.e., lowering and raising the floating dry dock) are slow and do not substantially disturb the underlying sediments. Ballast water pumps would be powered from existing land-side electrical power sources and operated in compliance with applicable National Pollutant Discharge Elimination System (NPDES) permit requirements. This facility-specific permit would dictate the operational limitations, monitoring requirements, and water quality standards that need to be met. Avoidance and Minimization Measures Under Alternative 1, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures	Following emplacement, operation of the floating dry dock could result in potential water quality impacts. However, sediment resuspension would be minimal; dry docking evolutions (i.e., lowering and raising the floating dry dock) are slow and do not substantially disturb the underlying sediments. Ballast water pumps would be powered from existing land-side electrical power sources and operated in compliance with applicable NPDES permit requirements. This facility-specific permit would dictate the operational limitations, monitoring requirements, and water quality standards that need to be met. All relevant BMPs listed in Table 2-3, including debris and spillage measures would be implemented to prevent and reduce adverse effects to water quality. Additionally, the action would comply with all required permit conditions during construction activities. Therefore, implementation of Alternative 2 would not result	response measures, clean construction materials, barge to collect demolition debris, etc.).

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		intended to reduce the potential for construction-related impacts to water quality (e.g., spill control and response measures, clean construction materials, barge to collect demolition debris, etc.).	in significant impacts to water resources. Avoidance and Minimization Measures Under Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to water quality (e.g., spill control and response measures, clean construction materials, barge to collect demolition debris, etc.).	
Biological Resources	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to biological	Physical disturbance during dredging and sediment disposal (14 weeks) as well as required demolition (4 weeks) and construction activities (10 weeks) under Alternative 1 would result in the short-term loss of marine benthic organisms. Turbidity would persist throughout these activities; however, it would vary spatially based on currents and sediment grain size. Most sediments	Under Alternative 2, impacts to biological resources would be similar to those described for Alternative 1. However, the dredge volume (i.e., 165,000 cy under Alternative 2 compared with 86,121 cy under Alternative 1) and dredging duration (i.e., 27 weeks under Alternative 2 compared with 14 weeks under Alternative 1) would be longer.	The implementation of Alternative 3 would result in the emplacement of two floating dry docks and associated impacts to water resources would be similar in type to those described for Alternative 1 and Alternative 2, but additive. Implementation of this alternative would result in up to 480 Level B (Behavior) takes of California sea lions.

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
	resources would occur under the No Action Alternative. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of BMPs and avoidance and minimization measures would not be necessary.	suspended by dredging would resettle within several hours, and only a small fraction would take longer to resettle. Following emplacement, operation of the floating dry dock could result in potential water quality impacts. However, sediment resuspension would be minimal; dry docking evolutions (i.e., lowering and raising the floating dry dock) are slow and do not substantially disturb the underlying sediments. Dredging as well as required construction and demolition activities would result in the temporary displacement of marine birds and minimal alterations to foraging conditions and/or prey availability. These impacts would not be significant because of their limited scale and duration. Underwater noise generated during dredging, demolition, and pile driving activities would disturb fish and marine mammals within the vicinity. As a result, fish and marine	As described for Alternative 1, dredging and construction activities would result in the short-term loss of marine benthic organisms. Turbidity impacts would be similar in type to those described for Alternative 1 and would be temporary and not significant. Impacts on birds would also be similar to those described Alternative 1, but of greater duration. Additionally, bird density and diversity are greater near the existing MGWB maintenance piers location. While the impacts on birds would be greater than those described for Alternative 1, they would remain less than significant. As described for Alternative 1, underwater noise generated during dredging, demolition, and pile driving activities would disturb fish and marine mammals within the vicinity. The Navy has prepared and submitted an application for an IHA to NMFS. A public notice from NMFS was published on 16 April 2020. Following the 30-day public	Avoidance and Minimization Measures As with Alternative 1 and Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to biological resources including the establishment of an 82-foot (25-meter) buffered shutdown zone for underwater construction or demolition activities, intended to reduce the potential for construction-related impacts to biological resources. Prior to dredging and construction at the existing MGBW maintenance piers location, this area will also be surveyed for eelgrass. If detected, it will be mapped, and a post-construction survey will be conducted to determine the extent of any project-related impacts, which the Navy would mitigate consistent with the California

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		mammals may temporarily leave or avoid the project area. The Navy has prepared an Incidental Harassment Authorization (IHA) application for the proposed floating dry dock at the south berth of the Mole Pier. The Navy will submit the IHA application and obtain approval from National Marine Fisheries Services (NMFS) prior to the initiation of any in-water construction-related activities. With the imposition of an 82-foot (25-meter) buffered shutdown zone Level A (Injury) take would be avoided. The implementation of this alternative would result in up to 240 Level B (Behavior) takes of California sea lions. Potential impacts on green turtles from implementation of the Proposed Action would primarily be from impact pile driving. However, with the imposition of an 82-foot (25-meter) buffered shutdown zone for green turtles, the potential for acoustic injury would be avoided. The Navy prepared and submitted a	noticing period, NMFS will consider issuance of an IHA for Alternative 2. With the imposition of an 82-foot (25-meter) buffered shutdown zone Level A (Injury) take would be avoided. The implementation of this alternative would result in up to 240 Level B (Behavior) takes of California sea lions. The Navy will obtain all required approvals from NMFS prior to the initiation of any in-water construction-related activities. Potential impacts on green turtles from implementation of the Proposed Action would primarily be from impact pile driving. However, with the imposition of an 82-foot (25-meter) buffered shutdown zone for green turtles, the potential for acoustic injury would be avoided. The Navy prepared and submitted a consultation letter to NMFS on 11 February 2020. After reviewing the consultation letter, NMFS provided a response on 25 March 2020 concurring with the Navy that the Proposed Action may	Eelgrass Mitigation Policy (October 2014).

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

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		consultation letter to NMFS on 11 February 2020. After reviewing the consultation letter, NMFS provided a response on 25 March 2020 concurring with the Navy that the Proposed Action may affect, but is not likely to adversely affect federally listed species and/or federally designated critical habitats. The construction and emplacement of the floating dry dock would result in new dredging and would shade approximately 2.62 acres of marine habitat. Alternative 1 would result in a calculated 8.48-percent reduction in ecological value as a result of the proposed floating dry dock. This would translate into a loss of function equivalent to 0.53 acres of unvegetated soft bay bottom. Within the Approach Area and Turning Basin, deepening of the area would result in a functional loss of 0.78 percent over the 21.39 acres. This translates into a functional loss equivalency of 0.17 acre. These impacts	affect, but is not likely to adversely affect federally listed species and/or federally designated critical habitats. Under Alternative 2, dredging would convert approximately 5 acres of shallow subtidal habitat to moderately deep and deep subtidal habitat. Dredging would remove an eelgrass bed estimated to occupy 0.83 acres. The actual area of impact for eelgrass would be determined by pre- and post-dredging surveys. Subsequent to dredging, the floating dry dock and accessory structures would shade approximately 2.1 acres that have been converted to deep subtidal habitat. These impacts would be mitigated by providing offsetting ecological lift equivalent to the quantified loss through 1.084 acres of eelgrass habitat credits through the Navy Eelgrass Mitigation Bank. The Navy recognizes the potential adverse effect on EFH and has prepared an EFH Assessment for consultation with NMFS. On 14 April 2020,	

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

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		would be mitigated by providing offsetting ecological lift equivalent to the quantified loss through 0.084 acres of eelgrass habitat credits through the Navy Eelgrass Mitigation Bank. The Navy recognizes the shading of approximately 2.62 acres of deep subtidal habitat as a potential adverse effect on Essential Fish Habitat (EFH) for groundfish and has prepared an EFH Assessment for consultation with NMFS. On 14 April 2020, NMFS stated that there is no objection to the Navy's proposed compensatory mitigation and NMFS has no additional EFH Conservation Recommendations at this time. Avoidance and Minimization Measures Under Alternative 1, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures	NMFS stated that there is no objection to the Navy's proposed compensatory mitigation and NMFS has no additional EFH Conservation Recommendations at this time. Avoidance and Minimization Measures Under Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to biological resources including the establishment of an 82-foot (25-meter) buffered shutdown zone for underwater construction or demolition activities, intended to reduce the potential for construction-related impacts to biological resources. Prior to dredging and construction at the existing MGBW maintenance piers location, this area will also be surveyed for eelgrass. If detected, it will be mapped,	

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		intended to reduce the potential for construction-related impacts to biological; resources including the establishment of an 82-foot (25-meter) buffered shutdown zone for underwater construction or demolition activities, intended to reduce the potential for construction-related impacts to biological resources.	and a post-construction survey will be conducted to determine the extent of any project-related impacts, which the Navy would mitigate consistent with the California Eelgrass Mitigation Policy (October 2014).	
Airborne Noise ¹	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to noise would occur under the No Action Alternative. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of BMPs and avoidance and minimization measures would not be necessary.	Under the Alternative 1, airborne noise would be produced from heavy machinery and vehicles required for demolition, construction, dredging, and associated human activity. Dominant noise sources associated with dredging may include dredge engine and exhaust noise; crane engine and exhaust noise; rope noise and bucket water splash; and various noises associated with the boom and grab, the bucket hitting the bottom during dredge, and the bucket closing and opening during construction. No blasting would take place. Dredging operations would take place between 6:00 p.m. and 6:00	Airborne noise sources near the existing MGWB maintenance piers under Alternative 2 would be similar to those described for Alternative 1. However, the dredge volume (i.e., 165,000 cy under Alternative 2 compared with 86,121 cy under Alternative 1) and dredging duration (i.e., 27 weeks under Alternative 2 compared with 14 weeks under Alternative 1) would be longer. Nevertheless, dredging and sediment disposal as well as required construction activities, including overnight work, would not increase ambient outdoor noise levels at the nearest sensitive	Noise impacts under Alternative 3 would be the additive emissions from the emplacement of the proposed floating dry dock at the south berth of the Mole Pier under Alternative 1 as well as the COL floating dry dock at the existing MGWB maintenance piers location. As described for Alternative 1 and Alternative 2, Alternative 3 would not increase ambient outdoor noise levels at the nearest sensitive receptor to greater than 65 dB DNL and would not conflict with the City of San Diego construction noise ordinance. Therefore, noise-related impacts would be less than significant.

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

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		a.m., Monday through Friday, for a duration of approximately 14 weeks. Demolition and construction activities required under Alternative 1 would generally occur on weekdays during daylight hours and would involve the use of standard construction equipment ranging from trucks and cranes to pile drivers, all of which would create noise. The tugboat used to move and position the crane barge would also generate some noise, but the noise would be consistent with the ambient noise environment characteristic of NBSD. The sound level of the impact pile driver during construction would dominate and would almost exclusively determine the total sound level emanating from the south berth of the Mole Pier. Dredging and sediment disposal as well as required demolition and construction activities, including overnight work, would not increase ambient outdoor noise levels	receptor to greater than 65 dB DNL and would not conflict with the City of San Diego construction noise ordinance. Therefore, noise-related impacts would be less than significant. Avoidance and Minimization Measures Under Alternative 2, additional avoidance and minimization measures would not be required for airborne noise.	Avoidance and Minimization Measures Under Alternative 3, additional avoidance and minimization measures would not be required for airborne noise.

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		at the nearest sensitive receptor to greater than 65 decibels (dB) DNL and would not conflict with the City of San Diego construction noise ordinance. Therefore, noise-related impacts would be less than significant. Avoidance and Minimization Measures Under Alternative 1, additional avoidance and minimization measures would not be required for airborne noise.		
Transportation	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to transportation would occur under the No Action Alternative. Avoidance and Minimization Measures	Under Alternative 1, landside traffic impacts would include construction worker commutes and construction equipment/materials deliveries that do not arrive via barge on the water-side of the south berth of the Mole Pier. However, these trips would be temporary and would add a negligible amount of traffic to the existing transportation network. Traffic impacts associated with sediment disposal would include the following:	Under Alternative 2, landside traffic impacts would be similar to those described for Alternative 1. Traffic-related impacts associated with nearshore replenishment and ocean disposal would remain similar to those described for Alternative 1. However, under Alternative 2, approximately two barge trip per day would be necessary over the approximately 27-week duration. The primary source for traffic-related impacts under the upland disposal option would	The implementation of Alternative 3 would result in the emplacement of two floating dry docks and associated impacts to traffic would be similar in type to those described for Alternative 1 and Alternative 2, but additive. Traffic-related impacts associated with construction worker commutes and construction equipment/materials deliveries would remain temporary and would add a negligible amount of traffic to

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
	Under the No Action Alternative, the implementation of BMPs and avoidance and minimization measures would not be necessary.	<u>Nearshore Replenishment – Beneficial Reuse Option</u> The primary source of traffic-related impacts under the nearshore replenishment option would be vessel transportation within San Diego Bay and Pacific Ocean. Approximately two barge trips per day would be necessary over the approximately 14-week duration to transport dredged sediment from the dredge site to the disposal site. Project barge tug/barge traffic levels in San Diego Bay and the Pacific Ocean would be temporary and negligible in comparison to the approximately 40 cruise and cargo ship trips per month as well as regular military vessel, commercial fishing, and personal recreational vessel traffic. <u>Ocean Disposal Option –</u> The primary source of traffic-related impacts under the ocean disposal option would be vessel transportation within San Diego Bay and Pacific Ocean. The ocean disposal option would involve loading the 86,121 cy of	be truck trips between NBSD and the upland disposal site at the Otay Landfill. The upland disposal option would involve loading the 165,000 cy of dredged sediment into 12-cy-capacity trucks and transporting the material to a designated site such as the Otay Landfill. Transporting sediment from the upland CDF to the Otay Landfill would require approximately 13,750 truck trips over the duration of Alternative 2, as governed by the rate of drying of sediment to a point where it is suitable for transport and disposal. However, as described for alternative 1, these truck trips would account for a negligible proportion of the existing average daily trips (ADT) along the haul route, including I-5 and I-805. Avoidance and Minimization Measures Under Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-	the existing transportation network. If sediment characterization and chemistry analyses determine that the dredged material must be disposed of at the certified upland disposal site at Otay Landfill, then approximately 7,177 truck trips would be required for the dredged sediment from the south berth of the Mole Pier and approximately 13,750 truck trips would be required for dredged sediment from the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Therefore, under Alternative 3, approximately 20,927 truck trips would be required to transport the dredged materials for the upland disposal option. The truck trips that may be required for the upland disposal option under Alternative 3 would be consistent with the industrial character of the Navy installation and would also be temporary in nature.

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		dredged sediment into a barge and transporting it to LA-5 ODMDS. As with the beneficial reuse option, approximately one barge trip per day would be necessary over the approximately 14-week duration to transport the dredged sediment with one tug and barge loading at the dredge site while the other is in transit to and from LA-5 ODMDS. Project barge tug/barge traffic levels in San Diego Bay and the Pacific Ocean would be temporary and negligible. <u>Upland Disposal Option –</u> The primary source for traffic-related impacts under the upland disposal option would be truck trips between NBSD and the upland disposal site at the Otay Landfill. The upland disposal option would involve loading the 86,121 cy of dredged sediment into 12-cy-capacity trucks and transporting the material to a designated site such as the Otay Landfill. Transporting sediment from the upland Confined Drying Facility (CDF)	related avoidance and minimization measures intended to reduce the potential for construction-related impacts. Specifically, haul truck trips associated with upland disposal would be scheduled such that they avoid the weekday and weekend peak hour traffic periods along local and regional roads and highways.	Avoidance and Minimization Measures As with Alternative 1 and Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts. Specifically, haul truck trips associated with upland disposal would be scheduled such that they avoid the weekday and weekend peak hour traffic periods along local and regional roads and highways.

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		to the Otay Landfill would require approximately 7,177 truck trips over the duration of Alternative 1, as governed by the rate of drying of sediment to a point where it is suitable for transport and disposal. These truck trips would account for less than 1 percent of the existing average daily trips (ADT) along the haul route, including Interstate 5 (I-5) and I-805. Avoidance and Minimization Measures Under Alternative 1, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts. Specifically, haul truck trips associated with upland disposal would be scheduled such that they avoid the weekday and weekend peak hour traffic periods along local and regional roads and highways.		

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
Hazardous Materials and Wastes	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to hazardous materials would occur under the No Action Alternative. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of BMPs and avoidance and minimization measures would not be necessary.	Sediment samples from the dredging footprint at the south berth of the Mole Pier are currently being collected and tested in accordance with regulations in 40 Code of Federal Regulations (CFR) Parts 220–228. The forthcoming sediment characterization report will be provided to U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE) for review and comment on potential sediment disposal options. The sediment characterization and chemistry tests will include analyses to assess whether the sediment meets the allowable parameters for unconfined ocean disposal. If sediment testing results show that hazardous substances are present in the dredged sediment, an Accident Prevention Plan would be required. Additionally, all dredged sediment disposal operations performed for Alternative 1 would comply with Clean Water Act (CWA) Section 404 and would be in	Potential impacts related to hazardous materials and wastes under Alternative 2 would be similar to those described for Alternative 1. All procedures for the sediment collection and analysis described for Alternative 1 would also be used to collect and analyze sediment from the proposed dredging footprint under Alternative 2. Additionally, the same procedures would apply to construction contractors for the site-specific SWPPP to incorporate BMPs during construction activities. Avoidance and Minimization Measures The BMPs as well as avoidance and minimization measures that would be implemented to address hazards and hazardous materials would be identical those described for water resources.	Potential impacts related to hazardous materials and wastes under Alternative 3 would be similar to those described for Alternative 1 and Alternative 2. Avoidance and Minimization Measures The BMPs as well as avoidance and minimization measures that would be implemented to address hazards and hazardous materials would be identical those described for water resources.

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		accordance with a dredging permit issued by USACE, and a CWA Section 401 Water Quality Certification from the San Diego Regional Water Quality Control Board (RWQCB). Contractors would be subject to all federal, state, and San Diego County requirements for hazardous materials and hazardous waste management and would be required to follow the Hazardous Waste Management Plan (HWMP). In addition, a site-specific construction SWPPP would be developed and implemented by the demolition and construction contractor that would incorporate BMPs designed to minimize the potential for hazardous material releases during demolition and construction activities. Any hazardous materials and wastes generated during construction and operational activities would also be subject to installation-wide Emergency Planning and Community Right-to-Know Act (EPCRA)		

Table ES-1 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		312 and 313 reporting requirements. Avoidance and Minimization Measures The BMPs as well as avoidance and minimization measures that would be implemented to address hazards and hazardous materials would be identical those described for water resources.		

Notes:

¹ This discussion of airborne noise includes the types or sources of airborne noise and the associated sensitive receptors in the human environment. Airborne and underwater noise in relation to biological resources and wildlife species is discussed in the Section 3.3, *Biological Resources*.

**Final
Environmental Assessment
Floating Dry Dock Project
Naval Base San Diego, California**

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	VII
EXECUTIVE SUMMARY	ES-1
ES.1 Proposed Action	ES-1
ES.2 Purpose of and Need for the Proposed Action	ES-1
ES.3 Alternatives Considered	ES-1
ES.4 Summary of Environmental Resources Evaluated in the EA	ES-2
ES.5 Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating Actions	ES-2
ES.6 Public Involvement	ES-2
1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION	1-1
1.1 Introduction	1-1
1.2 Location	1-1
1.3 Purpose of and Need for the Proposed Action	1-5
1.4 Decision to be Made	1-5
1.5 Scope of Environmental Analysis	1-5
1.6 Key Documents	1-7
1.7 Relevant Laws and Regulations	1-7
1.8 Public and Agency Participation and Intergovernmental Coordination	1-9
2 PROPOSED ACTION AND ALTERNATIVES	2-1
2.1 Proposed Action	2-1
2.2 Alternative Screening Factors	2-2
2.3 Alternatives Carried Forward for Analysis	2-2
2.3.1 No Action Alternative	2-3
2.3.2 Alternative 1: Emplacement of a Floating Dry Dock at the South Berth of the Mole Pier	2-3
2.3.3 Alternative 2 (Preferred Alternative): Emplacement of a COL Floating Dry Dock Near the MGBW Maintenance Piers	2-12
2.3.4 Alternative 3: Emplacement of a Floating Dry Dock at Both the South Berth of the Mole Pier and the Location Near the MGBW Maintenance Piers	2-18

2.4	Alternatives Considered but not Carried Forward for Detailed Analysis.....	2-18
2.5	Best Management Practices Included in the Action Alternatives	2-19
3	AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES.....	3-1
3.1	Air Quality/Climate Change	3-6
3.1.1	Regulatory Setting	3-6
3.1.2	Greenhouse Gases	3-10
3.1.3	Affected Environment.....	3-11
3.1.4	Environmental Consequences	3-14
3.2	Water Resources	3-19
3.2.1	Regulatory Setting	3-20
3.2.2	Affected Environment.....	3-21
3.2.3	Environmental Consequences	3-25
3.3	Biological Resources.....	3-32
3.3.1	Regulatory Setting	3-32
3.3.2	Affected Environment.....	3-32
3.3.3	Environmental Consequences	3-44
3.4	Airborne Noise	3-69
3.4.1	Basics of Sound and A-Weighted Sound Level	3-69
3.4.2	Noise Metrics.....	3-70
3.4.3	Noise Effects	3-73
3.4.4	Nonauditory Health Effects	3-74
3.4.5	Regulatory Setting	3-75
3.4.6	Affected Environment.....	3-76
3.4.7	Environmental Consequences	3-77
3.5	Transportation	3-83
3.5.1	Affected Environment.....	3-83
3.5.2	Environmental Consequences	3-85
3.6	Hazardous Materials and Wastes	3-89
3.6.1	Regulatory Setting	3-89
3.6.2	Affected Environment.....	3-90
3.6.3	Environmental Consequences	3-91
3.7	Summary of Potential Impacts on Resources and Impact Avoidance and Minimization .	3-93
4	CUMULATIVE IMPACTS	4-1
4.1	Definition of Cumulative Impacts.....	4-1
4.2	Scope of Cumulative Impacts Analysis.....	4-1
4.3	Past, Present, and Reasonably Foreseeable Actions	4-2

4.3.1	Past Actions	4-2
4.3.2	Present and Reasonably Foreseeable Actions	4-4
4.4	Cumulative Impact Analysis	4-6
4.4.1	Air Quality/Climate Change	4-6
4.4.2	Water Resources.....	4-8
4.4.3	Biological Resources	4-9
4.4.4	Airborne Noise	4-11
4.4.5	Transportation	4-13
4.4.6	Hazardous Materials and Wastes	4-14
5	OTHER CONSIDERATIONS REQUIRED BY NEPA	5-1
5.1	Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations	5-1
5.2	Irreversible or Irretrievable Commitments of Resources	5-4
5.3	Unavoidable Adverse Impacts	5-4
5.4	Relationship between Short-Term Use of the Environment and Long-Term Productivity	5-4
6	LIST OF PREPARERS.....	6-1
7	PERSONS AND AGENCIES CONSULTED	7-1
8	REFERENCES	8-1

List of Figures

Figure 1-1	Regional Location of Naval Base San Diego	1-4
Figure 1-2	Mole Pier at Naval Base San Diego	1-6
Figure 2-1	Nearshore Replenishment Sites.....	2-7
Figure 2-2	Emplacement of a Floating Dry Dock at the South Berth of the Mole Pier	2-11
Figure 2-3	Emplacement of a COL Floating Dry Dock at the MGBW Maintenance Piers Location.....	2-17
Figure 3-1	Bathymetry Contours.....	3-22
Figure 3-2	Eelgrass Beds at Naval Base San Diego	3-35
Figure 3-3	Marine Group Boatworks COL Alternative with Eelgrass Extents	3-36
Figure 3-4	Underwater Sound Propagation from Pile Driving and Removal Activities at the South Berth of Mole Pier Naval Base San Diego	3-55
Figure 3-5	Underwater Sound Propagation from Pile Installation Activities at the Marine Group Boat Works COL Naval Base San Diego.....	3-65
Figure 3-6	A-Weighted Sound Levels from Typical Sources.....	3-71

List of Tables

Table ES-1	Summary of Potential Impacts on Resource Areas.....	ES-3
Table 2-1	Proposed Pile Extraction/Installation Activities at the South Berth of the Mole Pier	2-10
Table 2-2	Proposed Pile Installation Activities at the MGBW Maintenance Piers Location.....	2-16
Table 2-3	Best Management Practices	2-19
Table 3-1	California and National Ambient Air Quality Standards	3-8
Table 3-2	General Conformity <i>de minimis</i> Levels Pursuant to 40 CFR Section 93.153(b)(1).....	3-9
Table 3-3	Representative Air Quality Data for NBSD (2012–2016) from San Diego- Beardsley Street Monitoring Station	3-13
Table 3-4	Alternative 1 Emissions and Comparison to <i>de minimis</i> Thresholds	3-15
Table 3-5	Alternative 2 Emissions and Comparison to <i>de minimis</i> Thresholds	3-18
Table 3-6	Underwater Noise Source Levels Modeled for Impact Pile Driving.....	3-47
Table 3-7	Underwater Noise Source Levels Modeled for Nonimpulsive Sources	3-47
Table 3-8	Calculated Radial Distance to Underwater Acoustic Thresholds and Area of ZOIs within the Thresholds from Pile Driving and Removal at the South Berth of the Mole Pier	3-53
Table 3-9	Sound Exposure Criteria for Fish Mortality, Injury, and TTS from Impact Pile Driving	3-58
Table 3-10	Mortality, Injury, TTS, and Behavior Impact Ranges (meters) for Fish from Impulsive and NonImpulsive Underwater Noise Construction Methods	3-59
Table 3-11	Calculated Radial Distance to Underwater Acoustic Thresholds and Area of ZOIs within the Thresholds from Pile Driving and Removal Near the MGBW Maintenance Piers	3-64
Table 3-12	Noise Levels at Representative Receptor Points in National City.....	3-79
Table 3-13	Noise Levels at Representative Receptor Points in National City.....	3-81
Table 3-14	Summary of Potential Impacts on Resource Areas.....	3-94
Table 4-1	Past Cumulative Action Evaluation	4-2
Table 4-2	Present and Reasonably Foreseeably Cumulative Actions	4-5
Table 5-1	Principal Federal and State Laws Applicable to the Proposed Action	5-1

Appendices

Appendix A	Air Quality Analysis and Record of Non-Applicability
Appendix B	Ecological Functional Loss Analysis
Appendix C	Informal Section 7 Consultation
Appendix D	Essential Fish Habitat Assessment
Appendix E	Coastal Consistency Negative Determination
Appendix F	Public and Agency Participation

Abbreviations and Acronyms

Acronym	Definition	Acronym	Definition
°F	degree(s) Fahrenheit	CONBSD	Commanding Officer Naval Base San Diego
µg/L	microgram(s) per liter	CPF	Commander of the United States Pacific Fleet
µg/m ³	microgram(s) per cubic meter	CTR	California Toxics Rule
µPa	microPascal	CWA	Clean Water Act
ACM	asbestos-containing material	cy	cubic yards
ADT	average daily trips	CZMA	Coastal Zone Management Act
AFDM	Medium Auxiliary Floating Drydock	dB	decibel(s)
ANSI	American National Standards Institute	dB RMS re 1 µPa	decibels referenced to a pressure of 1 microPascal
AT/FP	Anti-Terrorism/Force Protection	dBA	A-weighted decibel
BAE	British Aerospace Engineering	DDG	Guided Missile Destroyer
Basin Plan	Water Quality Control Plan for the San Diego Basin	DNL	day-night average sound level
BMP	best management practice	DoD	United States Department of Defense
CAA	Clean Air Act	DPS	distinct population segment
CAAQS	California Ambient Air Quality Standards	EA	Environmental Assessment
Caltrans	California Department of Transportation	EFH	essential fish habitat
CATEX	Categorical Exclusion	EIS	Environmental Impact Statement
CDF	confined drying facility	EO	Executive Order
CDFW	California Department of Fish and Wildlife	EPCRA	Emergency Planning and Community Right-to-Know Act
CEQ	Council on Environmental Quality	ESA	Endangered Species Act
CEQA	California Environmental Quality Act	ESQD	Explosives Safety Quantity-Distance
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	ESS	Explosives Safety Submission
CFR	Code of Federal Regulations	ESS DR	Explosives Safety Submission Determination Request
CNEL	community noise equivalent level	FICUN	Federal Interagency on Urban Noise
CO	carbon monoxide	FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
CO ₂	carbon dioxide	FMP	Fishery Management Plan
CO ₂ e	carbon dioxide equivalent	FTA	Federal Transit Administration
COL	Commercial Out Lease		

Acronym	Definition	Acronym	Definition
FY	fiscal year	MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
GHG	greenhouse gas	MSAT	Mobile Source Air Toxics
GIS	Geographic Information System	NA	Not Applicable or Not Available
GPS	Global Positioning System	NAAQS	National Ambient Air Quality Standards
HAPC	habitat area of potential concern	NASSCO	National Steel and Shipbuilding Company
HWMP	Hazardous Waste Management Plan	NAVFAC SW	Naval Facilities Engineering Command Southwest
I-15	Interstate 15	NAVSEA 05	Naval Sea Systems Command Naval Systems Engineering Directorate
I-5	Interstate 5	Navy	United States Department of the Navy
I-805	Interstate 805	NEPA	National Environmental Policy Act
IHA	Incidental Harassment Authorization	NBSD	Naval Base San Diego
INRMP	Integrated Natural Resources Management Plan	NIOSH	National Institute for Occupational Safety and Health
km ²	square kilometer(s)	NIPTS	noise induced permanent threshold shift
LCS	Littoral Combat Ship	NMFS	National Marine Fisheries Service
Leq	equivalent sound level	NO ₂	nitrogen dioxide
Leq(24)	24-hour equivalent sound level	NO _x	nitrogen oxides
Lmax	maximum A-weighted sound level	NOA	Notice of Availability
LOS	level of service	NOAA	National Oceanic and Atmospheric Administration
MBTA	Migratory Bird Treaty Act	NOSSA	Naval Ordnance Safety and Security Activity
MEC	Munitions and Explosives of Concern	NPDES	National Pollutant Discharge Elimination System
mg/L	milligram(s) per liter	NTU	nephelometric turbidity unit(s)
mg/m ³	milligram(s) per cubic meter	O ₃	ozone
MGBW	Marine Group Boat Works, LLC	ODMDS	Ocean Dredged Material Disposal Site
mL/L	milliliter(s) per liter	PFMC	Pacific Fishery Management Council
MLLW	mean lower low water		
mm	millimeter(s)		
MMPA	Marine Mammal Protection Act		
MOU	Memorandum of Understanding		
MPPEH	Material Potentially Presenting an Explosives Hazard		
MPRSA	Marine Protection, Research, and Sanctuaries Act		

Acronym	Definition	Acronym	Definition
PM ₁₀	particulate matter less than or equal to 10 microns in diameter	SO ₂	sulfur dioxide
PM _{2.5}	particulate matter less than or equal to 2.5 microns in diameter	SPL	sound pressure level
POSD	Port of San Diego	SWRCB	State Water Resources Control Board
ppb	part(s) per billion	SWPPP	Stormwater Pollution Prevention Plan
ppm	part(s) per million	TL	transmission loss
PSD	Prevention of Significant Deterioration	TMDL	Total Maximum Daily Load
PTS	permanent threshold shift	tpy	ton(s) per year
RCRA	Resource Conservation and Recovery Act	TSCA	Toxic Substances Control Act
RHA	Rivers and Harbors Act	TTS	temporary threshold shift
RMS	root mean square	UD	utilization distribution
ROI	Region of Influence	U.S.	United States
RWQCB	Regional Water Quality Control Board	U.S.C.	United States Code
SANDAG	San Diego Association of Governments	USACE	United States Army Corps of Engineers
SDAB	San Diego Air Basin	USDOT	United States Department of Transportation
SDAPCD	San Diego Air Pollution Control District	USEPA	United States Environmental Protection Agency
SEL	sound exposure level	USFWS	United States Fish and Wildlife Service
SEL _{cum}	cumulative sound exposure level over 24 hours	USS	United States Ship
sf	square feet	UXO	Unexploded Ordnance
SIP	State Implementation Plan	VOC	volatile organic compound
		Wood	Wood Environmental & Infrastructure Solutions, Inc.
		ZOI	zone of influence

1 Purpose of and Need for the Proposed Action

1.1 Introduction

Naval Facilities Engineering Command Southwest (NAVFAC SW), a Command of the United States (U.S.) Department of the Navy (hereinafter, jointly referred to as the Navy) has prepared this Environmental Assessment (EA) on behalf of the proponent Naval Base San Diego (NBSD) in accordance with the National Environmental Policy Act (NEPA) (42 U.S. Code [U.S.C.] Sections 4321–4370h); Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508); and Navy Regulations for Implementing NEPA (32 CFR Part 775).

10 U.S.C. Section 5062: *“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.”*

NBSD is a major port for Navy ships assigned to the U.S. Pacific Fleet and is the major West Coast logistics base for surface forces of the Navy, dependent activities, and other commands. Activities at NBSD include Continuous Maintenance Availabilities and loading of supplies for fleet vessels (Navy 2012b, 2016).

In a memorandum dated 16 January 2018, the Commander of the U.S. Pacific Fleet (CPF) identified a current and projected shortfall of dry dock space necessary to support the U.S. Pacific Fleet’s forecasted surface ship maintenance requirement.

Existing dry dock space available for surface ship maintenance in San Diego Bay consists of two floating docks owned and operated by British Aerospace Engineering San Diego (BAE); one floating dock owned and operated by National Steel and Shipbuilding Company (NASSCO); and one government-owned graving dock located on NBSD. The graving dock is capable of docking only the Avenger Class Mine Counter Measure and the Freedom-variant of the Littoral Combat Ship (LCS) and cannot support an Arleigh Burke class Guided Missile Destroyer (DDG) because the draft of the ship’s sonar dome compared with the depth of the dock.

A concept study was completed by the Naval Systems Engineering Directorate (Naval Sea Systems Command [NAVSEA] 05), which identified an average of 3.6 dry dockings per year between fiscal year (FY) 2017 and FY 2026 and a peak of 8 dry dockings during one month in FY 2022. The Navy cannot currently accommodate this need because it does not control the schedules for the existing dry docks owned by private companies (i.e., BAE and NASSCO). As described in the concept study, a conservative estimate of the average dry docks plus one standard deviation results in a requirement of five dry docks. Dry dock workload could then be appropriately managed through fleet scheduling actions. An additional Navy owned dry dock dedicated to Navy work and an additional available commercial dry dock are sufficient to fulfill this need, if they are DDG and LCS capable. Also, as the need is developing, it could be met by emplacing one dry dock in the near future, and another by FY 2022.

1.2 Location

NBSD is located approximately 3 miles southeast of the City of San Diego’s Central Business District and 10 miles north of the U.S./Mexico border on the eastern shore of San Diego Bay. NBSD is bordered to the north by the community of Barrio Logan, to the east by Interstate 5 (I-5), and to the south by the cities of National City and Chula Vista. East Harbor Drive divides NBSD into two main parts: the mainly industrial

bayfront area west of East Harbor Drive and the community support complex east of East Harbor Drive. There are approximately 977 acres of land and 326 acres of water that extend to the U.S. pier headline in San Diego Bay. NBSD contains 12 piers (including a Mole Pier), two channels, and various quay walls that extend along approximately 5.6 miles of shoreline (see Figure 1-1).

The emplacement of the proposed floating dry dock(s) would occur within San Diego Bay at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing Marine Group Boat Works, LLC (MGBW) maintenance piers.

The Mole Pier is located approximately 1 mile south of the entrance gate to NBSD, immediately south of Pier 8 and the Paleta Creek Channel, and north of Pier 10 (see Photo 1). The south berth of the Mole Pier, which was originally constructed in the early 1980s, comprises a concrete wharf, mechanical pier, electrical pier, access pier, and ramp (see Figure 1-2). The pile-supported concrete wharf is approximately 588 feet long and 53 feet wide. The mechanical pier (approximately 75 feet long and 53 feet wide), electrical pier (approximately 21 feet long and 53 feet wide), and access pier (approximately 42 feet long and 53 feet wide) were constructed north of the wharf to provide servicing and access to the wharf. The ramp pier (approximately 105 feet long and 23 feet wide) is a finger pier located on the quay wall just east of the wharf between the Mole Pier and Pier 10. A sump was originally dredged at the south berth of the Mole Pier to accommodate Medium Auxiliary Floating Dry Dock (AFDM) 14 "Steadfast," a floating dry dock previously used to repair Navy ships before it was relocated in 1998.

The south berth of the Mole Pier was modified in 2002 to accommodate berthing and mooring of the U.S. Ship (USS) Curtiss, which is currently stationed at the wharf. Modifications to the wharf involved construction of two mooring points for the USS Curtiss, a dolphin at the forward portion of the vessel, and an extension of the wharf at the aft location (Navy 2018a). Additionally, floating hoteling facilities for the USS Curtiss are located immediately adjacent



Photo 1. Approximately 2,795 square feet of existing pier deck would be demolished at the south berth of the Mole Pier to facilitate construction of a forward dolphin. The pile-supported extension at the west wharf would also be removed.

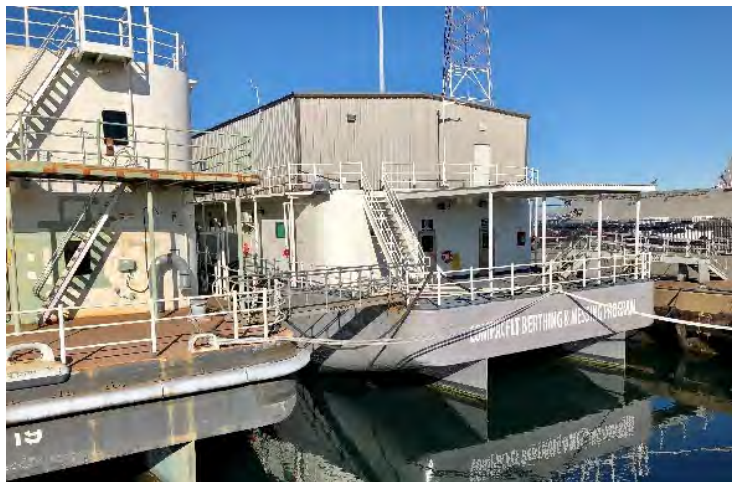


Photo 2. Implementation of the Proposed Action would require temporary relocation of these floating hoteling facilities, which are currently located immediately west of the concrete wharf.

to the ramp pier (see Photo 2). The Mole Pier site would include the proposed dredge footprint (approximately 4.79 acres) as well as upland areas along the south berth of the Mole Pier that would require improvements to support the proposed emplacement and operation of the proposed floating dry dock (approximately 5.30 acres). Therefore, the total site area at the south berth of the Mole Pier site would be approximately 10 acres.

The southern edge of the NBSD property boundary is located approximately 3,700 feet (0.7 mile) south of the Mole Pier and 1,220 feet (0.25 mile) south of Pier 13. Additionally, this location is approximately 500 feet south of the former Pier 14 site, which was previously used to berth shallow-draft vessels, but was later demolished by the Navy in 2008 (see Photo 3).

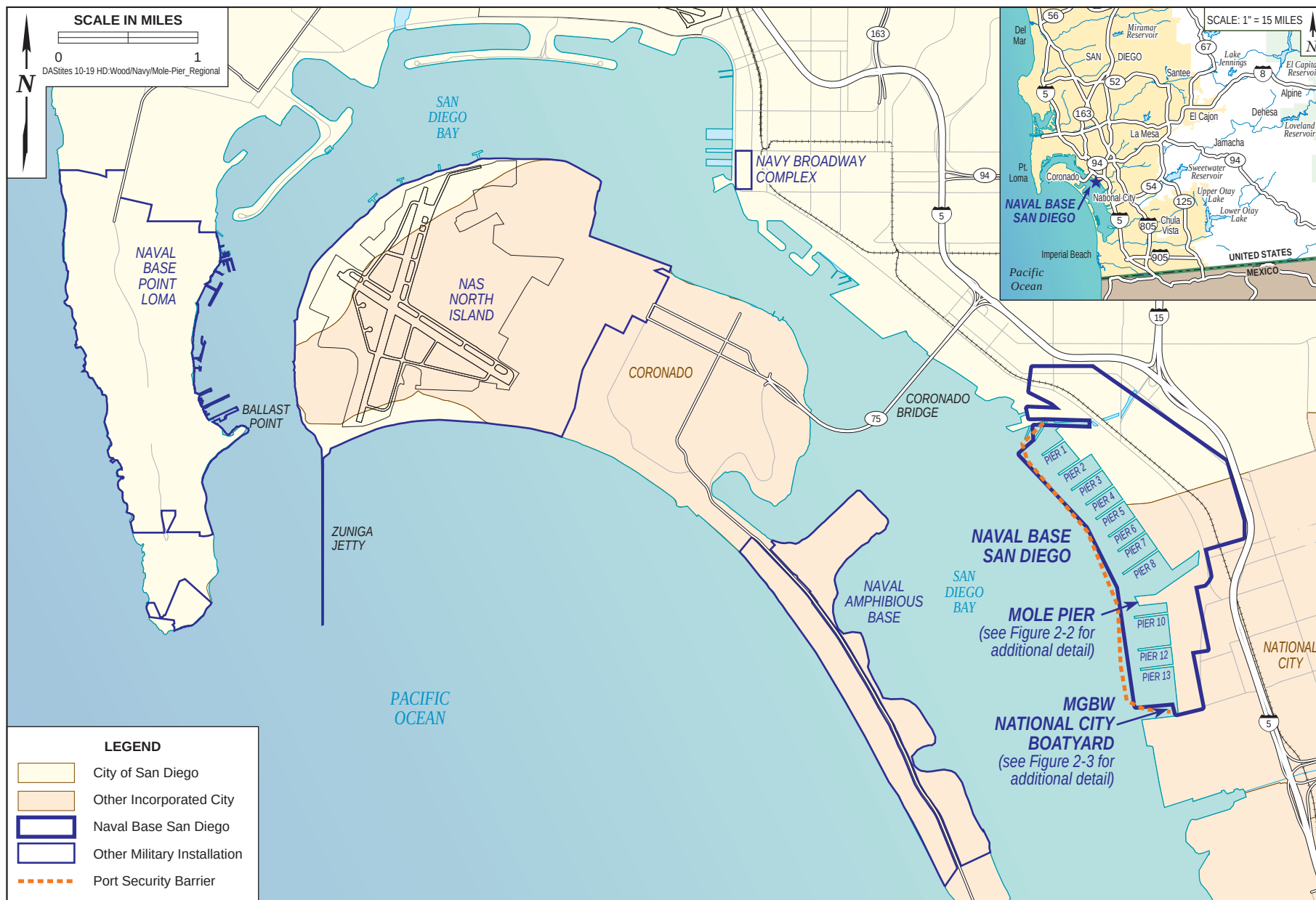
The southern edge of NBSD is located immediately adjacent to the MGBW National City Boatyard, a full-service facility that specializes in refits, repairs, and new construction (see Photo 4). The MGBW National City Boatyard includes two maintenance piers, which are between 15 and 40 feet wide and extend for approximately 400 feet. According to a recent Sediment Quality Survey Report, the existing water depth at this site ranges from approximately -9 to -17 feet mean lower low water (MLLW) (Mission Environmental LLC 2018). The project site would include the proposed 5.55-acre water lease area as well as the proposed 0.88-acre landside lease area, which would be leased by the Navy to MGBW for a period of 66 years. Therefore, the total project site area would encompass approximately 6.43 acres.



Photo 3. The former Pier 14 was demolished in 2008. This location (shown above) is currently open water with no in-water structures remaining.



Photo 4. The MGBW National City Boatyard is located immediately south of the NBSD property line. The site includes two maintenance piers located outside the existing security boundary.



1.3 Purpose of and Need for the Proposed Action

The *purpose* of the Proposed Action is to provide up to two floating dry docks, including all required dredging and sediment disposal as well as all required demolition and construction activities, necessary for maintenance of the U.S. Pacific Fleet at NBSD as identified by the CPF (refer to Section 1.1, *Introduction*). To achieve the purpose, the Navy would need to add one floating dry dock at NBSD and either upgrade the existing graving dock or add a second floating dry dock. Specifically, the proposed floating dry dock(s) would support maintenance of several vessel classes: DDG-51, LCS-2, LSD-41, and LSD-49.

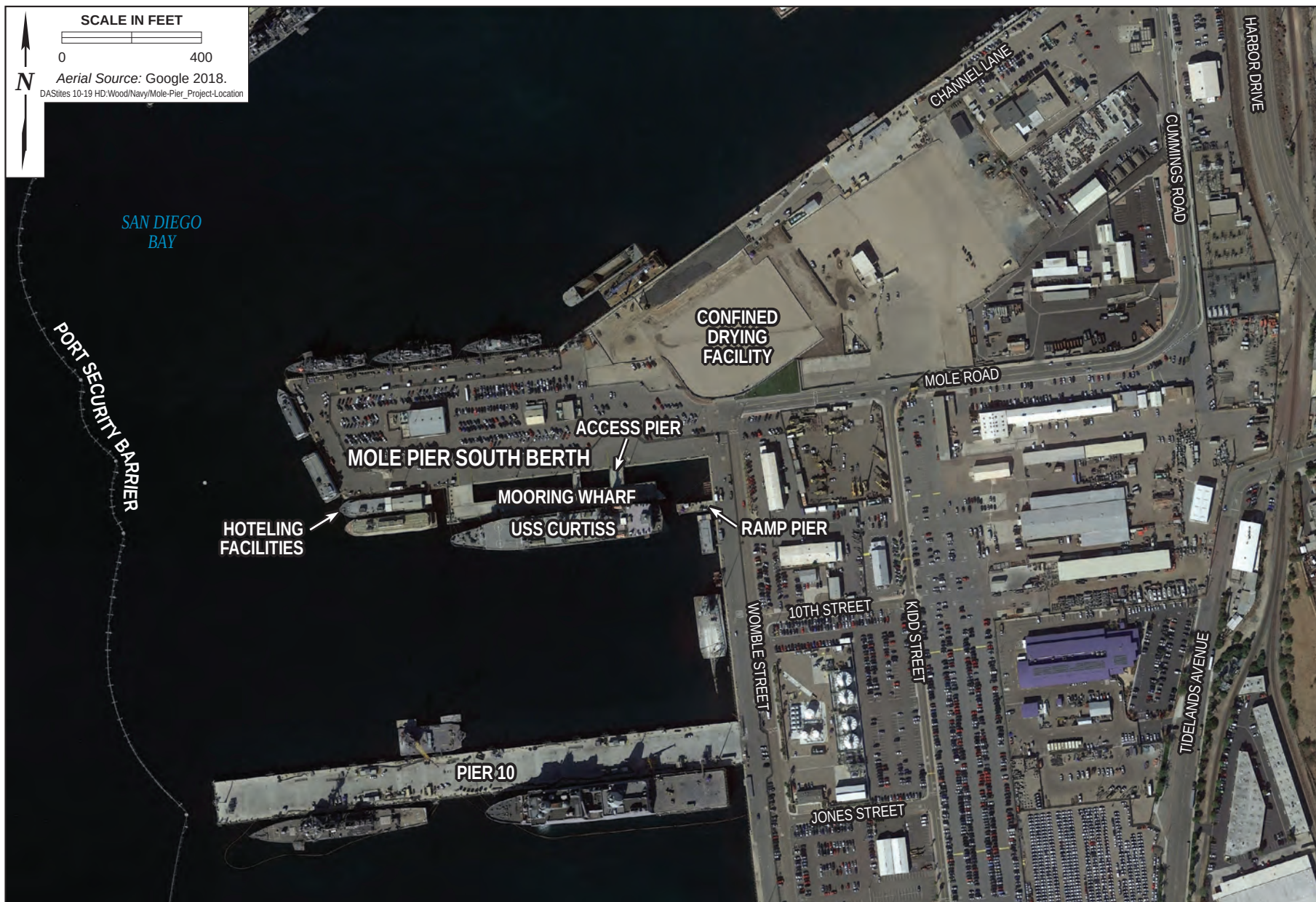
The *need* for emplacement and operation of dry dock space is to ensure NBSD's capability to conduct berth-side complex repair and maintenance of vessels, furthering the Navy's ability to provide training and equipping of combat-capable Naval forces ready to deploy worldwide. Current and projected shortfalls of dry dock space have reduced overall surface ship maintenance capabilities at NBSD. The Proposed Action would address this shortfall and enhance the ability of the Navy to execute its congressionally mandated roles and responsibilities under 10 U.S.C. Section 5062.

1.4 Decision to be Made

The decision to be made as a result of the analysis in this EA is first to determine whether preparation of an Environmental Impact Statement (EIS) is needed. An EIS would be required if it is anticipated that the Proposed Action would have significant impacts on the human or natural environment. Should an EIS be deemed unnecessary, the Navy would prepare a Finding of No Significant Impact (FONSI).

1.5 Scope of Environmental Analysis

To address the current and projected shortfall of dry dock space required for maintenance of the U.S. Pacific Fleet, the emplacement and operation of up to two floating dry docks, including all required dredging and sediment disposal as well as all required demolition and construction activities, has been proposed at NBSD. A sediment testing effort would be completed for both sites – the south berth of the Mole Pier as well as the location near the existing MGBW maintenance piers – prior to beginning any dredging activities to support regulatory decision-making on disposal options for dredged sediments (i.e., nearshore replenishment, unconfined aquatic disposal, and upland disposal). This impact analysis included in this EA is based on recent sediment test results from preliminary sampling or previous sampling performed at nearby sites. Additionally, underwater acoustic survey and modeling have been conducted to support preparation of an Essential Fish Habitat (EFH) Assessment (see Appendix D) and Incidental Harassment Authorization (IHA) application as well as associated regulatory decision-making on noise impacts on marine wildlife at the south berth of the Mole Pier and the location near the existing MGBW maintenance piers. This EA includes an analysis of potential direct, indirect, short-term, long-term, and cumulative impacts on the human and natural environment associated with the three action alternatives and the No Action Alternative.



EA

Mole Pier at Naval Base San Diego

FIGURE
1-2

1.6 Key Documents

Key documents are sources of information related to the proposed emplacement and operation of up to two floating dry docks that have been incorporated into this EA. Documents are considered to be key because 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 the following:

- *Dry Dock No. 1 Modifications and Mole Pier Floating Dry Dock Studies (Dry Dock Studies) (August 2018)*. This document identifies recommendations for improvements to the south berth of the Mole Pier required to support the floating dry dock.
- *Final Environmental Assessment Pier 8 Replacement Naval Base San Diego (June 2016)*. This document addresses impacts of the proposed improvements to Pier 8 on the human and natural environment, including dredging and in-water construction and demolition activities.
- *Wharf Shading Study for the Pier 8 Replacement and Demolition Project, Naval Base San Diego (March 2014)*. This document comprehensively assesses the impacts of shading within San Diego Bay.
- *Final Integrated Natural Resources Management Plan Naval Base San Diego (June 2014)*. This management plan provides long-term guidance for management of natural resources at NBSD to support the military mission, while protecting and enhancing installation resources for multiple use, sustainable yield, and biological integrity. The primary purpose of the Integrated Natural Resources Management Plan (INRMP) is to ensure that natural resources conservation measures and military operations on the installation are integrated and consistent with stewardship and legal requirements on NBSD.
- *Naval Base San Diego Parking and Traffic Congestion Relief Plan (June 2018)*. This document addresses parking and traffic issues within NBSD and the immediate surrounding vicinity.
- *San Diego Bay Integrated Natural Resources Management Plan (March 2013)*. This management plan is a long-term, collaborative strategy for managing the bay's natural resources, and the primary means by which the Navy and Port of San Diego (POSD) plan natural resources work in the bay.
- *Final Environmental Assessment Pier 12 Replacement and Dredging Naval Base San Diego (July 2011)*. This document addresses impacts of the proposed improvements to Pier 12 on the human and natural environment, including dredging and in-water construction and demolition activities.
- *Draft Marine Group Boat Works Project Feasibility Investigation Sediment Quality Survey Report (August 2018)*. This document provides a preliminary assessment of sediment quality at the existing MGBW maintenance piers location based on four sediment cores collected to depths ranging from 2.5 to 7 feet.

1.7 Relevant Laws and Regulations

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

- NEPA, 42 U.S.C. Sections 4321–4370h

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- CEQ Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR Parts 1500–1508
 - Navy Regulations for Implementing NEPA, 32 CFR Part 775
 - Clean Air Act (CAA) General Conformity Rule, 42 U.S.C. Section 7506(c)
 - Clean Water Act (CWA), 33 U.S.C. Section 1251 et seq.
 - Rivers and Harbors Act (RHA), 33 U.S.C. Section 407
 - Coastal Zone Management Act (CZMA), 16 U.S.C. Section 3505
 - National Historic Preservation Act, 54 U.S.C. Section 300101 et seq.
 - Endangered Species Act (ESA), 16 U.S.C. Section 1531 et seq.
 - Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSFCMA), 16 U.S.C. Sections 1801–1883
 - Marine Mammal Protection Act (MMPA), 16 U.S.C. Sections 1361–1407, Public Law 92-522
 - Marine Protections, Research, and Sanctuaries Act (MPRSA) of 1972, 16 U.S.C. Section 1431
 - Migratory Bird Treaty Act (MBTA), 16 U.S.C. Section 703
 - Bald and Golden Eagle Protection Act, 16 U.S.C. Sections 668–668d
 - Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Section 9601 et seq.
 - Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. Sections 11001–11050
 - Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. Section 136 et seq.
 - Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 et seq.
 - Toxic Substances Control Act (TSCA), 15 U.S.C. Sections 2601–2629
 - 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

The following agency consultations and associated permits/authorizations/concurrences would be required with implementation of the Proposed Action:

- CWA Section 404 and RHA Section 10 permits from the U.S. Army Corps of Engineers (USACE) Carlsbad Field Office
- U.S. Environmental Protection Agency (USEPA) and USACE suitability determination for ocean disposal of dredged sediments
- CWA Section 401 Water Quality Certification from the San Diego Regional Water Quality Control Board (RWQCB)
- Section 103 of the MPRSA approval for dredged sediment disposal at LA-5 Ocean Dredged Material Disposal Site (ODMDS)

- Concurrence from the California Coastal Commission on a Coastal Consistency Negative Determination submitted in accordance with the CZMA (see Appendix E)
- IHA from National Marine Fisheries Service (NMFS) under the MMPA
- Concurrence from NMFS on the EFH analysis and determination (see Appendix D)
- Concurrence from NMFS on the informal ESA Section 7 Consultation (see Appendix C)

Table 5-1 in Chapter 5 describes the consistency of the Proposed Action with these laws, policies, and regulations, and provides the names of regulatory agencies responsible for their implementation.

1.8 Public and Agency Participation and Intergovernmental Coordination

The Navy published a Notice of Availability (NOA) for the Draft EA in the *San Diego Union-Tribune* on 10 October through 12 October 2019. The NOA described the Proposed Action, solicited public comments on the Draft EA, provided dates of the 15-day public comment period, and announced that a copy of the Draft EA would be available for review on the Naval Facilities Engineering Command Southwest website (https://www.cnmc.navy.mil/regions/cnsw/om/environmental_support/Public_Review_of_Navy_Projects.html) and at the San Diego Central Library, Logan Heights/San Diego Public Library, and Valencia Park/Malcolm X Branch Library. The Draft EA was made available for public review beginning on 10 October 2019 and ending on 25 October 2019.

No public comments were received on the Draft EA.

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2 Proposed Action and Alternatives

2.1 Proposed Action

The scope of the Proposed Action includes all required dredging and sediment disposal as well as all required demolition and construction activities necessary to support the proposed emplacement and operation of up to two floating dry docks at NBSD.

The Navy has yet to determine the exact source of the required floating dry dock(s) and is currently conducting a business analysis of acquisition alternatives via either purchase or lease of the floating dry dock(s) from a U.S.-based shipyard. This review includes the various capacities of potential shipyards and their locations, expected associated costs, and direct and indirect environmental impacts. It would be possible to construct the floating dry dock(s) as one continuous unit, or to build and transport the floating dry dock(s) in smaller lengths or modules, which would then be assembled onsite prior to emplacement. The floating dry dock(s) would be acquired in time for emplacement after dredging and all other required site modifications have been completed, or shortly thereafter. When an acquisition strategy has been identified, the action details and associated environmental impacts would be analyzed under NEPA and an appropriate level of subsequent environmental documentation would be prepared. The floating dry dock(s) would not be self-powered or capable of maneuvering without assistance from support vessels; therefore, the floating dry dock(s) would remain permanently moored to its location.

Following the completion of dredging as well as demolition and construction activities, each floating dry dock would be staffed by up to 40 maintenance workers. Vessel repair and maintenance activities at the proposed floating dry dock(s) may include abrasive blasting, hydro-blasting, metal grinding, painting, tank cleaning, removal of bilge and ballast water, removal of anti-fouling paint, sheet metal work, electrical work, mechanical repair, engine repair, hull repair, shaft repair, propeller and rudder repair, repair/replacement of sea valves and fittings below the waterline, and sewage disposal. Operational activities associated with the floating dry dock would include the use of pumps, cranes, compressors, and electrical machinery that would be powered from existing land-side electrical power sources. The sole generators on board would be emergency back-up generators, which would be designed with all required spill containment and keel-cooling features. The saltwater fire suppression system would be a static system with no relief valve. Black- and gray-water sewage would be collected and stored on board and pumped to the land-side municipal wastewater treatment system.

Dry docking evolutions (i.e., lowering and raising the floating dry dock) would be accomplished with integral ballast tanks. Electrical pumps would be used to pump seawater into the ballast tanks to submerge the floating dry dock, and then out of ballast tanks to float the floating dry dock. Ballast water pumps would be powered from existing land-side electrical power sources and operated in compliance with applicable NPDES permit requirements. These facility-specific permits would dictate the operational limitations, monitoring requirements, and water quality standards that need to be met. Dry docking evolutions would occur between 4 and 6 times per year, each event would take approximately 6 hours to complete, depending on the objective(s) of the specific dry docking event. For the vast majority of time (>99 percent), the dry dock ballast tanks are filled with air, and the floating dry dock would remain stationary in the floating position while maintenance and repair work is undertaken on a dry-docked vessel. While ship repair and maintenance is occurring, appropriate BMPs would control for environmental releases of process water and dust (see Section 2.5, *Best Management Practices included in the Action Alternatives*). Work-process related trash and debris would be controlled and be transported to appropriate municipal disposal facilities.

Additional maintenance activities may be characterized as operations which maintain the floating dry dock itself. Maintenance activities include painting, refurbishment of equipment, tank cleaning, sheet metal work, electrical work, mechanical repair, and repair/replacement of valves and fittings. Maintenance of the floating dry dock would follow the same operational practices, implement the same BMPs, and be subject to the same environmental compliance regulations and programs (e.g., RCRA, SWPPP, etc.) as operational activities.

Future decisions about ship deployments to and from NBSD are programmatic in nature and are neither a part of this action nor addressed in this EA.

2.2 Alternative Screening Factors

CEQ Regulations for Implementing NEPA provide guidance for considering alternatives to a federal action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those action alternatives determined to be reasonable and to meet the *purpose* and *need* of the Proposed Action require detailed analysis.

Potential action alternatives that meet the *purpose* and *need* were evaluated against the following screening factors:

1. Must enhance the overall availability of dry dock space for NBSD.
2. Must be able support DDG-51, LCS-2, LSD-41, and/or LSD-49 class vessels to include lift capacity, loading, and utility requirements.
3. Is or can be reasonably dredged to operational depth for above listed vessel types. (Note that the operation depth is the depth required when floating dry dock is submerged to load a vessel for repair or maintenance.)
4. Is at or near NBSD where the relevant vessels are home ported to maximize efficiency and minimize transport time and expense.
5. Must accomplish dredging and sediment disposal as well as required demolition and construction activities in accordance with the following natural resource protection laws and programs:
 - a. San Diego Bay INRMP;
 - b. CAA General Conformity Rule;
 - c. MPRSA;
 - d. MMPA;
 - e. CWA Sections 401 and 404, and RHA Section 10 Regulatory Programs;
 - f. CZMA;
 - g. USEPA and USACE "Green Book" (1991) and Inland Testing Manual (1998); and
 - h. ESA and MSFCMA.

2.3 Alternatives Carried Forward for Analysis

The following alternatives were evaluated against the screening factors and carried forward for further analysis:

- No Action Alternative;
- Emplacement of a floating dry dock at the south berth of the Mole Pier;

- Emplacement of a Commercial Out Lease (COL) floating dry dock near the existing MGBW maintenance piers (Preferred Alternative); or
- Emplacement of floating dry docks at both the south berth of the Mole Pier and near the existing MGBW maintenance piers.

Three options for dredged sediment disposal were identified for each of the three action alternatives and have been evaluated herein.

2.3.1 No Action Alternative

Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s), including all required dredging and sediment disposal as well as all required demolition and construction activities, would not be implemented at NBSD. All vessel repair and maintenance schedules would continue to reflect existing conditions identified by the CPF and the Navy would continue to experience a shortfall of dry dock space at NBSD, particularly for DDG-51 class vessels. Therefore, under the No Action Alternative, it is likely that Continuous Maintenance Availabilities would be deferred and/or would be addressed at offsite commercial or Navy shipyards (e.g., along the East Coast) at increased costs, thereby reducing the Navy's overall ability to maintain mission-ready vessels.

The No Action Alternative would not meet the *purpose* and *need* for the Proposed Action. However, because CEQ Regulations for Implementing NEPA stipulate that the No Action Alternative must be analyzed to assess any environmental consequences that may occur if the Proposed Action is not implemented, this alternative has been carried forward for analysis in the EA. The No Action Alternative provides a baseline against which the Proposed Action can be compared.

2.3.2 Alternative 1: Emplacement of a Floating Dry Dock at the South Berth of the Mole Pier

Alternative 1 includes emplacement and operation of a floating dry dock at the south berth of the Mole Pier. Modifications to the south berth of the Mole Pier needed to support the floating dry dock include dredging and sediment disposal; demolition of small portions of the pier deck and the existing mooring dolphin; installation of two mooring dolphins and two fender piles necessary to support the floating dry dock; and upgrades and/or extension of existing utilities. Specifically, the scope of Alternative 1 would include the following:

- 1) Relocation of the USS Curtiss and hoteling facilities that are currently moored along the south berth of the Mole Pier;
- 2) Dredging of approximately 86,121 cubic yards (cy) of sediment and subsequent sediment disposal activities;
- 3) Partial demolition of the existing pier deck and the existing mooring dolphin;
- 4) Installation of two mooring dolphins;
- 5) Fendering upgrades, including installation of two fender piles;
- 6) Minor utility modifications; and
- 7) Emplacement and operation of a prefabricated steel floating dry dock.

2.3.2.1 Relocation of the USS Curtiss and Hoteling Facilities

The USS Curtiss, which is currently moored at the south berth of the Mole Pier, would be relocated to another location prior to initiation of any dredging activities or modifications necessary to accommodate the proposed floating dry dock (see Photo 5). Similarly, the existing hoteling facilities along the south berth of the Mole Pier would also be temporarily relocated to another location. When the specific locations for the USS Curtiss and



Photo 5. Prior to dredging, demolition, or construction activities, the USS Curtiss would be relocated to provide space for the proposed floating dry dock at the south berth of the Mole Pier.

the hoteling facilities are identified, associated potential impacts would be analyzed under NEPA and an appropriate level of subsequent environmental documentation would be prepared, as necessary.

2.3.2.2 Dredging

The proposed dredging area at the south berth of the Mole Pier (see Photo 6) is divided into three subareas: Turning Basin (1.73 acres), Approach (1.65 acres), and Sump (1.40 acres) (see Figure 2-2). Dredging would be completed to depths up to -36 feet MLLW in the Turning Basin, -37 feet MLLW in the Approach, and -55 feet MLLW in the Sump. The south berth of the Mole Pier was originally dredged to -55 feet MLLW to facilitate the emplacement of AFDM 14 “Steadfast” (Navy 2018a), a floating dry dock previously used to repair Navy ships before it was relocated in 1998. Currently, the depths in the proposed dredging area range from -19 to -55.5 feet MLLW. As such, it is anticipated that dredging would involve removal of approximately 86,121 cy of sediment over a 4.79-acre area using a barge-mounted clamshell dredge. Because of the potential presence of munitions, and associated Explosives Safety Quantity-Distance (ESQD) arcs, dredging activities would be limited to nighttime (6:00pm to 6:00am), Monday through Friday. Therefore, dredging activities would take approximately 14 weeks, with an average daily dredge volume of approximately 1,231 cy.¹ A conservative estimate of 20 workers would be required for the duration of dredging activities to transport, set up, and operate dredging equipment and sediment transport tugs and barges (personal communication from Alberto Sanchez 2019).

¹ This average daily dredging volume has been rounded to the nearest cubic yard, representing an overly conservative total dredge volume.

Future maintenance dredging may be necessary to maintain operational depth requirements. (*Maintenance dredging* refers to routine removal of accumulated sediment to maintain a desired depth. Maintenance dredging would not include any expansion of the previously dredged area or increase in depth.) The frequency of maintenance dredging would depend on sedimentation patterns, and such maintenance dredging would be evaluated as a separate action and permitted with the appropriate regulatory agencies accordingly.

Dredging and sediment disposal would adhere to pertinent regulatory programs, including the MPRSA, CWA Sections 404 and 401, and RHA Section 10.

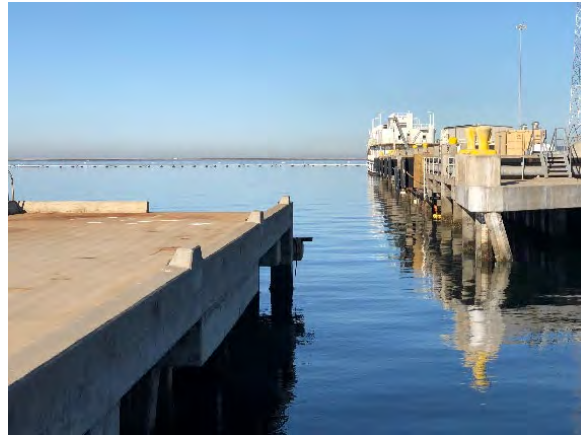


Photo 6. Dredging would occur in the open water immediately adjacent to the access pier (left) and concrete wharf (right). Approximately 86,121 cy of sediment would be removed.

2.3.2.3 Sediment Disposal

Three options for sediment disposal have been identified, one of which will be selected on the basis of the results of sampling and laboratory testing pursuant to the USEPA and USACE Green Book (1991) and Inland Testing Manual (1998). If the sediment characterization and chemistry results determine that dredged sediments meet allowable parameters for beneficial reuse, this preferred option would be pursued to the maximum extent feasible pursuant to CWA Section 404(b)(1), which requires selection of the Least Environmentally Damaging Practicable Alternative. If the sediment characterization and chemistry results do not meet allowable parameters for beneficial reuse, ocean disposal, or upland disposal options would be considered. Testing results could also dictate a combination of disposal options.

Under each of the three options, sediment disposal associated with this alternative would adhere to all applicable regulations and guidance documents as well as the Navy's project-specific consultations with appropriate regulatory agencies (refer to Section 1.7, *Relevant Laws and Regulations*).

Option 1: Nearshore Replenishment – Beneficial Reuse

The *Nearshore Replenishment – Beneficial Reuse* option involves loading dredged sediment into barges and transporting it to a nearshore replenishment site for beneficial reuse. Nearshore replenishment sites that are currently under consideration include the following:

- Naval Base Coronado Silver Strand Training Complex Boat Lanes 9 and 10, located approximately 14 miles (in-water transit distance) from the Mole Pier (preferred site);
- Naval Air Station North Island Beach, located approximately 10.5 miles (in-water transit distance) from the Mole Pier; and
- Other suitable location(s) identified during the permitting process.

One or a combination of nearshore replenishment sites may be used to receive the dredged sediments. Based on the proposed construction schedule, the average daily dredging and disposal production rate is expected to be approximately 1,231 cy. Two 1,000-cy barges would be used to transport the dredged sediment. Barges would be equipped with electronic tracking devices to document that material releases

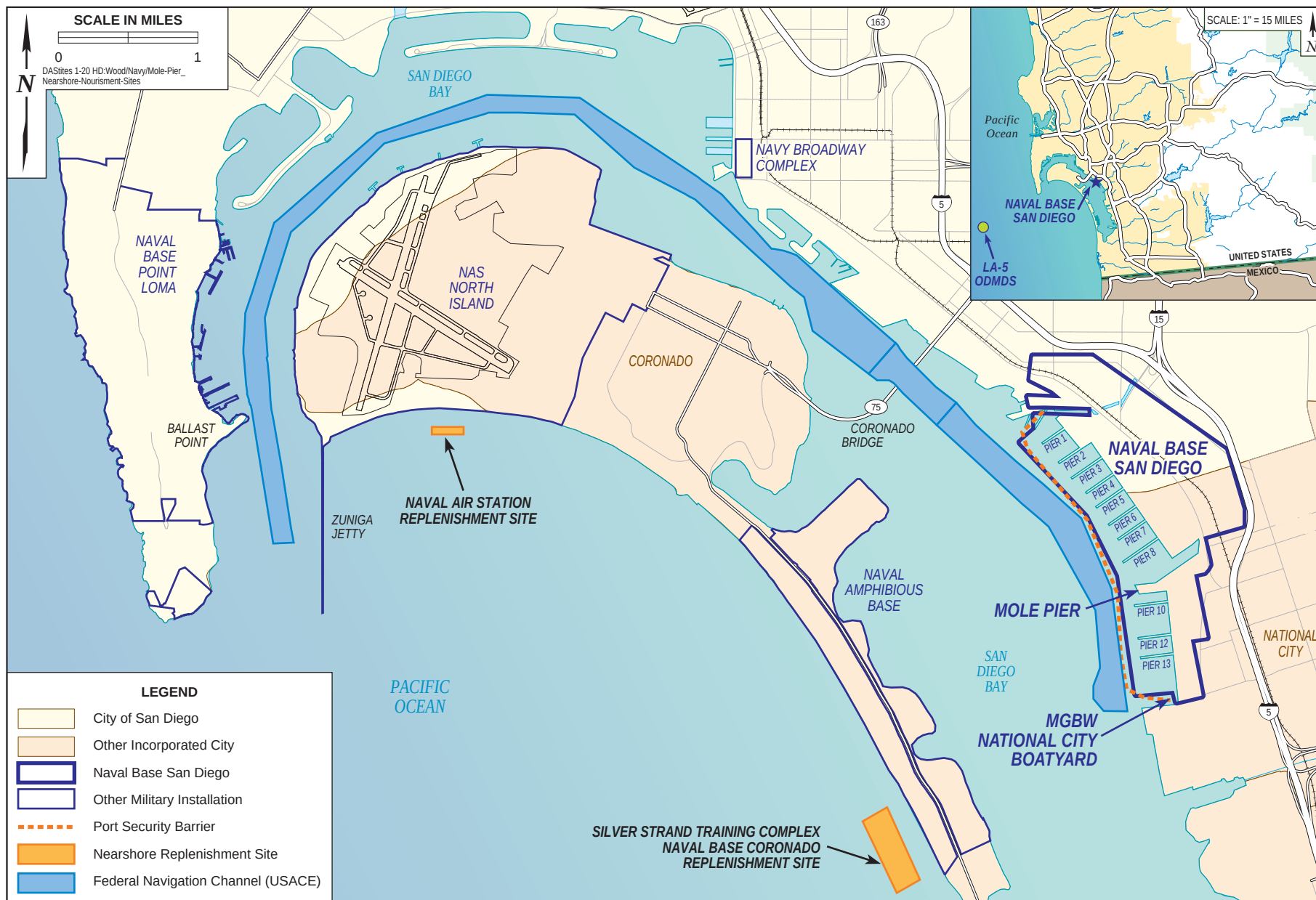
occurred within the disposal site boundaries, as specified by the dredging permit. The location of each nearshore replenishment site is shown on Figure 2-1.

Option 2: Ocean Disposal

The *Ocean Disposal* option involves loading the dredged sediment into barges and transporting it to LA-5 ODMDS. LA-5 ODMDS is a designated offshore open-water disposal site located on the ridged slope of the continental shelf at a depth of approximately 600 feet, 5.4 nautical miles off the San Diego Coast (Navy 2014b). Based on the proposed construction schedule, the average daily dredging and disposal production rate is expected to be approximately 1,231 cy. Two 1,000-cy barges would be used to transport the dredged sediment to LA-5 ODMDS. One tug/barge would be loaded with material at the dredge site, while the other is disposing of sediment at LA-5 ODMDS, ensuring that dredging can be completed in a timely manner while complying with LA-5 ODMDS restrictions prohibiting more than one barge onsite at a time. Round trip from NBSD to LA-5 ODMDS is expected to take approximately 34 hours (Navy 2014b). The barges would not be filled to their 1,000-cy capacity to avoid the potential for material releases. Further, the barges would be equipped with electronic tracking devices to document that material releases occurred within the disposal site boundaries specified in the dredging permit. The ocean disposal of dredged sediment is regulated under Section 103 of the MPRSA and disposal operations would be required to comply with all applicable permitting and dredging regulations published in 33 CFR Parts 320–330 and 33 CFR Parts 335–338.

Option 3: Upland Disposal

The *Upland Disposal* option would be implemented if it is determined that the dredged sediments are not suitable for either beneficial reuse or ocean disposal. This option involves transporting dredged sediment via barge to an upland confined drying facility (CDF) at NBSD (e.g., the area located on the northern side of the Mole Pier, which has previously been used to offload dredged sediment) or the MGBW National City Boatyard. Once adequately dried, the dredged sediment would be placed on a dump scow and mixed with a thickening agent. The sediment would then be transferred to a secondary holding site and tested for pH and water content in accordance with applicable landfill requirements and then transported via large trucks to a landfill such as the Otay Landfill, a permitted Class III Landfill (USEPA Facility Registration System ID 110000832243) located at 1700 Maxwell Road in Chula Vista, California, approximately 12.2 miles from NBSD. The landfill has a permitted maximum disposal rate of 6,700 tons per day, and it does not have a daily truck count limit (CalRecycle 2019).



EA

Nearshore Replenishment Sites

FIGURE
2-1

2.3.2.4 Demolition Activities

Following the relocation of the USS Curtiss and associated hoteling facilities and prior to any demolition activities, initial hazardous material surveys would be conducted at the south berth of the Mole Pier. Based on the results of these surveys, the existing utilities would be abated, disconnected, and cleaned and all electrical and mechanical equipment would be removed from the concrete wharf.

The pile-supported extension at the west end of the wharf – originally installed to support berthing and mooring of the USS Curtiss – would be demolished to allow for installation of the aft dolphin needed to



Photo 7. Demolition activities would involve removal of multiple 24-inch concrete piles (vertical structures in the water) on both the east and west ends of the concrete wharf.

support the floating dry dock. This work would include demolition of three 24-inch octagonal concrete piles and approximately 100 square feet (sf) of deck. Partial demolition at the eastern end of the wharf would be required to allow for construction of the forward dolphin. This work would include demolition of fourteen 24-inch by 24-inch square concrete piles and approximately 2,245 sf of pier deck. Demolition of the existing mooring dolphin at the eastern end of the wharf would include the demolition of seven 24-inch octagonal concrete piles along with approximately 450 sf of deck (Navy 2018a). In total, demolition activities would occur over a period of approximately 4 weeks.

Typical pier demolition activities progress bay-ward to landward and from the top down (Navy 2016). First, fender piles and exterior appurtenances (e.g., utilities) would be demolished above and below the pier deck. Fender piles would be disconnected from the wharf, extracted or sheared, and processed onsite for disposal or recycling (see Photo 7). The concrete pier deck would be sawcut longitudinally and transversely at mid-span of every row of piles, allowing for removal in large but manageable sections, with weights of less than 50 tons. While the section is rigged to the derrick crane, a hydraulic shearing tool attached to a barge-mounted excavator would be used to cut the piles just below pile cap. Once freed from the piles, the sections would be set onto a barge. Following removal of the pier deck, a hydraulic cutter (or pile clipper) would be lowered over each of the existing piles, allowing the pile to be cut at the mudline, removed by the crane, and set onto a barge (personal communication from Alberto Sanchez 2019).

All appropriate best management practices (BMPs) would be implemented during demolition activities (see Table 2-3). For example, a system of rafts would be used under the demolition locations to capture any debris (Navy 2016). Additionally, concrete slurry from the cut operation would be vacuumed as saw cutting occurs (Navy 2016).

Throughout the demolition phase, the following equipment would likely be used to remove, collect, and transport demolition debris: a spud-anchored barge, barge and wharf cranes, one tugboat, mobile construction equipment, transport trucks, and scows (Navy 2016).

Several types of debris would result from the demolition activities, including concrete, steel, and asphalt. The Navy would comply with the Low-Impact Development Initiative requiring that all demolition projects that take place after 2011 to recycle and divert materials from local landfills to the maximum extent practicable. Materials appropriate for recycling, including concrete, steel, and asphalt, would be recycled. Materials that could not be recycled would be transported to a permitted landfill.

2.3.2.5 Mooring Dolphins

The proposed floating dry dock would require the installation of two mooring dolphins – located forward and aft of the proposed dry dock – to be placed to the east and west of the existing concrete wharf (Navy 2018a) (see Figure 2-2). The forward and aft mooring dolphins would each be supported by approximately sixteen 24-inch octagonal concrete piles (Navy 2018a). The aft mooring dolphin would also require approximately two 24-inch battered steel-pipe piles (Navy 2018a). Large reinforced concrete caps, measuring approximately 30 feet by 30 feet, would be placed atop each pile. Grippers would be secured to the dolphins' concrete pile caps and used to hold the floating dry dock in position. Construction materials would be delivered by truck and the piles would likely be installed using a floating crane and a diesel impact hammer as well as vibratory methods and jetting methods, as necessary (see Table 2-1). The number of final strikes for each pile would depend on underlying geology. For example, pile-driving activities associated with the Pier 12 replacement required between 500 and 600 blows per pile (personal communication from Alberto Sanchez 2019). Construction activities, including installation of piles and construction of mooring dolphins (and fender piles and utilities modifications discussed below), would occur over a period of 10 weeks.

2.3.2.6 Fender Piles

Up to two new fender piles would be installed along the outface of the south berth of the Mole Pier. It is anticipated that fender piles would consist of two steel piles of 16-inch diameter or less in size. Piles would initially be installed using a diesel impact hammer and vibratory methods, potentially aided by jetting methods.

2.3.2.7 Utilities Modification

The existing potable water and sanitary sewer utilities at the south berth of the Mole Pier are adequate to serve the proposed floating dry dock. Electrical distribution at the Mole Pier area is currently fed from the South Cummings Substation. Existing electrical infrastructure at the Mole Pier is adequate; however, Alternative 1 would extend 12-kilovolt feeders from the existing substation with flexible lines to the proposed floating dry dock. It is anticipated that industrial power mounds would be installed and electrical service would be extended to the new mounds so that contractors could bring in their own compressed air units. A packaged water booster pump station would also be required to provide water for firefighting purposes.

2.3.2.8 Floating Dry Dock Emplacement

The floating dry dock would be procured by Naval Sea Systems Command PMS 325 (refer to Section 2.1, *Proposed Action*) and then barged to south berth of the Mole Pier (see Section 2.3.3.7, *Floating Dry Dock Emplacement*, which describes the transport of a COL floating dry dock to the MGBW maintenance piers, but is also applicable to Alternative 1). The floating dry dock would be constructed entirely of steel and would have an 18,000-ton vessel-lifting capacity designed to meet the requirements of Navy MIL-STD 1625D (Reference 15) and American Bureau of Shipping Standards. Minimum dimensions for the proposed floating dry dock are 700-foot length, 163-foot outside width, 139-foot inside width, pontoon height of 14 feet, and wing wall height of 44 feet above the pontoon deck. As previously described, the proposed floating dry dock would be installed to support maintenance operations for DDG-51, LCS-2, LSD-41, and/or LSD-49 class vessels. For a description of proposed floating dry dock operations, see Section 2.3.3.8, *Operations*.

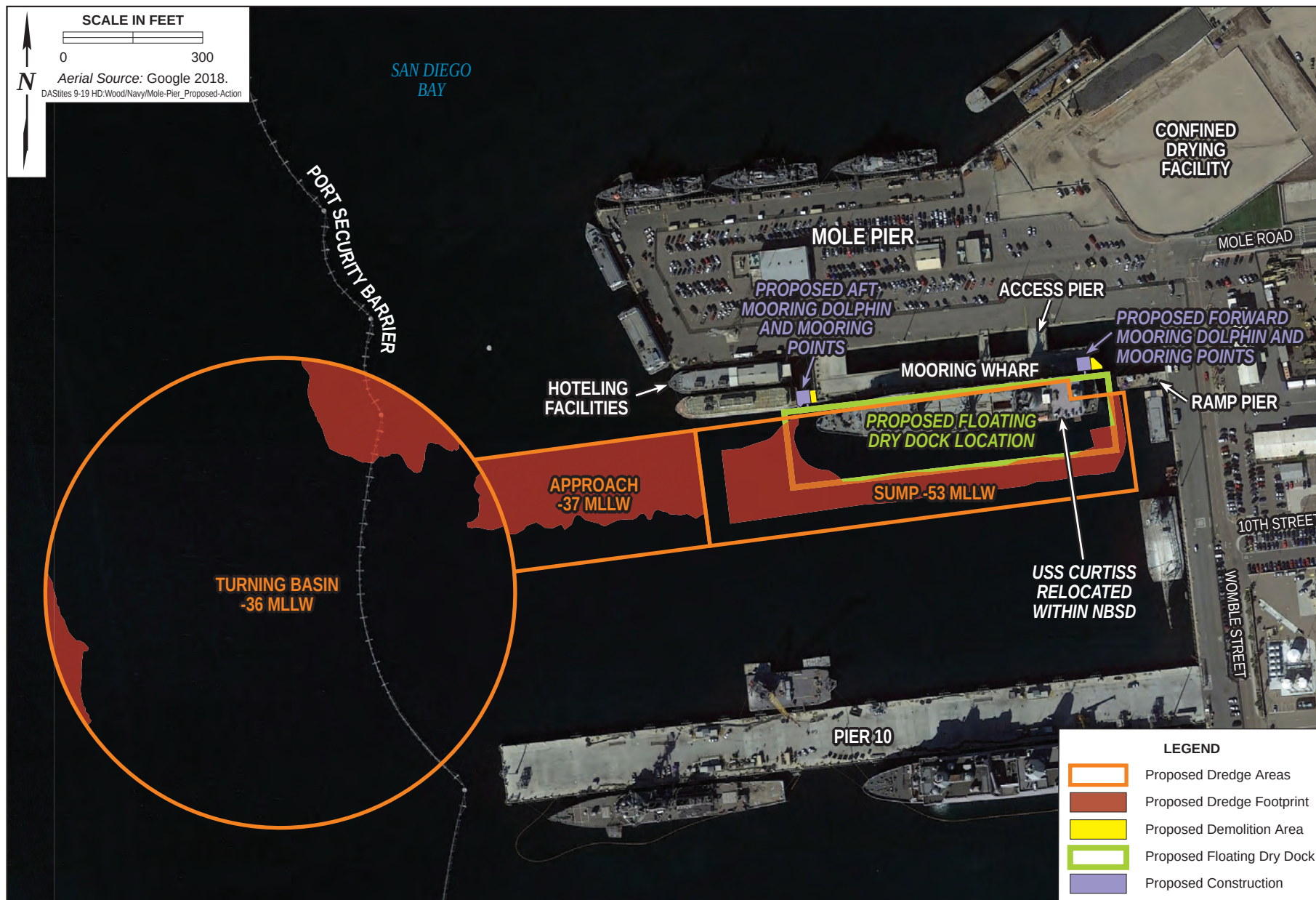
Table 2-1 Proposed Pile Extraction/Installation Activities at the South Berth of the Mole Pier

<i>Activity</i>	<i>Pile Purpose/Location</i>	<i>Total Number of Piles</i>	<i>Pile Size/Type</i>	<i>Pile Extraction/Installation Method</i>	<i>Strikes per Pile</i>	<i>Minutes per Pile</i>	<i>Assumed Daily Maximum Number of Piles Extracted/Installed</i>	<i>Assumes Total Maximum Number of Days for Pile Extraction/Installation</i>
Demolition-Extraction	West end of wharf, wharf extension	3	24-inch octagonal concrete	Vibratory Extraction	NA	10 minutes	1	3
	Eastern end of wharf	14	24-inch by 24-inch square concrete	Vibratory Extraction	NA	10 minutes	1	14
	Eastern end of wharf, mooring dolphin	7	24-inch octagonal concrete	Vibratory Extraction	NA	10 minutes	1	7
Construction-Installation	Proposed forward and aft mooring dolphins east and west of existing wharf	32	24-inch octagonal concrete	Diesel Impact Hammer	600 blows	NA	1	32
	Proposed aft mooring dolphin batter piles	2	24-inch steel round pipe	Diesel Impact Hammer	600 blows	NA	1	2
				Vibratory	NA	10 minutes	1	
	Proposed new fender piles	2	16-inch steel round pipe	Diesel Impact Hammer	600 blows	NA	1	2
				Vibratory	NA	10 minutes	1	

Notes: The pile extraction/installation methods listed above are the preferred techniques for pile handling; however, depending on conditions encountered while dredging at the south berth of the Mole Pier, other methods may be applied (see Section 2.3.2.4, *Demolition Activities*; Section 2.3.2.5, *Mooring Dolphins*; and Section 2.3.2.6, *Fender Piles*).

The piles listed above are assumed to be the largest pile sizes that may be driven for the floating dry dock locations. If pile sizes/types are altered during the design process, monitoring efforts will be adjusted to account for any changes to the piles.

Abbreviations: NA = Not Applicable



EA

Emplacement of a Floating Dry Dock at the South Berth of the Mole Pier

FIGURE
2-2

2.3.3 Alternative 2 (Preferred Alternative): Emplacement of a COL Floating Dry Dock Near the MGBW Maintenance Piers

For this alternative, the Navy would lease approximately 5.55 acres of water and 0.88 acre of land to MGBW for a period of 66 years to support emplacement and operation of a COL floating dry dock at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Following all required construction activities and emplacement of the proposed COL floating dry dock at this location, MGBW would be responsible for all operations and maintenance activities associated with the facility. Given the existing water depth and real property constraints, the COL floating dry dock would be slightly smaller than the floating dry dock described in Alternative 1 and would provide required maintenance for Navy LCS-2, LSD-41, and LSD-49 class vessels only. DDG-51 class vessels would continue to be maintained at existing dry docks within San Diego Bay.



Photo 8. This alternative would include emplacement of a COL floating dry dock at the southern boundary of NBSD near the existing MGBW maintenance piers.

In addition to the lease agreement between the Navy and MGBW, the following actions would be required to support emplacement of the proposed COL floating dry dock near the existing MGBW maintenance piers:

- 1) Dredging of approximately 165,000 cy of sediment and subsequent sediment disposal activities;
- 2) Installation of new access structures for the proposed COL floating dry dock;
- 3) Installation of two mooring dolphins for the proposed COL floating dry dock;
- 4) Utility installation and other landside improvements; and
- 5) Emplacement and operation of a steel floating dry dock.

2.3.3.1 Dredging

Emplacement of the proposed COL floating dry dock would require dredging of a 5.55-acre area, including a 2.14-acre base dredged to a depth up to -39 feet MLLW (see Figure 2-3). According to a recent Sediment Quality Survey Report, the existing water depth near the existing MGBW maintenance piers ranges from approximately -9 to -17 feet MLLW (Mission Environmental LLC 2018). As such, it is anticipated that dredging would involve removal of approximately 165,000 cy of sediment using a barge-mounted clamshell dredge. Similar to the south berth of the Mole Pier, because of the potential presence of munitions and associated ESQD arcs, dredging activities would be limited to nighttime (6:00 p.m. to 6:00 a.m.), Monday through Friday. Therefore, dredging activities would conservatively take approximately 27 weeks, with an average daily dredge volume of approximately 1,223 cy. However, nighttime dredging would not be required for native sediments, therefore dredging activities could occur over a shorter time period. As described for Alternative 1, a conservative estimate of 20 workers would be required for the

duration of dredging activities to transport, set up, and operate the dredging equipment and sediment transport tugs and barges.

Future maintenance dredging may be necessary to maintain the operational depth requirements. (*Maintenance dredging* refers to routine removal of accumulated sediment to maintain a desired depth. Maintenance dredging would not include any expansion of the previously dredged area or an increase in depth.) The frequency of maintenance dredging would depend on sedimentation patterns, and such maintenance dredging would be evaluated as a separate action and permitted accordingly. Maintenance dredging activities could also occur in the Approach Area, which would be required to maintain a depth of approximately -15 feet MLLW.



Photo 9. The proposed mooring dolphins would be constructed to the north (i.e., left as pictured above) of the existing MGBW maintenance piers.

Dredging and sediment disposal would adhere to pertinent regulatory programs, including the MPRSA, CWA Sections 404 and 401, and RHA Section 10. MGBW would be responsible for obtaining these required approvals and permits prior to the initial of construction activities.

2.3.3.2 Sediment Disposal

As described for Alternative 1, three options for sediment disposal have been identified, one of which will be selected on the basis of the results of sampling and laboratory testing pursuant to the USEPA and USACE Green Book (1991) and Inland Testing Manual (1998). If sediment characterization and chemistry results determine that dredged sediments meet allowable parameters for beneficial reuse, this preferred option would be pursued to the maximum extent feasible pursuant to CWA Section 404(b)(1). If the sediment characterization and chemistry results do not meet allowable parameters for beneficial reuse, ocean disposal, or upland disposal options would be considered. The *Upland Disposal* option would be implemented only if it is determined that the dredged sediments are not suitable for either beneficial reuse or ocean disposal. As described in Section 2.3.2.3, *Sediment Disposal*, this option involves transporting the dredged sediment via barge to an upland CDF at NBSD (e.g., the area located on the northern side of the Mole Pier, which has previously been used to offload dredged sediment) or the MGBW National City Boatyard, which is approximately 0.21 acres in area.

Testing results could also dictate a combination of disposal options. For example, based on the recent Sediment Quality Survey Report (Mission Environmental LLC 2018) the sediment profile within the footprint of the proposed sump is expected to include unconsolidated sediments underlain by consolidated native materials that would be unaffected by potential contaminants. While unconsolidated sediments closest to the surface could require upland disposal, underlying consolidated native materials would likely be suitable for nearshore beach replenishment, ocean disposal, or potential reuse within San Diego Bay for habitat enhancement projects. A sampling analysis plan has been prepared by Mission

Environmental LLC on behalf of MGBW and was reviewed and approved by USACE and USEPA on 9 January 2020.

Under each of the three options, sediment disposal associated with this alternative would adhere to all applicable regulations and guidance documents as well as the Navy's project-specific consultations with appropriate regulatory agencies (refer to Section 1.7, *Relevant Laws and Regulations*).

2.3.3.3 Access Structures

Two pedestrian bridges and a vehicle bridge would be constructed to provide landside access and servicing to the COL floating dry dock (see Figure 2-3). The port-side pedestrian bridge, which would provide access to the port wing deck, would be approximately 115 feet long supported by a landside concrete abutment. The proposed ramp wharf would be approximately 80 feet wide and 55 feet long and would support a 60-foot-long vehicle bridge that would provide vehicle access to the COL floating dry dock. The ramp wharf would also support the starboard pedestrian bridge, which would provide access to the starboard wing deck. The concrete ramp wharf and vehicle bridge would cover approximately 5,360 sf and would be supported by twenty-four 24-inch octagonal concrete piles. These access structures, which would be similar to those currently provided at the south berth of the Mole Pier and other Navy piers in the vicinity, would allow for construction vehicles and heavy equipment to be used during maintenance of Navy vessels. Construction materials would be delivered by truck and the piles would likely be installed using a floating crane and a diesel impact hammer as well as vibratory methods and jetting methods, as necessary. Construction activities, including installation of piles and construction of access structures (and mooring dolphins, fender piles, and utilities modifications discussed below), would occur over a period of 10 weeks.

2.3.3.4 Mooring Dolphins

The proposed COL floating dry dock would require installation of two mooring dolphins – located forward and aft of the proposed dry dock (i.e., between the proposed dry dock and the existing MGBW maintenance piers; see Figure 2-3). The forward and aft mooring dolphins would each be supported by sixteen 24-inch octagonal concrete piles and four 24-inch battered steel-pipe piles. The aft mooring dolphin would also require approximately two additional 24-inch battered steel-pipe piles (see Table 2-2). Large reinforced concrete caps, measuring approximately 30 feet by 30 feet, would be placed atop each pile. Grippers would be secured to the dolphins' concrete pile caps and used to hold the floating dry dock in position. Construction materials would be delivered by truck and the piles would likely be installed using a floating crane and a diesel impact hammer as well as vibratory methods and jetting methods, as necessary. As described for Alternative 1, the number of final strikes for each pile would depend on the underlying geology. For example, pile-driving activities associated with the Pier 12 replacement required between 500 and 600 blows per pile (personal communication from Alberto Sanchez 2019).

2.3.3.5 Fender Piles

Up to two new fender piles would be installed along the aft mooring dolphin. It is anticipated that fender piles would consist of two steel piles of 24-inch diameter or less in size. Piles would initially be installed using a diesel impact hammer and vibratory methods, potentially aided by jetting methods.

2.3.3.6 Utilities Modifications

Under this alternative, the lessee would need to provide all power services. Required utilities work would include construction of a switching station, primary and secondary distribution systems, telephone services,

coaxial and fiber optic communications, supervisory control and data acquisitions systems for energy monitoring and control, and a fire alarm. Other utilities would consist of sanitary sewer, storm water, and potable water supply lines, and a steam distribution and return condensate system. The lessee would tie into existing utilities on or near the site (e.g., existing 16-inch water line). The Navy would also conduct a preliminary assessment of the lease area to identify any additional landside improvements required.

2.3.3.7 Security Improvements

Required security improvements would include removal and replacement of the installation's secure perimeter fence. The facility would be required to maintain a 30-foot standoff distance from Building 3644 in compliance with existing Anti-Terrorism/Force Protection (AT/FP) standards. MGBW would also be required to install their own water barrier system in accordance with Unified Facilities Criteria 4-025-01, *Security Engineering: Waterfront Security*.

2.3.3.8 Floating Dry Dock Emplacement

The proposed floating dry dock would be procured by MGBW, constructed at a shipyard outside of San Diego, and then barged to the existing MGBW maintenance piers location. Upon entering territorial waters, the proposed floating dry dock would be towed through the main navigation channel of San Diego Bay. A minimum of four tug boats (1,000 to 6,000 horsepower [HP] and one ocean tug (6,000 to 10,000 HP), along with one Bay Pilot, one Dockmaster, and a riding crew would accompany the floating dry dock to the proposed mooring location. The selected towing company would be required to follow all U.S. Coast Guard and international safety regulations. In addition, a licensed Marine Warranty Surveyor would approve the tow prior to the proposed dry dock leaving its building yard. The weather window would be closely monitored prior to the dry dock's arrival to San Diego Bay. If there is an issuance of a Sea State Level 2 or greater, then the floating dry dock would not be allowed to enter San Diego Bay. An emergency contingency plan would be developed, and standby emergency equipment and/or materials would be readily available if required. It would take approximately 4 to 8 hours to transport the proposed floating dry dock from the entrance channel for San Diego Bay to its permanent mooring location, and an additional 3 to 4 hours for mooring the dry dock. A crew of approximately 12 staff (e.g., experienced ship handlers, riggers, dockhands, and crane operators) would be required for emplacement activities.

The proposed floating dry dock would be constructed entirely of steel and would have a 9,000-ton vessel-lifting capacity designed to meet the requirements of Navy MIL-STD 1625D (Reference 15) and American Bureau of Shipping Standards. Minimum dimensions for the proposed floating dry dock are 531.5-foot length, 154.2-foot outside width, 128-foot inside width, pontoon height of 10.2 feet, and wing wall height of 42.85 feet above the pontoon deck. As previously described, the proposed floating dry dock would be installed to support maintenance operations for LCS-2, LSD-41, and LSD-49 class vessels.

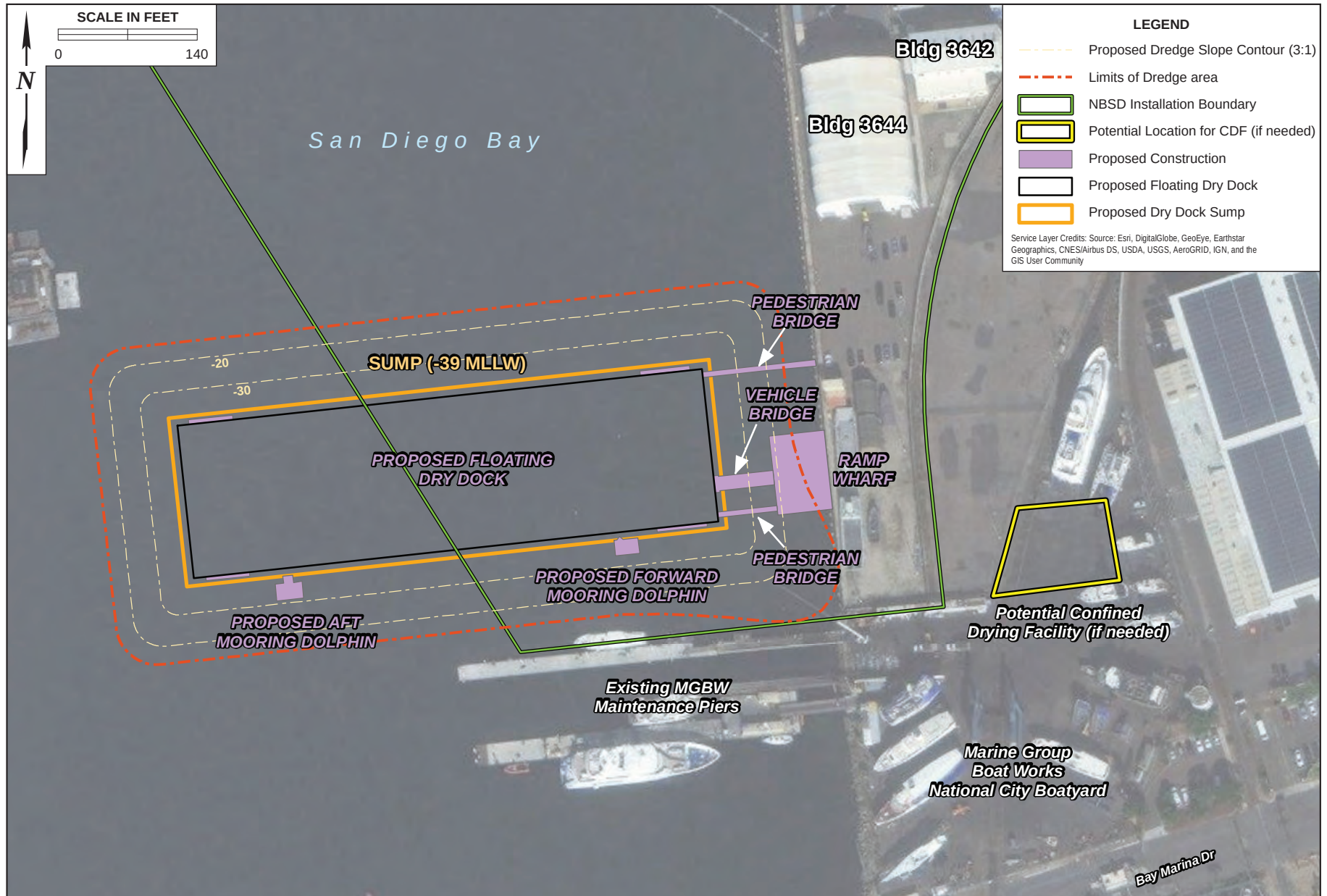
Table 2-2 Proposed Pile Installation Activities at the MGBW Maintenance Piers Location

<i>Activity</i>	<i>Pile Purpose/Location</i>	<i>Total Number of Piles</i>	<i>Pile Size/Type</i>	<i>Pile Extraction/Installation Method</i>	<i>Strikes per Pile</i>	<i>Minutes per Pile</i>	<i>Assumed Daily Maximum Number of Piles Extracted/Installed</i>	<i>Assumes Total Maximum Number of Days for Pile Extraction/Installation</i>
Construction-Installation	Proposed forward and aft mooring dolphins	32	24-inch Octagonal concrete	Diesel Impact Hammer	600 blows	NA	1	32
	Proposed forward and aft mooring dolphins	18	24-inch steel	Diesel Impact Hammer	600 blows	NA	1	18
				Vibratory	NA	10 minutes	1	
	Proposed aft mooring dolphin	2	24-inch steel	Diesel Impact	600 blows	NA	1	2
				Vibratory	NA	10 minutes	1	
	Ramp wharf and vehicle bridge	24	24-inch Octagonal concrete	Diesel Impact Hammer	600 blows	NA	3	8

Notes: The pile extraction/installation methods listed above are the preferred techniques for pile handling; however, depending on conditions encountered while dredging at the existing MGBW maintenance piers location, other methods may be applied (see Section 2.3.3.3, *Access Structures*, and Section 2.3.3.4, *Mooring Dolphins*).

The piles listed above are assumed to be the largest pile sizes that may be driven for the floating dry dock locations. If pile sizes/types are altered during the design process, monitoring efforts will be adjusted to account for any changes to the piles.

Abbreviations: NA = Not Applicable



EA

Emplacement of a COL Floating Dry Dock at the MGBW Maintenance Piers Location

FIGURE
2-3

2.3.3.9 Operations

Upon emplacement of the proposed floating dry dock at its permanent mooring location, the COL floating dry dock would be staffed by up to 24 personnel. All COL floating dry dock operations would be conducted as per the requirements and guidelines in MIL STD 1625D. Operations would occur on an as needed basis based off the tides, weather conditions and ship's scheduling requirements, and would include equipment such as electric gantry cranes, 60- to 80-foot manlifts, and various sized forklifts and trucks. Proposed dry dock operations would occasionally require the use of hazardous chemicals (e.g., oil lubricants, paint, paint thinners, cleaning solvents, etc.), and a chemical storage locker located on the COL floating dry dock would be used for storing these chemicals at all times. Potential waste materials that could be generated during general ship repair operations include sandblast and paint debris, as well as various lubricants and cleaning solvents. All waste materials generated at and by the proposed COL floating dry dock would be disposed of in accordance with all applicable NBSD and MGBW permit requirements. A dry dock operational manual would be prepared as a part of the floating dry dock's Facility Certification Report consistent with MIL STD 1625D. A safety manual would also be prepared and included in the Facility Certification Report.

2.3.4 Alternative 3: Emplacement of a Floating Dry Dock at Both the South Berth of the Mole Pier and the Location Near the MGBW Maintenance Piers

This alternative includes emplacement and operation of two prefabricated floating dry docks, to be emplaced at the south berth of the Mole Pier and at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Dredging and sediment disposal as well as demolition and construction activities described for the south berth of the Mole Pier and the location near the existing MGBW maintenance piers would be required (refer to Section 2.3.2 and Section 2.3.3, respectively). Due to required permitting timelines, the floating dry docks would not be installed concurrently.

2.4 Alternatives Considered but not Carried Forward for Detailed Analysis

During the concept development for the proposed floating dry dock, the Navy considered all potential siting locations within NBSD, which is the best location in terms of efficiency, measured in cost and transport time delays. The south berth of the Mole Pier site is available, as well as some available land at the south end of the base, near the MGBW maintenance piers. A private entity is in best position to expand dry dock supply quickly compared to the federal government, which has strict procurement rules and associated timelines. Market research revealed that MGBW is the only commercial entity in the area interested in and positioned to take advantage of the available land. The screening factors would be adequately satisfied if there were another useable dry dock at another base on San Diego Bay. Naval Base Point Loma has a floating dry dock, but it is not suitable for the relevant vessels and is fully utilized for submarines. Other bases (e.g., Naval Air Base Coronado) have other missions and do not have the land or facilities necessary to establish a suitable dry dock. For these reasons, no alternative siting locations would meet the *purpose* and *need* for the project and satisfy the reasonable alternative screening factors presented in Section 2.2, *Alternative Screening Factors*. The south berth of the Mole Pier and the location near the MGBW maintenance piers are the only practicable sites currently available at NBSD. Notwithstanding that, the Navy did in fact consider other west coast locations. Naval Base Ventura County would have very high cost of construction and would not meet the efficiency screening factor. Los Angeles and San Francisco do not have available government-owned land to construct a suitable dry dock and there are no commercial floating dry docks that are suitable in terms of capability to serve the relevant vessels.

The Navy also considered upgrades to the existing graving dock, as recommended as an option by the CPF. However, upgrades to the existing graving dock would result in additional near-term shortfalls in dry dock space during construction. Further, during construction, the Navy would not have any access to government-owned dry docks and would be required to rely on the schedules of private companies (i.e., BAE and NASSCO) for Navy vessel maintenance. Therefore, this alternative would not satisfy the reasonable alternative screening factors presented in Section 2.2, *Alternative Screening Factors*.

2.5 Best Management Practices Included in the Action Alternatives

This section presents an overview of the BMPs that are incorporated into the Proposed Action in this document. BMPs are existing policies, practices, and measures included in the action to reduce environmental impacts of designated activities, functions, or processes. Although BMPs mitigate potential impacts by avoiding, minimizing or reducing/eliminating impacts, BMPs are distinguished from potential mitigation measures because BMPs are: 1) existing requirements for the Proposed Action; 2) ongoing, regularly occurring practices; or 3) not unique to this Proposed Action. In other words, the BMPs identified in this document are inherently part of the Proposed Action and are not potential mitigation measures proposed as a function of the NEPA environmental review process for the Proposed Action. Table 2-3 lists BMPs. Additional avoidance and minimization measures specific to the Proposed Action are discussed separately in Chapter 3.

Table 2-3 Best Management Practices

<i>BMP</i>	<i>Description</i>	<i>Impacts Reduced/Avoided</i>
Pre-Construction <i>Caulerpa</i> Survey	A pre-construction <i>Caulerpa</i> survey will occur for both sediment collection and dredging activities per the <i>Caulerpa</i> Control Protocol.	Potential spread of invasive <i>Caulerpa</i> associated with bottom-disturbing activities and/or transport of dredged sediments.
Pre- and Post-Dredging and Construction Eelgrass Survey at the MGBW Maintenance Piers Location	Prior to dredging and construction at the existing MGBW maintenance piers location, this area will be surveyed for eelgrass. If detected, it will be mapped, and a post-construction survey will be conducted to determine the extent of any project-related impacts, which the Navy would mitigate consistent with the California Eelgrass Mitigation Policy (October 2014) (see Section 3.3.3.5).	Potential loss of eelgrass which is important habitat for fish and sea turtles.
Dry Dock Transport Meetings	Meetings will be held with the Navy, U.S. Coast Guard, and San Diego Bay Pilots to plan for the arrival of the floating dry dock(s) in San Diego Bay. A Notice to Mariners will also be sent prior to the arrival of the floating dry dock(s).	Potential transportation conflicts within San Diego Bay.
Vessel Speed Limits	Vessel operators will follow designated speed zones to and from the project site.	Potential vessel strikes with aquatic species.

Table 2-3 Best Management Practices (Continued)

<i>BMP</i>	<i>Description</i>	<i>Impacts Reduced/Avoided</i>
Green Turtle Monitoring (Clamshell Dredge/Daytime Operation)	A qualified biological monitor will be present to look for green turtle activity in the vicinity of the project site and will provide a brief training to vessel operators during dredge operations, transportation of materials (including dredged sediments), and other construction vessels.	Potential impacts on green turtle.
Marine Mammal Monitoring	A qualified biological monitor will be present to look for marine mammal activity in the vicinity of the project site and will provide a brief training to vessel operators during dredge operations, transportation of materials (including dredged sediments), and other construction vessels.	Potential impacts on marine mammals.
Pre-Construction Visual Sweep	A visual scan of the project surface area will be conducted prior to commencing pile-driving activities, and after a break in pile driving for more than 30 minutes.	Potential impacts on green turtle and/or marine mammals.
Sensitive Species Protection	Operations will be halted temporarily if any marine mammal or green turtles is observed in transit or occupying the project site or selected disposal sites. <u>Dredging:</u> Work will be suspended if an animal is observed within the buffered shutdown zone (<82 feet [<25 meters]). Work will be allowed to restart once the animal has been observed leaving the buffered shutdown zone, or once 15 minutes has elapsed since the most recent observation. <u>Pile driving:</u> Work will be suspended if an animal is observed within the buffered shutdown zone (<82 feet [<25 meters]). Work will be allowed to restart once the animal has been observed leaving the buffered shutdown zone, or once 15 minutes has elapsed since the last observation.	Potential impacts on marine mammals and green turtle.
Pile Driving Soft-Start Procedure	The use of soft-start procedures are believed to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, contractors would be required to provide an initial set of strikes from the hammer at reduced energy, with each strike followed by a 30-second waiting period. This procedure would be conducted a total of three times before impact pile driving begins.	Potential impacts on marine mammals and green turtle.

Table 2-3 Best Management Practices (Continued)

<i>BMP</i>	<i>Description</i>	<i>Impacts Reduced/Avoided</i>
Minimization of Suspended Sediments	Dredge passes will start near the shoreline and move toward deeper water to minimize suspended sediments by reducing sloughing toward open water.	Potential water quality impacts.
Vessel Grounding Prevention	Vessel draft and movements will be controlled by the contractor to limit potential for grounding.	Potential water quality impacts associated with sediment disturbance or material spill due to vessel grounding incidents.
Sediment Spillage Control	During transport and handling of sediment, containment measures will be used to minimize spillage.	Potential water quality impacts associated with sediment spillage outside of selected disposal sites.
Surface Debris Survey	The contractor will be required to conduct a surface debris survey prior to dredging.	Potential water quality impacts associated with transport and deposition of nondredge material.
GPS Barge Locator Requirement	The contractor will use a GPS to ensure that material is removed from the correct locations.	Potential water quality impacts associated with dredge and transport of materials outside the project area.
Compliance with Explosives Safety Submission Determination Request (ESS DR) or Explosives Safety Submission (ESS)	Munitions may be present in the dredged bay sediments; these materials could present an explosives safety hazard. To mitigate this hazard, the contractor will comply with an ESS DR in accordance with Naval Ordnance Safety and Security Activity (NOSSA) requirements. Dredging would not begin without NOSSA and/or U.S. Department of Defense Explosives Safety Board approval of the ESS or ESS DR.	Potential public health and safety impacts associated with munitions.
Dredge Material Screening	Dredge materials requiring upland disposal and considered to be potentially hazardous will be screened for munitions and explosives of concern and radiological commodities, as necessary.	Potential safety issues associated with upland dredge material disposal.
Nighttime Dredging	Dredging operations will take place between 6:00 p.m. and 6:00 a.m., Monday through Friday.	Potential impacts associated with munitions and ESQD arcs.
Dredge Depth Limit and Area Limits	The contractor will not be allowed to excavate beyond the overdredge depth or outside of the project area limits.	Potential water quality impacts associated with dredge and transport of materials outside the project area.
Dredge Bucket Swing Limit	The dredge bucket will be swung directly to the barge after it breaks the water surface using the minimal swing distance.	Potential water quality impacts associated with sediment release at dredge site due to prolonged transit of dredge bucket to barge/scow.
Bottom Stockpiling and Dredging Limit	No bottom stockpiling or multiple bites of the clamshell bucket will be allowed.	Potential water quality impacts associated with unnecessary sediment disturbance at dredge site.

Table 2-3 Best Management Practices (Continued)

<i>BMP</i>	<i>Description</i>	<i>Impacts Reduced/Avoided</i>
Overdredge Limit	The contractor will not be allowed to overdredge beyond the designed side slopes.	Potential water quality impacts associated with over-steepening of the slope resulting in unnecessary sediment movement/sliding or impacts on adjacent structural stability.
Dredge Bucket Fill Limit	The dredge bucket will not be overfilled.	Potential water quality impacts associated with sediment spillage from overfilled dredge bucket.
Barge/Scow Maximum Capacity	The barge/scow will not be filled beyond 85 percent capacity.	Potential water quality impacts associated with sediment spillage outside selected disposal sites.
Dredge Material Control	Material will not be allowed to leak from the bins or overtop the walls of the barge/scow.	Potential water quality impacts associated with unintended sediment release outside of selected disposal sites.
Offloading Spill Control	During offloading, metal spill aprons, upland spill control curbing and collection systems, and other spill control measures will be implemented. If a bucket is used, a dribble apron will be used.	Potential water quality impacts associated with uncontrolled deposition of sediment during offloading operations.
Spill/Sheen Response Materials	Surface booms, oil-absorbent pads, and similar materials will be maintained onsite to contain any sheen that may occur on the surface of the water during dredging.	Potential water quality impacts associated with spill/sheen.
Clean Materials	Only clean construction materials suitable for use in the oceanic environment will be used.	Potential water quality impacts associated with construction materials.
Debris Control	A cable net and floating boom will be used to capture floating debris that falls into the water during demolition activities and debris will be collected and disposed of on-shore.	Potential water quality impacts associated with uncontrolled construction and demolition debris.

Abbreviations:

BMP = best management practice

ESQD = Explosives Safety Quantity-Distance

GPS = Global Positioning System

MGBW = Marine Group Boat Works, LLC

3 Affected Environment and Environmental Consequences

This chapter presents a description of the environmental resources and baseline conditions that could be affected from the implementation of the three action alternatives and an analysis of the potential direct and indirect effects.

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. Additionally, 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 in several contexts such as society as a whole (e.g., human, national), 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 greater region 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 must be to be considered significant. Likewise, the less sensitive the context, the more intense a potential impact would be expected to be significant. In that sense context is also directly related to cumulative impacts.

The potential impacts on the following resource areas are considered to be negligible or nonexistent, so they were not analyzed in detail in this EA:

Geological Resources: The emplacement and operation of a floating dry dock(s), including all required dredging and sediment disposal as well as all required demolition and construction activities, would not result in adverse impacts on geological resources. Most of the proposed activities would occur within previously developed or disturbed areas of San Diego Bay. Dredging would not result in impacts on geology and topography, particularly at the south berth of the Mole Pier, because this area was previously dredged to -55 feet MLLW to support AFDM 14 “Steadfast” (Navy 2018a). San Diego is a seismically active region, as is most of Southern California. Seismic hazards can include landslides, ground shaking, surface displacement, and rupture, liquefaction, and tsunamis. The emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would comply with all applicable provisions of the Unified Facilities Criteria and would incorporate BMPs, specifically addressing susceptibility to geological/seismic hazards (e.g., overdredge limit); therefore, with these design considerations incorporated, installation of a floating dry dock at south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would result in negligible impacts on topography, geology, and soils.

Cultural Resources: The emplacement and operation of a floating dry dock(s) would not affect any archaeological sites or other cultural resources, because none occur within the Area of Potential Effect, as defined under the Programmatic Agreement between the Commanding Officer Naval Base San Diego (CONBSD) and the California State Historic Preservation Officer regarding NBSD Undertakings, San Diego County, California (Navy 2014c). Consistent with Stipulation 6.A of the CONBSD Programmatic Agreement, because the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers are more than 325 feet (100 meters) from the nearest identified

historic properties, including the Naval Station San Diego Historic District (revised 2007) and individually eligible Dry Dock No. 1, the Area of Potential Effect is defined as the discrete site of the undertaking and any associated staging or laydown areas.

The Area of Potential Effect under Alternative 1 consists of the 4.79-acre dredge area required for the floating dry dock and the 5.30-acre upland construction area (including the construction staging area) along the south berth of the Mole Pier. The dredge area consists of disturbed bay bottom that was previously dredged to -55 feet MLLW to support AFDM 14 "Steadfast" (Navy 2018a). Adjacent upland areas were created by backfilling tidelands with excavated material. Given the development history associated with the Mole Pier, the potential for presence of buried archaeological resources (including shipwrecks) to either occur or to be adversely affected by Alternative 1 is precluded.

The Area of Potential Effect under Alternative 2 consists of the 5.55-acre dredge area required for the COL floating dry dock, and the 0.88-acre upland construction area (including the construction staging area) at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Given the development history associated with the southern edge of the NBSD property boundary near the existing MGBW maintenance piers, the potential for the presence of buried archaeological resources (including shipwrecks) to either occur or to be adversely affected by Alternative 2 is precluded.

The emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would not affect listed, contributing, or eligible properties on the National Register of Historic Places. Consistent with Stipulation 8.A of the CONBSD Programmatic Agreement, the Proposed Action qualifies for a determination of "No Historic Properties Affected," in accordance with 36 CFR Section 800.4 (d)(1). Therefore, installation of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would not have a significant impact on cultural resources.

Land Use: The CZMA (16 U.S.C. Section 1451) encourages coastal states to be proactive in managing coastal zone uses and resources. The CZMA established a voluntary coastal planning program under which participating states submit a Coastal Management Plan to the National Oceanic and Atmospheric Administration (NOAA) for approval. Under the CZMA, federal agency actions within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone are to be carried out in a manner that is consistent with the maximum extent practicable with the enforceable policies of the approved state management plans. Each state defines its coastal zone in accordance with the CZMA. Excluded from any coastal zone are lands the use of which by law is subject solely to the discretion of the federal government or that are held in trust by the federal government (16 U.S.C. Section 1453).

Although NBSD land is government-owned property, and therefore is excluded from the coastal zone, the Navy has conducted an analysis of each alternative's reasonably foreseeable future direct and indirect effects on coastal uses and resources.

The Mole Pier is currently used for the transit, berthing, and repair of vessels among other general marine, industrial, and military uses characteristic of NBSD. The southern edge of the NBSD property boundary near the existing MGBW maintenance piers has supported similar uses. Public access, including coastal recreation, is restricted at the both locations because they are within a federal defense installation. Recreation within the surrounding areas of NBSD is similarly restricted because of safety and AT/FP concerns. As such, emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would be

consistent with existing and ongoing uses within the surrounding areas of NBSD and would therefore neither directly affect nor further restrict access to, or use of, the area to the public at large.

The emplacement and operation of a floating dry dock(s) would have no effect on coastal zone uses and would be consistent with the CZMA. Other effects on coastal resources are minimal and have been analyzed in previous dredging construction projects conducted at military installations in San Diego. Therefore, emplacement and operation of a floating dry dock(s) would have no adverse effect on coastal zone uses or coastal resources and would be consistent with the California Coastal Management Plan. The Navy has submitted a coastal consistency negative determination in compliance with the CZMA and has received concurrence from the California Coastal Commission in a letter dated 31 December 2019 (see Appendix E).

The existing military land use at the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would continue to support naval operations and no land use compatibility issues or conflicts would occur. Each of the proposed disposal locations – the Nearshore Replenishment Sites, LA-5 ODMDS, and Otay Landfill – are permitted for and currently operate as receiving sites for dredged sediments. As such, potential use of any of these locations is consistent with current land use designations and is compatible with ongoing activities. Therefore, no land use impacts would occur.

Visual Resources: There would be no significant changes to the existing views from the emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Views to and from NBSD would remain consistent with the military and industrial nature of the surrounding area. Dredging operations would last for a period of up to 27 weeks; such activities are common and consistent with both existing military and civilian waterfront and in-water activities, which include frequent and ongoing dredging operations. Each of the proposed disposal locations – the Nearshore Replenishment Sites, LA-5 ODMDS, and Otay Landfill – are permitted for and currently operate as receiving sites for dredged sediments. As such, potential use of any of these locations is consistent with existing visual resources. Upon completion of the proposed dredging activities and demolition and construction activities, which could last for up to 8 months, temporarily placed dredging equipment and construction equipment/materials would be removed. Operationally, the visual character of the floating dry dock(s) would be of a similar size and industrial nature; as such, the dry dock(s) would not introduce a new or conflicting visual element to the viewshed. Therefore, neither short- nor long-term impact on visual resources would occur as a result of installation of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers.

Airspace: There would be no changes to local air traffic in the vicinity of NBSD, including at Naval Air Station North Island or San Diego International Airport, from emplacement of a floating dry dock and all associated modifications at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. The floating dry dock(s) would neither create any obstructions to the safe operation of aircraft nor necessitate in substantial increases in military or civilian air traffic.

Infrastructure: The proposed modifications needed to accommodate emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would extend 12-kilovolt feeders from the existing substation with flexible lines to the proposed floating dry dock(s). It is anticipated that industrial power mounds would be

installed and electrical lines would be extended to the new mounds so that contractors could bring in their own electrical powered equipment, including compressed air units (Navy 2018a). A packaged water booster pump station would also be required to provide water for firefighting purposes (Navy 2018a). However, installation of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would neither require nor cause the need for substantial increases in utility capacities or public services.

Otay Landfill, a permitted and existing dredged sediment disposal location under the upland disposal option, has a maximum permitted disposal rate of 6,700 tons per day (CalRecycle 2019). Under the upland disposal option, transport of suitably dried sediment from NBSD would be metered to ensure that it would not exceed the Otay Landfill permitted disposal rate. Therefore, no impacts on infrastructure would occur.

Public Health and Safety: EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that each federal agency must, to the extent permitted by law and appropriate and consistent with the agency's mission: 1) make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and 2) ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks (62 Federal Register 19885). The areas to be dredged (located offshore of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers) are not occupied by any residents (including children) or located within proximity of facilities where children congregate (e.g., schools, daycare centers, playgrounds, etc.). The demolition and construction phases would take place within a secure area not accessible to the general public and remote from facilities where children congregate. Therefore, given the secure location of the project site, the emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would not exposure people – including children – to either environmental health risks or safety risks.

The contractor would be required to comply with safety requirements of the Occupational Safety and Health Administration, the most recent versions of USACE EM 385-1-1 Safety and Health Requirements (USACE 2014), and multiple other Naval Facilities Engineering Command Southwest and Navy health and safety instructions. Dredging would be completed to the required depth and would be sloped so that the structural integrity of the pier and quay walls would be maintained and therefore would not affect the stability of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers.

Munitions may be present in the dredged bay sediments; these materials could present an explosives safety hazard. To mitigate this hazard, the contractor will comply with an ESS DR or ESS in accordance with Naval Ordnance Safety and Security Activity (NOSSA) requirements.

- ESS DR Requirements Anticipated – Low likelihood of encountering Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosives Hazard (MPPEH)
 - MEC Awareness Training (3Rs) required for all personnel
 - If munitions other than small arms are found, project must stop and NOSSA must be consulted on the need for an ESS.
- Explosives Safety Submission (ESS) Requirements Anticipated – Medium/High likelihood of encountering MEC/MPPEH.
 - MEC Awareness Training (3Rs) required for all personnel

- o Shielding required for essential (project) personnel
- o Unexploded Ordnance (UXO) Technicians observe screening operations and debris handling
- o Exclusion zones required to prevent non-essential personnel from entering explosive safety arcs on the dredge and at the CDF
- o Dredging required at night to minimize non-essential personnel in exclusion zone
- o All upland disposal sediment required to be screened to 0.75 inch to remove munitions 20 millimeters (mm) or greater (e.g., high explosives)
- o All ocean disposal sediment required to be screened to 12 inches
- o Third Party Quality Assurance required
- o If munitions are found, project continues following the ESS and may include intentional detonation

Dredging would not begin without NOSSA and/or U.S. Department of Defense Explosives Safety Board approval of the ESS or ESS DR. These requirements and regulations address the potential risks to health and safety and would be followed; therefore, impacts on public health and safety would not be significant.

Socioeconomics and Environmental Justice: Dredging activities as well as demolition and construction activities associated with emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would be temporary in nature and would generate short-term spending and employment opportunities. This work would result in beneficial impacts on the local economy; however, these impacts would be negligible in the context of the regional San Diego economy. Similarly, over the long term, the floating dry dock(s) would be staffed by up to 40 maintenance workers; however, this increase in employment would also be negligible on a regional scale.

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 on its programs, policies, and activities on minority populations and low-income populations” (59 Federal Register 7629). The emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would not substantively affect either human health or the environment. Proposed dredging would occur within NBSD property boundaries; transport of dredged sediments would occur within San Diego Bay and potentially the Pacific Ocean; and replenishment may occur at Nearshore Replenishment Site(s). For each of these elements, installation of the floating dry dock(s) would occur on submerged federal lands, over open water, or at previously approved Nearshore Replenishment Site(s). No permanent populations – minority, low-income, or otherwise – would be significantly affected. Therefore, there would be no disproportionate environmental or health impacts on low-income populations or minority populations per EO 12898 from emplacement of a floating dry dock at the south berth of the Mole Pier and/or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers.

3.1 Air Quality/Climate Change

This discussion of air quality includes criteria pollutants, standards, sources, permitting, and greenhouse gases (GHGs). Air quality in a given location is defined by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks, buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g., some building materials and cleaning solvents). Air pollutants are also released from natural sources such as volcanic eruptions and forest fires.

The main pollutants of concern considered in this air quality analysis include volatile organic compounds (VOCs), ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter less than or equal to 10 microns in diameter (PM_{10}), and particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$). Although neither VOCs nor NO_x (other than nitrogen dioxide [NO_2]) have established ambient standards, they are important as precursors to O_3 formation.

The Region of Influence (ROI) for this air quality analysis is the entire San Diego Air Basin (SDAB), which encompasses San Diego County.

3.1.1 Regulatory Setting

3.1.1.1 Criteria Pollutants and National Ambient Air Quality Standards

The principal pollutants defining the air quality, called "criteria pollutants," include CO, sulfur dioxide (SO_2), NO_2 , O_3 , PM_{10} , $PM_{2.5}$, and lead. CO, SO_2 , lead, and some particulates are emitted directly into the atmosphere from emissions sources. O_3 , NO_2 , and some particulates are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes.

Under the CAA, USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants (40 CFR Part 50). NAAQS are classified as primary or secondary. Primary standards protect against adverse health effects; secondary standards protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings. Some pollutants have both short- and long-term standards. Short-term standards are designed to protect against acute, or short-term, health effects, while long-term standards were established to protect against chronic health effects.

Areas that are and have historically been in compliance with NAAQS are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment.

The CAA requires states to develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to attain the standards for each area designated nonattainment for a NAAQS. These plans, known as State Implementation Plans (SIPs), are developed by state and local air quality management agencies and submitted to USEPA for approval.

Table 3-1 lists applicable California Ambient Air Quality Standards (CAAQS) and NAAQS for the proposed floating dry dock(s).

3.1.1.2 Mobile Sources

Hazardous air pollutants emitted from mobile sources are called Mobile Source Air Toxics (MSATs). MSATs are compounds emitted from highway vehicles and nonroad equipment that are known or suspected to cause cancer or other serious health and environmental effects. In 2001, USEPA issued its first MSAT Rule, which identified 201 compounds as being hazardous air pollutants that require regulation. A subset of six of the MSAT compounds was identified as having the greatest influence on health and consisted of benzene, butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter. USEPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds with the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented (40 CFR Parts 59, 80, 85, and 86; 72 Federal Register 8428). Unlike the criteria pollutants, there are no NAAQS for benzene and other hazardous air pollutants. The primary control methodologies for these pollutants for mobile sources involve reducing their content in fuel and altering the engine operating characteristics to reduce the volume of pollutant generated during combustion.

3.1.1.3 General Conformity

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in ton[s] per year [tpy]) vary by pollutant and also depend on the severity of the nonattainment status for the air quality management area in question.

A conformity applicability analysis is the first step of a conformity evaluation and assesses whether a federal action must be supported by a conformity determination. This assessment is typically done by quantifying projected applicable direct and indirect emissions from implementation of the federal action. Indirect emissions are those emissions caused by the federal action and originating in the region of interest, but that can occur at a later time or in a different location from the action itself and are reasonably foreseeable. The federal agency can control and will maintain control over the indirect action because of a continuing program responsibility of the federal agency. Reasonably foreseeable emissions are projected future direct and indirect emissions that are identified at the time of the conformity evaluation. The location of such emissions is known and the emissions are quantifiable, as described and documented by the federal agency based on its own information and after review of any information presented to the federal agency. If the results of the applicability analysis indicate that the total emissions would not exceed the *de minimis* emissions thresholds, then the conformity evaluation process is completed. *De minimis* threshold emissions are presented in Table 3-2.

Table 3-1 California and National Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS ¹	NAAQS ²	
			Primary	Secondary
O ₃	8-hour	0.070 ppm (137 µg/m ³)	0.070 ppm (137 µg/m ³)	Same as Primary Standards
	1-hour	0.09 ppm (180 µg/m ³)	--	
CO	8-hour	9.0 ppm (10 mg/m ³)	9.0 ppm (10 mg/m ³)	---
	1-hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	
NO ₂	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	53 ppm (100 µg/m ³)	Same as Primary Standard
	1-hour	0.18 ppm (339 µg/m ³)	100 ppb (188 µg/m ³)	---
SO ₂	Annual Arithmetic Mean	---	0.30 ppm (for certain areas)	---
	24-hour	0.04 ppm (105 µg/m ³)	0.14 ppm (for certain areas)	---
	3-hour	---	---	0.5 ppm (1,300 µg/m ³)
	1-hour	0.25 ppm (655 µg/m ³)	75 ppb (196 µg/m ³)	---
PM ₁₀	Annual Arithmetic Mean	20 µg/m ³	---	Same as Primary Standard
	24-hour	50 µg/m ³	150 µg/m ³	
PM _{2.5}	Annual Arithmetic Mean	12 µg/m ³	12 µg/m ³	15.0 µg/m ³
	24-hour	---	35 µg/m ³	Same as Primary Standard
Sulfates	24-hour	25 µg/m ³	---	---
Lead	30-day average	1.5 µg/m ³	---	---
	Calendar quarter	---	1.5 µg/m ³ (for certain areas)	Same as Primary Standard
	Rolling 3-month average	---	0.15 µg/m ³	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)	---	---
Vinyl Chloride (chloroethene)	24-hour	0.01 ppm (26 µg/m ³)	---	---

Notes:

CO, SO₂ (1- and 24-hour), NO₂, O₃, PM₁₀, and visibility reducing particles standards are not being exceeded. All other California Standards are not to be equaled or exceeded.

Not to be exceeded more than once a year except for annual standards.

Abbreviations:

--- = Not Applicable

µg/m³ = microgram(s) per cubic meter

CAAQS = California Ambient Air Quality Standards

CO = carbon monoxide

mg/m³ = milligram(s) per cubic meter

NAAQS = National Ambient Air Quality Standards

NO₂ = nitrogen dioxide

O₃ = ozone

PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = particulate matter less than or equal to 10 microns in diameter

ppb = part(s) per billion

ppm = part(s) per million

SO₂ = sulfur dioxide

Table 3-2 General Conformity *de minimis* Levels Pursuant to 40 CFR Section 93.153(b)(1)

<i>Pollutant</i>	<i>Area Type</i>	<i>Tons per Year</i>
O ₃ (VOC or NO _x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an O ₃ transport region	100
O ₃ (NO _x)	Marginal and moderate nonattainment inside an O ₃ transport region	100
	Maintenance	100
O ₃ (VOC)	Marginal and moderate nonattainment inside an O ₃ transport region	50
	Maintenance within an O ₃ transport region	50
	Maintenance outside an O ₃ transport region	100
CO, SO ₂ and NO ₂	All nonattainment and maintenance	100
PM ₁₀	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
PM _{2.5} : Direct emissions, SO ₂ , NO _x (unless determined not to be a significant precursor), VOC or ammonia (if determined to be significant precursors)	All nonattainment and maintenance	100
Lead	All nonattainment and maintenance	25

Abbreviations:

CFR = Code of Federal Regulations

CO = carbon monoxide

NO₂ = nitrogen dioxideNO_x = nitrogen oxidesO₃ = ozonePM_{2.5} = particulate matter less than or equal to 2.5 microns in diameterPM₁₀ = particulate matter less than or equal to 10 microns in diameterSO₂ = sulfur dioxide

VOC = volatile organic compound

3.1.1.4 Permitting**New Source Review (Preconstruction Permit)**

New major stationary sources and major modifications at existing major stationary sources are required by the CAA to obtain an air pollution permit before commencing construction. This permitting process for major stationary sources is called New Source Review and is required whether the major source or major modification is planned for nonattainment areas or attainment and unclassifiable areas. In general, permits for sources in attainment areas and for other pollutants regulated under the major source program are referred to as Prevention of Significant Deterioration (PSD) permits, while permits for major sources emitting nonattainment pollutants and located in nonattainment areas are referred to as nonattainment new source review permits. In addition, a proposed project may have to meet the requirements of nonattainment new source review for the pollutants for which the area is designated as nonattainment and PSD for the pollutants for which the area is attainment. Additional PSD permitting thresholds apply to increases in stationary source GHG emissions. PSD permitting can also apply to a new major stationary source (or any net emissions increase associated with a modification to an existing major stationary source) that is constructed within 6.2 miles of a Class I area, and which would increase the 24-hour average concentration of any regulated pollutant in the Class I area by 1 microgram per cubic meter (mg/m³) or more. Navy installations are required to comply with applicable permit requirements under the PSD program per 40 CFR Section 51.166.

Title V (Operating Permit)

The Title V Operating Permit Program consolidates all CAA requirements applicable to the operation of a source, including requirements from the SIP, pre-construction permits, and the air toxics program. It applies to stationary sources of air pollution that exceed the major stationary source emission thresholds, as well as other nonmajor sources specified in a particular regulation. The program includes a requirement for payment of permit fees to finance the operating permit program whether implemented by USEPA or a state or local regulator. Navy installations subject to Title V permitting are required to comply with the requirements of the Title V Operating Permit Program, which are detailed in 40 CFR Part 70 and all specific requirements contained in their individual permits.

3.1.1.5 State Regulations

The California Air Resources Board enforces air pollution regulations and sets guidelines to attain and maintain the NAAQS and CAAQS within the State of California. These guidelines are provided in the SIP.

The California CAA of 1988, as amended in 1992, outlines a program to attain the CAAQS for O₃, NO₂, SO₂, particulate matter, and CO by the earliest practicable date. Because the CAAQS are more stringent than the NAAQS, emissions reductions beyond what would be required to show attainment for the NAAQS would be needed to show compliance with the CAAQS. The California Air Resources Board delegates the authority to regulate stationary source emissions to local air quality management districts and requires these agencies to develop their own strategies for achieving compliance with the NAAQS and CAAQS, but maintains regulatory authority over these strategies, as well as all mobile source emissions throughout the state. The San Diego Air Pollution Control District (SDAPCD) is the local agency responsible for enforcement of air quality regulations in the region.

3.1.1.6 Local Regulations

The SDAPCD is responsible for regulating stationary sources of air emissions in the SDAB. SDAPCD Rules and Regulations (SDAPCD 2018) establish emission limitations and control requirements for stationary sources based on source type and magnitude. The SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB, which is the SDAPCD's input to the SIP. In addition, SDAPCD Conformity Rule 1501 provides general conformity guidance to ensure that federal actions are consistent with the efforts of the SDAPCD to achieve its NAAQS attainment goals.

In their capacity as the regulatory agency for stationary sources within the SDAB, the SDAPCD requires air quality permits for stationary source activities or equipment that emit air contaminants. The SDAPCD requires air permits before construction or installation and again before any operational activities begin. An "Authority to Construct" permit is used to authorize construction or installation activities. A "Permit to Operate" is used to authorize operation of specific equipment. All necessary construction or operationally related permits must be authorized by the SDAPCD before project implementation occurs.

3.1.2 Greenhouse Gases

GHGs are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

USEPA issued the Final *Mandatory Reporting of Greenhouse Gases Rule* on 22 September 2009. GHGs covered under the Final *Mandatory Reporting of Greenhouse Gases Rule* are carbon dioxide (CO₂), methane, NO_x, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases, including nitrogen trifluoride and hydrofluorinated ethers. Each GHG is assigned a global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to CO₂, which has a value of one. The equivalent CO₂ rate is calculated by multiplying the emissions of each GHG by its global warming potential and summing the results to produce a single, combined emissions rate representing all GHGs. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of mobile sources and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions as carbon dioxide equivalent (CO₂e) are required to submit annual reports to USEPA.

GHG emissions are also regulated under the PSD and Title V permitting programs, as initiated by a USEPA rulemaking issued on 3 June 2010 known as the GHG Tailoring Rule (75 Federal Register 31514). GHG emissions thresholds for permitting of stationary sources are an increase of 75,000 tpy of CO₂e at existing major sources and facility-wide emissions of 100,000 tpy of CO₂e for a new source or a modification of an existing minor source. The 100,000 tpy of CO₂e threshold defines a major GHG source for both construction (PSD) and operating (Title V) permitting, respectively. However, on 23 June 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. USEPA* (No. 12-1146). As a result of the decision, USEPA will no longer apply or enforce federal regulatory provisions or the USEPA-approved PSD SIP provisions that require a stationary source to obtain a PSD permit if GHGs are the only pollutant that the source emits or has the potential to emit above the major source thresholds, or for which there is a significant emissions increase and a significant net emissions increase from a modification (e.g., 40 CFR Section 52.21[b][49][v]). In addition, USEPA does not intend to continue applying regulations that would require that states include in their SIP a requirement that such sources obtain PSD permits.

Similarly, USEPA will no longer apply or enforce federal regulatory provisions or provisions of the USEPA-approved Title V programs that require a stationary source to obtain a Title V permit solely because the source emits or has the potential to emit GHGs above the major source thresholds (e.g., the regulatory provision relating to GHG subject to regulation in 40 CFR Section 71.2). USEPA also does not intend to continue applying regulations that would require Title V programs submitted for approval by USEPA to require that such sources obtain Title V permits.

In an effort to reduce energy consumption, reduce GHGs, reduce dependence on petroleum, and increase use of renewable energy resources, the Navy has implemented a number of renewable energy projects. The Navy has established FY 2020 GHG emissions reduction targets of 34 percent from a FY 2008 baseline for direct GHG emissions and 13.5 percent for indirect emissions. Examples of Navy-wide GHG reduction projects include energy efficient construction, thermal and photovoltaic solar systems, geothermal power plants, and generation of electricity with wind energy. The Navy continues to promote and install new renewable energy projects.

3.1.3 Affected Environment

NBSD is located in San Diego County, within the SDAB. SDAPCD is responsible for implementing and enforcing state and federal air quality regulations in San Diego County (refer to Section 3.1.1.6, *Local Regulations*). San Diego has been determined by USEPA to be a moderate nonattainment area for 8-hour O₃ under the 2008 and 2015 standards. San Diego County is classified by USEPA as in

attainment/unclassified for all other criteria pollutants. Nevertheless, because San Diego County is in nonattainment for O₃, a General Conformity evaluation is required.

Per the California Air Resources Board (2014), the most recent emissions inventory (from 2012) for SDAB is as follows:

- NO_x = 111.3 tons per day;
- VOC = 30.2 tons per day;
- CO = 141 tons per day;
- SO_x = 0.3 tons per day;
- PM₁₀ = 7.0 tons per day; and
- PM_{2.5} = 2.4 tons per day.

Note that VOC and NO_x emissions are used to represent O₃ generation because they are precursors of O₃.

Emission sources associated with the existing use of NBSD include civilian and military personal vehicles, commercial and military vehicles, and small vessel and tug boat activity along Chollas Creek and San Diego Bay. NBSD operates under a Title V permit from the SDAPCD (APCD20089-PTO-960391). Permitted sources include a combustion turbine, duct burner, electrical generator, emergency internal combustion engine fire pump, and two boilers. Recent annual criteria pollutants emissions for the closest proximity monitoring station to NBSD (San Diego-Beardsley Street Monitoring Station located just south of downtown San Diego near the intersection of I-5 and the Coronado Bridge) are shown in Table 3-3.

Table 3-3 Representative Air Quality Data for NBSD (2012–2016) from San Diego-Beardsley Street Monitoring Station

<i>Air Quality Indicator</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>
<i>Ozone</i>					
Days State 1-hour Standard Exceeded (0.09 ppm)	0	0	0	0	0
Days Federal 8-hour Standard Exceeded (0.075 ppm) ¹	0	0	0	0	0
Days State 8-hour Standard Exceeded (0.07 ppm)	0	0	2	0	0
Maximum 1-hour (ppm)	0.071	0.063	0.093	0.089	0.072
Maximum 8-hour (ppm)	0.065	0.053	0.073	0.067	0.061
<i>Carbon Monoxide</i>²					
Days Federal 8-hour Standard Exceeded (35 ppm)	0	NA	NA	NA	NA
Days State 8-hour Standard Exceeded (20 ppm)	0	NA	NA	NA	NA
Maximum 1-hour (ppm)	2.6	3	2.7	2.6	2.2
Maximum 8-hour (ppm)	1.81	NA	NA	NA	NA
<i>Nitrogen dioxide</i>					
Days Federal 1-hour Standard Exceeded (0.10 ppm)	0	0	0	0	0
Days State 1-hour Standard Exceeded (0.18 ppm)	0	0	0	0	0
Maximum 1-hour (ppm)	0.065	0.072	0.075	0.062	0.073
Annual Average (ppm)	0.013	0.014	0.013	0.014	NA
<i>Sulfur dioxide</i>³					
Days State 24-hour Standard Exceeded (0.04 ppm)	NA	NA	NA	NA	NA
Maximum 24-hour (ppm)	NA	NA	NA	NA	NA
Annual Average (ppm)	NA	NA	NA	NA	NA
<i>Particulate matter less than or equal to 10 microns in diameter</i>					
Days State 24-hour Standard Exceeded (50 µg/m ³)	0	6	0	5.7	NA
Days Federal 24-hour Standard Exceeded (150 µg/m ³)	0	0	0	0	NA
Maximum Daily – Federal (µg/m ³)	45	90	40	53	49
Maximum Daily – State (µg/m ³)	47	92	41	54	51
Federal Annual Average (µg/m ³)	21.8	24.9	23.3	23	21.9
State Annual Average (µg/m ³)	22.2	25.4	23.8	23.2	NA
<i>Particulate matter less than or equal to 2.5 microns in diameter</i>					
Days Federal 24-hour Standard Exceeded (35 µg/m ³)	1	1.1	1	0	NA
Maximum Daily – Federal (µg/m ³)	39.8	37.4	36.7	33.4	34.4
Maximum Daily – State (µg/m ³)	39.8	37.4	36.7	44.9	34.4
Federal Annual Average (µg/m ³)	11	10.3	10.1	9.3	NA
State Annual Average (µg/m ³)	NA	10.3	10.1	10.2	NA

Source: California Air Resources Board 2018; SDAPCD 2016

Notes:

On 1 October 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

8-hour carbon monoxide averages are available at San Diego Beardsley Street Station between 2005 and 2012.

The sulfur dioxide monitor was decommissioned on 30 June 2011.

Abbreviations:

µg/m³ = microgram(s) per cubic meter

NA = Not Available

ppm = part(s) per million

3.1.4 Environmental Consequences

Effects on air quality are based on estimated direct and indirect emissions associated with the three action alternatives. The ROI for assessing air quality impacts is the SDAB.

This analysis compares projected emissions of criteria pollutants and regulated precursors to relevant federal and state standards to assess the potential for significant increases in pollutant concentrations under NEPA. Comparison to *de minimis* thresholds associated with federal CAA conformity requirements is the first step in assessing the significance of potential air quality impacts. They also determine whether conformity determination is required for federal actions occurring in nonattainment or maintenance areas.

“Significant” air quality impacts could occur if implementation of any of the alternatives would directly or indirectly exceed screening criteria including: conformity *de minimis* thresholds for nonattainment and maintenance pollutants and/or PSD thresholds for major emitting facility standards for attainment pollutants. Criteria pollutant increases below those thresholds are presumed to be less than significant. Neither of these screening thresholds would be exceeded under any of the three action alternatives, including Alternative 2 (Preferred Alternative).

If screening thresholds are exceeded, the analysis proceeds to more refined levels. For example, modeling and/or health risk assessment, may be employed.

3.1.4.1 Avoidance and Minimization Measures

None of the three action alternatives would require the need for avoidance and minimization measures to further reduce air emissions within the NBSD region.

3.1.4.2 No Action Alternative

Under the No Action Alternative, emplacement and operation of a floating dry dock, including all required dredging and sediment disposal as well as all required demolition and construction activities, would not occur and there would be no change to baseline air emissions or air quality at NBSD. Therefore, no significant impacts on air quality/climate change would occur with implementation of the No Action Alternative. However, as described in Section 2.3.1, *No Action Alternative*, it is likely that major surface ship maintenance would be increasingly addressed at offsite shipyards, resulting in additional mobile emissions for vessels that could otherwise be maintained at NBSD.

3.1.4.3 Alternative 1 Potential Impacts

Implementation of Alternative 1 would include emplacement and operation of a floating dry dock – including all required dredging and sediment disposal as well as all required demolition and construction activities – at the south berth of the Mole Pier. Modifications would include dredging of the Turning Basin, Approach, and Sump; partial demolition of the existing concrete wharf; installation of two mooring dolphins and two fender piles; and minor utility modifications, including installation of an industrial power mound. The dredging of underwater sediment, loading of dredged sediment onto barges, transport of dredged sediment to disposal locations via barge, and direct disposal at a Nearshore Replenishment Site(s) for beneficial reuse are all also included in Alternative 1. If not deemed adequate for beneficial reuse, the material would be disposed of at the offshore LA-5 ODMS. If not suitable for beneficial reuse or ocean disposal, dredged sediments would be dried at a CDF and then transported via truck to a permitted upland disposal site at the Otay Landfill. Air emissions associated with Alternative 1 would result from operation of a motorized dredge, crane, barge, and tractor-trailer truck for dried sediment transport; a barge for

transport of the floating dry dock; and pile drivers for installation of new dolphins and piles at the south berth of the Mole Pier.

Assumptions

Air quality impacts from dredging, transportation, and sediment disposal activities as well as demolition and construction activities would occur as a result of combustion emissions associated with fossil-fuel-powered equipment.

Because of the nature of Alternative 1, landside grading would not be required; dredging activities would not generate fugitive dust because the marine sediments would be wet. Further, sediments used for beneficial reuse would be placed in offshore waters and not directly onto beaches or other dryland locations, and dried sediments transported via truck would be either wetted or covered for transportation to the Otay Landfill. It is assumed that all dredging and in-water disposal activities would be completed over a 14-week period; however, in the unlikely event that upland disposal is required, disposal may take 2 to 3 months to allow for sediment drying.

Prior to implementation of Alternative 1, the Navy would apply for and obtain an “Authority to Construct” permit through the SDAPCD to authorize construction or installation activities (refer to Section 3.1.1.6, *Local Regulations*). Additionally, the contractor would certify all equipment used during demolition and construction activities with the SDAPCD. Demolition activities, including demolition of piles and pier deck, would occur over a period of approximately 4 weeks. Construction activities, including installation of piles and construction of mooring dolphins, would occur over a period of 10 weeks.

As described in Section 2.1, *Proposed Action*, following the completion of dredging and construction activities, vessel repair and maintenance activities at the proposed floating dry dock may include abrasive blasting, hydro-blasting, metal grinding, painting, tank cleaning, removal of bilge and ballast water, removal of anti-fouling paint, sheet metal work, electrical work, mechanical repair, engine repair, hull repair, shaft repair, propeller and rudder repair, repair/replacement of sea valves and fittings below the waterline, and sewage disposal. Future decisions about ship deployments to and from NBSD are programmatic in nature and are neither a part of this alternative nor addressed in this EA.

Operational activities associated with ship maintenance activities would be highly variable, depending on the type of maintenance activities required. For this reason, only emissions associated with dredging, transportation, and sediment disposal activities as well as demolition and construction activities have been quantified for Alternative 1. Emissions associated with the floating dry dock would be evaluated by SDAPCD as a part of the issuance of a “Permit to Operate,” for which the Navy would apply and obtain prior to vessel maintenance. Under this permit(s), the Navy would comply with all required permit conditions for marine coating operations, crane(s), emergency standby engine(s), etc.

Impacts

Table 3-4 presents estimated emissions for dredging, transportation, and sediment disposal as well as demolition and construction associated with implementation of Alternative 1. Estimated emissions would be below the *de minimis* threshold levels for CAA conformity. Therefore, implementation of Alternative 1 would not result in significant impacts on air quality.

Table 3-4 Alternative 1 Emissions and Comparison to *de minimis* Thresholds

Construction Year	Emissions (tpy)					
	CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}

Nearshore Replenishment						
Naval Base Coronado Silver Strand Training Complex Boat Lanes ¹						
2020	9.79	1.85	19.46	0.21	0.89	0.89
<i>de minimis</i> Threshold/Major Source Threshold	100	50	50	100	100	100
Exceeds Threshold?	No	No	No	No	No	No
Naval Air Station North Island Replenishment Site						
2020	7.27	1.55	16.73	0.21	0.73	0.73
Exceeds Threshold?	No	No	No	No	No	No
Ocean Disposal Option						
2020	7.27	1.55	16.73	0.2118	0.727	0.727
<i>de minimis</i> Threshold/Major Source Threshold	100	50	50	100	100	100
Exceeds Threshold?	No	No	No	No	No	No
Upland Disposal Option						
2020	10.9	1.81	20.67	0.2141	0.958	0.958
<i>de minimis</i> Threshold/Major Source Threshold	100	50	50	100	100	100
Exceeds Threshold?	No	No	No	No	No	No

Notes:

¹ Naval Base Coronado Silver Strand Boat Lanes was selected for analysis as the most distant Nearshore Replenishment Site that provides a conservative base for analysis relative to the other offshore and upland disposal options.

Proposed construction and demolition activities would be the same for each of the sediment disposal options.

Abbreviations:

CO = carbon monoxide

NO_x = nitrogen oxides

PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = particulate matter less than or equal to 10 microns in diameter

SO_x = sulfur oxides

tpy = tons per year

VOC = volatile organic compounds

General Conformity

Estimated dredging emissions associated with Alternative 1 would be below *de minimis* threshold levels for CAA conformity. Therefore, implementation of Alternative 1 would conform to SDAPCD's input to the SIP that addresses the SDAB and would not trigger a conformity determination under Section 176(c) of the CAA. The Navy has prepared a Record of Non-Applicability for CAA conformity (see Appendix A) in accordance with Office of the Chief of Naval Operations Instruction 5090.1E and the Navy guidance for compliance with the CAA General Conformity Rule, dated 21 December 2018. Because the emissions associated with implementation of Alternative 1 would not exceed the *de minimis* threshold levels, there would be no significant adverse impacts on air quality.

Greenhouse Gases

Implementation of Alternative 1 would contribute directly to emissions of GHGs from the combustion of fossil fuels during construction. Dredging, transportation, and disposal activities as well as demolition and construction activities would generate approximately between 1,040 and 1,253 metric tons of CO₂e. This limited amount of GHG emissions would not likely contribute to global warming to any discernible extent. Therefore, implementation of Alternative 1 would not result in significant impacts specific to GHG emissions. As previously described, future decisions about ship deployments to and from NBSD are programmatic in nature and are neither a part of this alternative nor addressed in this EA.

3.1.4.4 Alternative 2 (Preferred Alternative) Potential Impacts

Implementation of Alternative 2 would include emplacement and operation of a COL floating dry dock (including all required dredging and sediment disposal as well as all required demolition and construction activities) at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Modifications would include dredging of the Sump; installation of new access structures; installation of two mooring dolphins; installation of new fendering; utility installation and/or expansion; and emplacement of a prefabricated steel floating dry dock. The dredging of underwater sediments, loading of dredge material onto barges, transport of dredged sediments to disposal locations via barge, and direct disposal at a Nearshore Replenishment Site(s) for beneficial reuse would be identical to those described for Alternative 1. If not deemed adequate for beneficial reuse, the material would be disposed of at the offshore LA-5 ODMDs. If not suitable for beneficial reuse or ocean disposal, dredged sediments would be dried at a CDF located at NBSD or at the MGBW National City Boatyard and then transported via truck to a permitted upland disposal site at the Otay Landfill. Air emissions resulting from Alternative 2 would include operation of a motorized dredge, crane, barge, and tractor-trailer truck for dried sediment transport; a barge for transport of the floating dry dock; and pile drivers for installation of new dolphins and piles at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers.

Under Alternative 2, air quality/climate change impacts from dredging, transportation, and sediment disposal activities as well as construction activities would occur as a result of combustion emissions associated with fossil-fuel-powered equipment during construction. These impacts would be similar in type to those described for Alternative 1. However, under Alternative 2, approximately 165,000 cy of sediment would be dredged. Therefore, air emissions would be increased from those described for Alternative 1, which would require only 86,121 cy of dredged sediment and minor modifications to the existing concrete wharf at the south berth of the Mole Pier. Additionally, the construction schedule for Alternative 2 would be approximately 8 months, resulting in similar, but slightly increased air emissions, relative to those of Alternative 1.

Table 3-5 presents estimated emissions for dredging, transportation, and sediment disposal as well as construction associated with implementation of Alternative 2. Estimated dredging emissions associated with Alternative 2 would be below *de minimis* threshold levels for CAA conformity. Therefore, implementation of Alternative 2 would conform to SDAPCD's input to the SIP that addresses the SDAB and would not trigger a conformity determination under Section 176(c) of the CAA. The Navy has prepared a Record of Non-Applicability for CAA conformity (see Appendix A) in accordance with Office of the Chief of Naval Operations Instruction 5090.1E and the Navy guidance for compliance with the CAA General Conformity Rule, dated 21 December 2018. Because the emissions associated with implementation of

Alternative 2 would not exceed the *de minimis* threshold levels, there would be no significant adverse impacts on air quality.

Table 3-5 Alternative 2 Emissions and Comparison to *de minimis* Thresholds

Construction Year	Emissions (tpy)					
	CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}
Nearshore Replenishment (Naval Base Coronado Silver Strand Boat Lanes)¹						
2020	17.0	3.17	34.11	0.18	1.43	1.42
<i>de minimis</i> Threshold/Major Source Threshold	100	50	50	100	100	100
Exceeds Threshold?	No	No	No	No	No	No
Ocean Disposal Option						
2019	12.14	2.6	28.85	0.17	1.12	1.11
Exceeds Threshold?	No	No	No	No	No	No
Upland Disposal Option						
2019	13.58	2.77	30.41	0.1737	1.21	1.2
<i>de minimis</i> Threshold/Major Source Threshold	100	50	50	100	100	100
Exceeds Threshold?	No	No	No	No	No	No
Upland Disposal Option						
2019	19.09	3.1	36.37	0.1772	1.56	1.55
<i>de minimis</i> Threshold/Major Source Threshold	100	50	50	100	100	100
Exceeds Threshold?	No	No	No	No	No	No

Notes:

¹ Naval Base Coronado Silver Strand Boat Lanes was selected for analysis as the most distant Nearshore Replenishment Site that provides a conservative base for analysis relative to the other offshore and upland disposal options.

Proposed construction and demolition activities would be the same for each of the sediment disposal options.

Abbreviations:

CO = carbon monoxide

NO_x = nitrogen oxides

PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = particulate matter less than or equal to 10 microns in diameter

SO_x = sulfur oxides

tpy = tons per year

VOC = volatile organic compounds

3.1.4.5 Alternative 3 Potential Impacts

The implementation of Alternative 3 would result in construction of two floating dry docks and associated air quality/climate change impacts would be similar in type to those described for Alternative 1 and Alternative 2. Due to required permitting timelines, the floating dry docks would not be installed concurrently. Therefore, criteria pollutant emissions would occur for a longer duration, but would not be additive. Because the emissions associated with implementation of Alternative 1 and Alternative 2 would not exceed the *de minimis* threshold levels, there would be no significant adverse impacts on air quality associated with Alternative 3.

3.2 Water Resources

This discussion of water resources includes marine waters and shorelines. This section also discusses the physical characteristics of marine waters, wetlands, etc.; associated vegetation and wildlife are addressed in Section 3.3, *Biological Resources*.

Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and wells. Groundwater is used for water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition. Sole source aquifer designation provides limited protection of groundwater resources that serve as drinking water supplies.

Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. A Total Maximum Daily Load (TMDL) is the maximum amount of a substance that can be assimilated by a water body without causing impairment. A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards occur.

Marine waters would typically include estuaries, waters seaward of the historical height of tidal influence, and offshore high-salinity waters. Marine water quality would be described as the chemical and physical composition of the water as affected by natural conditions and human activities. Additionally, marine waters may include an area within a National Marine Sanctuary requiring an action proponent to avoid adverse water quality impacts to prevent damage to resources within the sanctuary.

Wetlands are jointly defined by USEPA and USACE as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands generally include “swamps, marshes, bogs, and similar areas.”

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplain boundaries are most often defined in terms of frequency of inundation, that is, the 100-year and 500-year flood. Floodplain delineation maps are produced by the Federal Emergency Management Agency and provide a basis for comparing the locale of the Proposed Action to the floodplains.

Shorelines can be located along marine (oceans), brackish (estuaries), or fresh (lakes) bodies of water. 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. Shoreline ecosystems are vital habitat for multiple life states of many fish, birds, reptiles, amphibians, and invertebrates. Different shore zones provide different kinds and levels of habitat, and when aggregated, can significantly influence life. Organic matter that is washed onto the shore, or “wrack,” is an important component of shoreline ecosystems, providing habitat for invertebrates, soil and organic matter, and nutrients to both the upland terrestrial communities and aquatic ecosystems.

3.2.1 Regulatory Setting

The Safe Drinking Water Act is the federal law that protects public drinking water supplies throughout the nation. Under the Safe Drinking Water Act, USEPA sets standards for drinking water quality. Groundwater quality and quantity are regulated under several statutes and regulations, including the Safe Drinking Water Act.

The CWA establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES) program, on the amounts of specific pollutants that can be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint sources (i.e., stormwater) of water pollution.

The California NPDES stormwater program requires construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more to obtain coverage under an NPDES Construction General Permit for stormwater discharges. Construction or demolition that necessitates an individual permit also requires preparation of a Notice of Intent to discharge stormwater and a Stormwater Pollution Prevention Plan (SWPPP) that is implemented during construction. As part of the 2010 Final Rule for the CWA, *Effluent Limitations Guidelines and Standards for the Construction and Development Point Source Category*, activities covered by this permit must implement non-numeric erosion and sediment controls and pollution prevention measures.

Wetlands are currently regulated by USACE under Section 404 of the CWA as a subset of all “waters of the U.S.” Waters of the U.S. are defined as 1) traditional navigable waters; 2) wetlands adjacent to navigable waters; 3) nonnavigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow perennially or have continuous flow at least seasonally (e.g., typically 3 months); and 4) wetlands that directly abut such tributaries under Section 404 of the CWA, as amended, and are regulated by USEPA and USACE. The CWA requires that California establish a Section 303(d) list to identify impaired waters and establish TMDLs 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 into wetlands and other Waters of the U.S. Any discharge of dredge or fill into Waters of the U.S. requires a permit from USACE.

Section 438 of the Energy Independence and Security Act establishes storm water design requirements for development and redevelopment projects. Under these requirements, federal facility projects larger than 5,000 sf must “maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.”

Section 10 of the RHA provides for USACE permit requirements for any in-water construction. 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; deposit of fill and dredged sediments; filling of wetlands adjacent or contiguous to waters of the U.S.; construction of riprap, revetments, groins, breakwaters, and levees; and transportation of dredged sediments for dumping into ocean waters.

The National Wild and Scenic Rivers System was created by Wild and Scenic Rivers Act of 1968 to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Wild and Scenic Rivers Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and

development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

EO 11990, *Protection of Wetlands*, requires that federal agencies adopt a policy to avoid, to the extent possible, long- and short-term adverse impacts associated with destruction and modification of wetlands and to avoid the direct and indirect support of new construction in wetlands whenever there is a practicable alternative.

EO 11988, *Floodplain Management*, requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practicable alternative. Flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a 1 percent chance of inundation by a flood event in a given year.

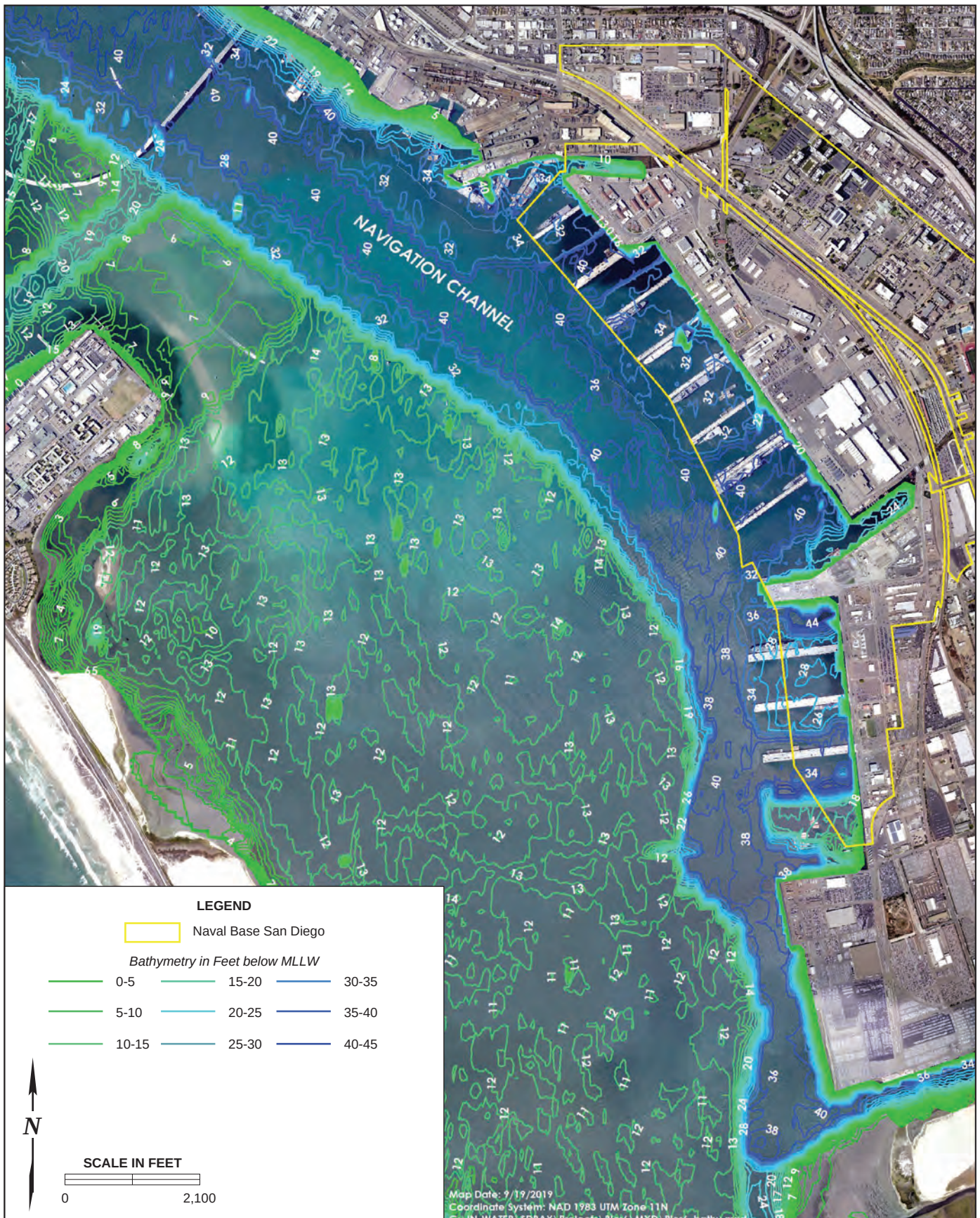
3.2.2 Affected Environment

This section presents existing conditions for bathymetry and circulation, upland surface waters, and marine waters at NBSD. There is no potential for direct or indirect impacts on other water resources (e.g., groundwater) and therefore they do not receive any further consideration within this EA.

3.2.2.1 Bathymetry and Circulation

The northern and central portions of San Diego Bay have been shaped by historical dredging and filling to support large ship navigation and shoreline development; only the southernmost portion of the bay retains its natural shallow bathymetry (Merkel & Associates Inc. 2009). The bathymetry and bedform of San Diego Bay are defined by a main navigation channel that steps up to shallower dredged depths toward the sides and southern end of the bay (Merkel & Associates, Inc. 2009). USACE dredges the main navigation channel in San Diego Bay to maintain a depth of -47 feet MLLW and is responsible for providing safe transit for private, commercial, and military vessels within the bay (NOAA 2010). Outside of the navigation channel, the bay floor consists of platforms at depths that vary slightly (Merkel & Associates, Inc. 2009). Within the Central Bay, typical depths range from -35 to -38 feet MLLW to support large ship turning and anchorage (Merkel & Associates, Inc. 2009). Small vessel marinas are typically dredged to depths of -15 feet MLLW (Merkel & Associates, Inc. 2009).

Bathymetry at the south berth of the Mole Pier has been substantially altered by previously filling and dredging activities, beginning with the construction of the Mole Pier in the early 1980s (refer to Section 1.1, *Introduction*). For example, the existing sump was originally dredged to a depth of -55 feet MLLW to accommodate AFDM 14 "Steadfast." The south berth of the Mole Pier was later modified in 2002 to accommodate berthing and mooring of the USS Curtiss, which is currently stationed at the wharf. The existing water depth at the southern NBSD property boundary near the existing MGBW maintenance piers ranges from approximately -9 to -17 feet MLLW (see Figure 3-1).



EA

**Bathymetric Contours
Naval Base San Diego**

**FIGURE
3-1**

Circulation within San Diego Bay is affected by its crescent shape and narrow bay mouth, tides, and seasonal salinity and temperature variations (POSD 2007). San Diego Bay can be divided into four regions based on circulation characteristics:

- The North Bay – Marine Region extends from the bay mouth to the area offshore downtown San Diego. Tidal action has the greatest influence on circulation in this area, where bay water is exchanged with sea water over a period of two to three days (POSD 2007).
- The North-Central Bay – Thermal Region runs from the North Bay to Glorietta Bay (south of Coronado Island). In the Thermal Region, currents are mainly driven by surface heating (POSD 2007). Incoming tides bring cold ocean water from deeper areas, which is then replaced with warm bay surface water when the tide recedes. These tidal processes lead to strong vertical mixing (POSD 2007).
- The South-Central Seasonally Hypersaline Region (i.e., with higher salt content than seawater) occurs between Glorietta Bay and Sweetwater Marsh. Here, variations in salinity due to warm-weather evaporation at the surface separate the water into upper and lower zones driven by density differences (POSD 2007).
- The South Bay Estuarine Region, located south of Sweetwater Marsh, receives occasional freshwater inflows from the Otay and Sweetwater Rivers (POSD 2007). Residence time of bay water in the estuarine region may be greater than 1 month (POSD 2007). Common salinity values for the bay range from 33.3 to 35.5 practical salinity units for the bay mouth and the southern bay, respectively (Chadwick et al. 1999).

San Diego Bay has mixed diurnal/semi-diurnal tides, with the semi-diurnal component being dominant (Largier 1995). The interaction between these two types of tides is such that the higher high tide occurs before the lower low tide, creating the strongest currents on the large ebb tide (Largier 1995). The tidal range (difference between MLLW and mean highest high water) is approximately 5.5 feet (Largier 1995). In general, tidal currents are strongest near the bay mouth, with maximum velocities of 1.6 to 3.3 feet per second (Largier 1995). Tidal current direction generally follows the center of the channel (Chadwick et al. 1999). Residence time for water in San Diego Bay increases from approximately 5 to 20 days in mid-bay to over 40 days in the South Bay (Chadwick et al. 1999). During an average tidal cycle, approximately 13 percent of the water in San Diego Bay mixes with ocean water and then moves back into the bay (POSD 2007). The complete exchange of all the water in San Diego Bay can take between 10 and 100 days, depending on the amplitude of the tidal cycle (POSD 2007). Tidal flushing and mixing are important in maintaining water quality within San Diego Bay. The tidally induced currents regulate salinity, moderate water temperature, and disperse pollutants (POSD 2007).

3.2.2.2 Upland Surface Waters

NBSD is located within the 60,007-acre San Diego Bay Watershed and within the 16,270-acre Chollas Creek Watershed. The Chollas Creek Watershed includes Chollas and Paleta Creeks, which cross NBSD (Navy 2002). The Mole Pier is located immediately south of the Paleta Creek Channel and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers is approximately 3,700 feet (0.7 mile) south of the Mole Pier and 1,220 feet (0.25 mile) south of Pier 13. Additionally, this location is approximately 500 feet south of the former Pier 14 site, which was previously used to berth shallow-draft vessels, but was later demolished by the Navy in 2008. Because of intense urbanization within the watershed, Chollas Creek is completely channelized on NBSD and lacks natural soil cover, and the stream bank along Paleta Creek is degraded (Navy 2014a).

Water quality in Chollas Creek and Paleta Creek is highly degraded and the State Water Resources Control Board (SWRCB) lists both as “impaired” water bodies on the CWA Section 303(d) list. Copper, Lead, and Zinc TMDLs (SWRCB 2007) have been established for Chollas Creek and TMDLs will be established for Paleta Creek (SWRCB 2019).

3.2.2.3 Marine Waters

As described in Section 3.2.2.1, *Bathymetry and Circulation*, San Diego Bay is a narrow, crescent-shaped natural embayment oriented northwest-southeast, with an approximate length of 15 miles (POSD 2007). The width of the bay ranges from 0.2 to 3.6 miles, and depths range from -74 feet MLLW near the tip of Ballast Point to less than 4 feet at the southern end (Merkel & Associates, Inc. 2009). Approximately half of the bay is less than 15 feet deep and most of it is less than 50 feet deep (Merkel & Associates, Inc. 2009). Prior to the 1960s, San Diego Bay was one of the most polluted harbors in the world because of more than 70 years of discharge of raw sewage and industrial waste as the population increased and San Diego became a major harbor for the Navy and civilian commerce (Chadwick et al. 1999). In 1963, the City of San Diego constructed its Wastewater Treatment Plant on the western 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 in the bay (POSD 2007).

Water temperature in San Diego Bay ranges from 59.1 to 78.9 degrees Fahrenheit (°F). This range can be attributed to thermoclines exhibited in deeper industrial/port waters, which are typical of this geographic region. Measured pH values range from 6.80 to 8.03 throughout the bay (low pH values noted but verified with calibrated field meters). Dissolved oxygen levels have an average of approximately 7.6 milligrams per liter (mg/L) and range from 0.80 to 8.50 mg/L. Light transmittance ranges from 22.5 to 79.5 percent. Levels of dissolved oxygen and light transmittance tend to decrease with depth and known factors for a decline in measured values, including reduced flushing and natural stratification (Amec Foster Wheeler Environment & Infrastructure, Inc. [Amec Foster Wheeler] 2016).

Water quality is commonly assessed by measuring dissolved nutrients, dissolved oxygen, pH, turbidity, chlorophyll *a* (i.e., a measure of the amount of phytoplankton present in San Diego Bay), and coliform bacteria (Chadwick et al. 1999). Measured values for dissolved nutrients in the bay such as phosphate and silicates range from 0.9 to 4 parts per million (ppm) for silicon and 0.02 to 0.3 ppm for phosphorus in the winter, to 0.3 to 1.3 ppm for silicates and 0.2 ppm for phosphorus in the summer (Chadwick et al. 1999). This variation is the result of inflow of these nutrients with winter runoff, and uptake by phytoplankton growth in the summer (Chadwick et al. 1999). Dissolved oxygen levels range from approximately 4 milliliters per liter (mL/L) during the summer to 8 mL/L during the winter (Chadwick et al. 1999). These oxygen levels are typically at or near atmospheric equilibrium levels.

Surface water chemistry is analyzed by the Regional Harbor Monitoring Program using primary and secondary indicators, including total and dissolved levels of copper (primary), and total and dissolved zinc and nickel (secondary). Copper concentrations in San Diego Bay show improvement in comparison with a historical baseline, and average copper concentrations do not exceed the California Toxics Rule (CTR) threshold of 5.8 micrograms per liter (µg/L) total and 4.8 µg/L dissolved. Less than 20 percent of measurements throughout the bay still exceed the CTR threshold. Both total and dissolved zinc and nickel concentrations are well below CTR threshold values used for the Regional Harbor Monitoring Program. All other dissolved and total metals are found at concentrations below their respective acute and chronic

CTR thresholds. Polycyclic aromatic hydrocarbon concentrations are also below their respective CTR threshold values (Amec Foster Wheeler 2016).

Turbidity is a measure of water clarity or murkiness and can be caused by suspended sediments transported in runoff or increased algal/bacterial growth (Tierra Data, Inc. 2010). Turbidity can also be created by natural and man-made resuspension of bottom sediments. Increased turbidity reduces the amount of light available for plant growth underwater, so it can affect the ability of San Diego Bay to support living organisms (Tierra Data, Inc. 2010). Turbidity in San Diego Bay varies, depending on the tides, seasons, and location within the bay (Tierra Data, Inc. 2010).

The monthly average for the North Bay varies from 0.4 to 2.1 nephelometric turbidity units (NTU), with amounts up to 3 NTU during December rainfall and 7 NTU during the maximum tidal change (Tierra Data, Inc. 2010). The Water Quality Control Plan for the San Diego Basin (Basin Plan) sets limits for allowable increases in turbidity over existing conditions (San Diego RWQCB 2016).

Chlorophyll *a* concentrations range from 0.2 to 25 µg/L (Chadwick et al. 1999). The highest values were measured in the South Bay in winter, when runoff carries high levels of nutrients into the South Bay. In summer, chlorophyll *a* levels return to background levels of 1 to 2 µg/L. These chlorophyll *a* levels are generally much higher than those found in the adjacent open ocean. Before 1964, when untreated sewage was still being discharged into San Diego Bay, bacterial counts (fecal coliform) were as high as 82 microorganisms per milliliter in the South Bay (Chadwick et al. 1999). After these discharges ceased, bacterial counts have typically remained below 10 microorganisms per milliliter except during some winter storms. These levels are below federal limits for water contact, indicating that San Diego Bay is generally safe for recreational use (Chadwick et al. 1999).

Current sources of pollution to San Diego Bay include underground dewatering, industries on the bay and upstream, marinas and anchorages, U.S. Naval activities, materials used for underwater hull cleaning and vessel antifouling paints, and urban runoff (Chadwick et al. 1999). Additional pollution sources include creosote-treated wood pier pilings, which are a source of polycyclic aromatic hydrocarbons, stormwater runoff from land used for industrial, commercial, and transportation purposes, bilge water discharge, and oil spills (Chadwick et al. 1999). Changes in Navy procedures since the mid-1990s have included replacing approximately half of the pier pilings with plastic, concrete, or untreated wood, and implementing the Bilge Oily Waste Treatment System for treatment of construction and repair wastewater.

Overall, the levels of contamination in the water and sediment in San Diego Bay appear to be lower now than in previous decades, including levels of some metals and polycyclic aromatic hydrocarbons (POSD 2007).

3.2.3 Environmental Consequences

Evaluation of water quality impacts is based on the potential for a substantial increase in turbidity, discharge of suspended sediments, or discharge of contaminants at concentrations that exceed federal or state water quality standards or objectives. Impacts on water resources would occur if implementation of the Proposed Action would alter or obstruct patterns of circulation in San Diego Bay or substantially degrade surface water, groundwater, or marine water quality or cause impairment to beneficial use.

3.2.3.1 Avoidance and Minimization Measures

The Navy would comply with all applicable avoidance and minimization measures presented in Table 2-3. Additionally, the Navy would comply with the following avoidance and minimization measures with

respect to biological resources. The avoidance and minimization measures listed below would be followed during all required dredging and sediment disposal as well as all required demolition and construction activities to limit potential impacts on water quality:

1. Spill control and response measures (e.g., spill kits) will be implemented during dredging, transport, and disposal.
2. Sediment will be controlled when on board vessels to minimize spillage during transport.
3. Dredge bucket depth of excavation, swing length, and fill amount will all be limited.
4. Pumping equipment will be inspected prior to pumping to ensure that no leaks in pumping equipment or hosing exist.
5. The contractor will use only clean construction materials suitable for use in the oceanic environment. The contractor will ensure that no debris, soil, silt, sand, sawdust, rubbish, cement or concrete washings thereof, chemicals, or oil or petroleum products from construction are allowed to enter into or be placed where they may be washed by rainfall or runoff into waters of the U.S. Upon completion of the project authorized, any and all excess material or debris will be completely removed from the work area and disposed of in an appropriate upland site.
6. Uncured concrete will be poured into water-tight forms and not be allowed to overtop forms.
7. Subject to the terms and conditions identified in all applicable project-specific permit, the Navy will deploy precautionary measures to alleviate turbidity associated with demolition and construction activities.
8. The contractor will position a barge, where necessary, to capture and contain large debris associated with required demolition activities (e.g., concrete pier decking).

3.2.3.2 No Action Alternative

Under the No Action Alternative, the emplacement and operation of a floating dry dock (including all required dredging and sediment disposal as well as all required demolition and construction activities) would not occur and there would be no change to existing short-term or long-term water quality at NBSD. Therefore, no significant impacts on water resources would occur with implementation of the No Action Alternative.

3.2.3.3 Alternative 1 Potential Impacts

The ROI for the analysis of effects on water resources includes the Approach Area, Turning Basin, and Sump, along with the surrounding marine waters of San Diego Bay and nearshore replenishment or ocean disposal locations and associated transit lanes. Additionally, the ROI includes the adjacent upland areas on the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers, because each of the action alternatives would result landside improvements to support the emplacement and operation of a floating dry dock at these locations.

Bathymetry and Circulation

Dredging operations would temporarily increase water movement in the area where dredging is actively occurring. However, this effect would be strictly limited to the 14-week duration of dredging and would not affect large-scale water circulation within San Diego Bay. Further, the minor changes in bathymetry resulting from dredge material removal would not be sufficient to affect circulation patterns within the immediate vicinity of the Mole Pier or in San Diego Bay. Therefore, dredging associated with Alternative 1 would not have a significant impact on bathymetry and circulation.

Upland Surface Water Quality

Potential surface water quality impacts associated with Alternative 1 include spills and releases of hazardous and nonhazardous materials, including materials involved with dredging as well as demolition and construction. In accordance with the SWRCB Construction General Permit (NPDES Permit No. CAS000002, SWRCB Order No. 2009-0009-DWQ amended by 2010-0014-DWQ and 2012-0006-DWQ; SWRCB 2012), NPDES General Permit for Storm Water Discharges Associated with Construction and Land Use Disturbance Activities, the contractor would be required to develop, receive Navy approval of, and implement a site-specific construction SWPPP. The SWPPP would specify BMPs to prevent construction pollutants from contacting stormwater, eliminate or reduce non-stormwater discharges, and perform inspections of all BMPs (SWRCB 2012). The SWPPP would also include BMPs to minimize potential impacts related to the on-shore construction components, such as preventing erosion; using sediment barriers; providing inlet covers; covering stockpiles; inspecting equipment and vehicles for drips; and placing drip pans beneath vehicles and equipment (SWRCB 2012).

Upon emplacement of the floating dry dock, the existing NPDES Permit for industrial and stormwater discharges at NBSD would apply (Order R9-2013-0064 as amended by R9-2017-0009, CA0109169). The permit is currently under an extension period until the San Diego RWQCB issues a new permit. If the new permit is issued prior to the addition of the floating dry dock, NBSD would have to notify the San Diego RWQCB to account for the changes. Permit requirements put in place for a floating dry dock would likely be similar to those for the USS Arco found in the Naval Base Point Loma NPDES Permit, R9-2014-0037 as amended by R9-2017-0010. The SWPPP and basewide BMPs for preventing and minimizing contact of potential pollutants with stormwater would continue to be followed, including restricting access; providing regular cleaning and sweeping; controlling spills and reducing waste; permanently sealing drains in critical areas that lead to storm drains; and conducting regular inspection and maintenance of the storm drain system.

Operationally, contractors working at the floating dry dock would be required to develop and implement SWPPPs and/or spill prevention plans to manage their job-related debris and contaminants to minimize impacts on water quality. Therefore, there would be no significant impacts on water quality resulting from the implementation of Alternative 1.

Marine Water Quality

A barge-mounted clamshell bucket dredge would likely be used during dredging activities. Potential sources of impacts on marine water quality associated with dredging activities include accidental release of vessel and equipment fuels or hydraulic fluids and increased turbidity as bottom sediments become resuspended in the water column during the dredging process.

Increased turbidity may result in temporary decreases in light penetration and levels of dissolved oxygen. Sands tend to settle out quickly, and contaminants do not typically adhere to larger-grained materials, so contaminants would not be anticipated in the dredged sediments (USACE 2009). Most sediments resuspended by dredging settle out of the water column near the dredge within several hours, and only a small fraction take longer to resettle. The clamshell bucket dredge method would likely be used because it causes less turbidity than the cutter head/hopper dredge method. Increases in turbidity would be low because of the physical characteristics of the dredged sediments (mainly sand) and would be limited to the immediate vicinity of the operation. Decreases in levels of light penetration and dissolved oxygen would occur only within a few hundred feet of the dredging site and would end several hours after cessation of dredging activities, making a permanent decline in aquatic primary productivity unlikely (see

Section 3.3, *Biological Resources*). Because the material to be dredged is estimated to be mostly sand and silts, and previous sampling conducted in the vicinity and at the south berth of the Mole Pier did not indicate elevated levels of contaminants, it is unlikely that temporary turbidity associated with dredging would mobilize significant levels of dissolved-phase contaminants into the water column. As described in Section 3.6, *Hazardous Materials and Wastes* sediments are expected to be consistent across the entire dredge footprint and are expected to exhibit the same characteristics and be found suitable for unconfined aquatic disposal through Tier II Green Book testing results to be verified by USEPA and USACE. However, if sediment testing results show that hazardous substances are present in the dredged sediment, an Accident Prevention Plan would be required. Impacts on water quality due to increased turbidity, therefore, would not be significant.

Sediment samples from the dredge footprint will be collected and tested in accordance with regulations in 40 CFR Parts 220–228. The sediment characterization report will be provided to USEPA and USACE for review and comment on potential sediment disposal options. Based upon the analytical results, the agencies will determine whether the sediments from the proposed dredge footprint are suitable for unconfined aquatic disposal for either nearshore replenishment or ocean disposal at the LA-5 ODMDS site. The Navy is currently evaluating nearshore replenishment options, but ocean disposal remains a possibility.

Nearshore sediment disposal for beneficial reuse is an ongoing use for dredged sediments employed by the SANDAG and USACE to nourish beaches in San Diego County. Nearshore Replenishment Sites have been considered and designated as appropriate offshore (i.e., in-water) sediment receiver sites within San Diego County (SANDAG 2008a). Dredged sediments would be transported into the littoral zone and dumped from scows or barges, resulting in short-term impacts on marine water quality in the immediate vicinity at the time of disposal. Nearshore currents would disperse the dredged sediments along the coast, supplying local beaches with additional sediment. Some San Diego sites are considered “feeder” beaches to the rest of the region, with sediments deposited at these locations transported downshore by prevailing currents and supplying a wider area with beneficial sediment.

The LA-5 ODMDS site is designated for disposal of dredged sediments that have been evaluated by the pursuant USACE and USEPA permitting criteria (33 CFR Parts 227 and 40 CFR Parts 220–225 and 227–228) and authorized for dumping under Section 103 of the MPRSA (USEPA 1987). Ocean disposal of dredged sediments would cause short-term impacts on marine water quality in the immediate vicinity of LA-5 ODMDS at the time of disposal (USEPA 1987). Offshore currents would disperse the dredged sediments into a plume cloud with increased turbidity, and possibly decreased dissolved oxygen, but the plume would dilute to negligible concentrations within 2 hours (USEPA 1987). Increased turbidity associated with ocean disposal of the dredged sediments would be short-term and spatially restricted. Thus, impacts associated with dredging and disposal would not be significant.

Demolition activities would involve partial removal of the Mole Pier infrastructure and pier deck, followed by removal of existing pier pilings with a crane. Potential sources of impacts on water quality associated with demolition activities would include debris and dust from disassembling the concrete and asphalt decks, petroleum products associated with the asphalt debris, vessel and equipment fuels, and bottom sediments resuspended by the pile removal and demolition vessel movement. The contractor would be required to develop, receive Navy approval of, and implement a project-specific SWPPP that would include BMPs for minimizing and containing dust and debris. Debris from work on barges would be captured on board the barges. All captured material would be swept up and disposed of in accordance with the SWPPP. As a part of the BMPs outlined in the SWPPP, the contractor would be required to provide

a floating boom around the project site to contain floating surface debris, and to use catch devices and sheeting. The contractor would also be required to prepare and implement a Construction Demolition Plan that would cover all phases of the work to be done and to specify materials, equipment, and procedures to be used to contain all construction and demolition waste and debris, including dust. Vessel movement associated with demolition activities and removal of the existing piles would cause disturbance of bottom sediments and increased turbidity from sediment resuspension. However, the sediment resuspension and increased turbidity would be short-term and limited to the areas of bottom disturbance and localized to the Mole Pier.

Construction activities, including installation of piles with an impact pile driver aided by jetting methods and other construction-related vessel activities, would also result in localized, short-term disturbances of bottom sediments. However, as with demolition activities, the impact on water quality from turbidity and suspended sediments would be short-term and limited to the areas of bottom disturbance and localized to the south berth of the Mole Pier. In addition to the SWPPP, Construction Demolition Plan, and Spill Prevention Plan, the Navy is in the process of preparing and submitting an application for a Section 401 Water Quality Certification from the San Diego RWQCB and for a Section 404 permit from USACE; these permits would apply to all in-water components of Alternative 1 and the Navy would comply with all permit conditions during demolition and construction activities.

Following emplacement, operation of the floating dry dock could result in potential water quality impacts. However, sediment resuspension would be minimal; dry docking evolutions (i.e., lowering and raising the floating dry dock) are slow and do not substantially disturb the underlying sediments. Ballast water pumps would be powered from existing land-side electrical power sources and operated in compliance with applicable NPDES permit requirements. This facility-specific permit would dictate the operational limitations, monitoring requirements, and water quality standards that need to be met. As described in Section 2.3.3.8, *Operations* dry docking evolutions would occur between 4 and 6 times per year, each event would take approximately 6 hours to complete, depending on the objective(s) of the specific dry docking event. For the vast majority of time (>99 percent), the dry dock ballast tanks are filled with air, and the floating dry dock would remain stationary in the floating position while maintenance and repair work is undertaken on a dry-docked vessel. While ship repair and maintenance is occurring, appropriate BMPs would control for environmental releases of process water and dust (refer to Section 2.5, *Best Management Practices included in the Action Alternatives*). Work-process related trash and debris would be controlled and be transported to appropriate municipal disposal facilities.

Accidental releases of petroleum and debris from vessels and equipment would be limited and prevented by proper maintenance, inspection, and operation of vessels and equipment, and implementation of a site-specific SWPPP and Spill Prevention Plan. Any petroleum release or petroleum sheen observed on the water surface would be reported to NBSD Port Operations and the U.S. Coast Guard National Response Center. In the event of an accidental release, cleanup procedures would take place; booms and other spill containment equipment kept on hand would be immediately deployed, the source of the release would be determined and secured, and the NBSD Fire Department would respond to clean up the spill. These procedures would prevent impacts on water quality from petroleum products associated with demolition activities.

Summary

Implementation of Alternative 1 would not result in significant changes to bathymetry and circulation, upland surface water quality, or marine water quality at the south berth of the Mole Pier or farther

offshore. Therefore, implementation of Alternative 1 would not result in significant impacts on water resources.

3.2.3.4 Alternative 2 (Preferred Alternative) Potential Impacts

The ROI for the analysis of effects to water resources includes the proposed Sump within the southern edge of the NBSD property boundary near the existing MGBW maintenance piers, along with the surrounding marine waters of San Diego Bay and nearshore replenishment or ocean disposal locations and associated transit lanes. Additionally, the ROI includes the adjacent upland area because Alternative 2 would also include the construction of access structures, utilities modification, and other landside improvements.

Impacts from the implementation of Alternative 2 on water resources would be similar in type to those described for Alternative 1, including upland surface water quality and marine water quality. Under Alternative 2, approximately 165,000 cy of sediment would be dredged to facilitate emplacement of the COL floating dry dock. Changes in local bathymetry at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would affect localized circulation, but would not have any measurable impact on the overall circulation within San Diego Bay. As described for Alternative 1, impacts on marine water quality, such as increased turbidity, decreased light penetration, and decreased dissolved oxygen, would occur from the barge-mounted clamshell bucket that would likely be used during dredging activities. However, most sediments resuspended by dredging settle out of the water column near the dredge within several hours, and only a small fraction take longer to resettle. Additionally, as described for Alternative 1, prior to the initiation of dredging activities in this location, sediment characterization and chemistry analyses would be completed and the Navy would obtain all appropriate permits, including a Section 401 Water Quality Certification from the San Diego RWQCB and for a Section 404 permit from USACE. Preliminary sediment samples for Alternative 2 have been collected from locations within, and in the vicinity of, the proposed dredge footprint (Space and Naval Warfare Systems Center San Diego 2007). Sediment characterization analysis shows that the footprint contains primarily native San Diego Bay floor materials mixed with non-native sediments, between 915 and 6,540 cy likely deposited from nearby landside operations. A full chemical characterization of bulk sediments was used to identify the potential for impacts to bay sediments using comparisons to sediment quality guideline (SQG) values, statistically comparing the chemistry of sediments pooled into native, mixed, or non-native categories. The chemical characterization found that while 8 of the 30 stations sampled had a least one chemical above a SQG, half of these were found at stations representing native sediments. However, given that native sediments were typically higher in chemical concentrations, there was a high likelihood that the native materials were the source of the elevated levels, and impacts to water quality from non-native materials would be less than significant (Space and Naval Warfare Systems Center San Diego 2007).

The action would comply with all required permit conditions and would implement all appropriate management plans and BMPs to prevent potential impacts on water quality. For example, turbidity curtains may be used to limit the dispersion of sediment and potential impact on eelgrass beds that are south and west of the southern NBSD property boundary (see Section 3.3, *Biological Resources*). As such, impacts on marine water quality from increased turbidity would be greater than those described for Alternative 1, but would remain less than significant.

Construction activities, including installation of piles with an impact pile driver, would also result in localized, short-term disturbances of bottom sediments. The scope of in-water construction under Alternative 2 would be much greater than that for Alternative 1, which is limited to minor modifications

of the existing concrete wharf. However, as with dredging activities, the impact on water quality from turbidity and suspended sediments under Alternative 2 would be short-term and limited to the areas of bottom disturbance and localized to the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Under Alternative 2, construction activities may also result in localized impacts on water quality over open water from the pouring of concrete associated with the access structures. For example, if concrete entered the water column, it could result in changes to pH that may be detrimental to marine biological resources (see Section 3.3, *Biological Resources*). All relevant BMPs listed in Table 2-3, including debris and spillage measures, would be implemented to prevent and reduce adverse effects on water quality. For example, a system of floating rafts and cable nets and floating booms would be employed during construction. Additionally, uncured concrete would be poured into water-tight forms and would not be allowed to overtop the form to prevent impacts on marine waters. Additionally, the action would comply with all required permit conditions during construction activities.

The proposed COL floating dry dock has been designed to eliminate all overboard discharges associated with the floating dry dock itself and for compliance with regional permit requirements associated with Boatyard General Waste Discharge Requirements (San Diego RWQCB 2013). The dry dock and associated facilities function as impervious surfaces, and pollutant discharges will be addressed through implementation of design controls, source controls, and pollutant controls. The proposed COL floating dry dock has been designed to capture, store, and divert 74,000 gallons of stormwater to the municipal wastewater treatment system. A new NPDES permit would be obtained by MGBW to allow for the operational filling and discharging of water from the ballast tanks of the COL floating dry docks. In addition, BMPs will be implemented to comply with the facility SWPPP, including general source control measures and specific measures for industrial activities, and in order to prevent the discharge of any ship repair-related or other pollutants into San Diego Bay. Therefore, implementation of Alternative 2 would not result in significant impacts on water resources.

3.2.3.5 Alternative 3 Potential Impacts

The ROI for the analysis of effects on water resources includes the Approach Areas, Turning Basins, and Sumps at the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers, along with the surrounding marine waters of San Diego Bay and nearshore replenishment or ocean disposal locations and associated transit lanes. Additionally, the ROI includes the adjacent upland areas on the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers because Alternative 3 would include all of the upland components previously described for Alternative 1 and Alternative 2.

The implementation of Alternative 3 would result in emplacement of two floating dry docks and associated impacts on water resources would be similar in type to those described for Alternative 1 and Alternative 2, but additive. For example, this alternative would introduce greater levels of turbidity over a larger area than described for Alternative 1 and Alternative 2 individually; however, as previously described for each of these alternatives, most sediments resuspended by dredging settle out of the water column near the dredge within several hours, and only a small fraction take longer to resettle. Additionally, all applicable permits would be obtained and all appropriate management plans and BMPs would be implemented to prevent impacts on water quality at the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Therefore, as described for Alternative 1 and Alternative 2, there would be no significant impacts on water resources as a result of this alternative.

3.3 Biological Resources

Biological resources include living, native, or naturalized plant and wildlife species and the habitats within which they occur. Within this EA, biological resources are divided into three major categories: 1) marine habitats and communities; 2) fish and wildlife; and 3) threatened and endangered species listed under the ESA.

3.3.1 Regulatory Setting

The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7 of the ESA requires action proponents to consult with the USFWS or the NMFS 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 U.S. Department of Defense (DoD) where an INRMP has been developed that, as determined by the U.S. 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, including 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 authorize 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 an action if it would have a significant negative effect on the sustainability of a population of a migratory bird species.

The MSFCMA provides for the conservation and management of the fisheries. Under this Act, EFH consists of the waters and substrate needed by fish to spawn, breed, feed, or grow to maturity.

3.3.2 Affected Environment

The following discussions describe the existing conditions for each of the categories under biological resources at the project area, including both alternative project sites and other nearby areas that may be directly or indirectly affected by the Proposed Action.

The description of existing conditions is based on the following sources:

- San Diego Bay Integrated Natural Resources Management Plan (Navy and POSD 2013);
- NBSD INRMP (Navy 2014a);
- 2017 San Diego Bay Eelgrass Inventory Update (Merkel & Associates, Inc. 2018);
- 2010 Characterization of Essential Fish Habitat in San Diego Bay (Navy 2010);

- *Fish surveys conducted in San Diego Bay* by Allen et al. (2002), Pondella and Williams (2009), Williams et al. (2015, 2016), and Martinez-Takeshita et al. (2015);
- San Diego Bay Avian Species Surveys 2016–2017 (Tierra Data, Inc. 2018);
- California Least Tern and Western Snowy Plover Monitoring at Naval Base Coronado, 2017 (Post et al. 2018);
- Silver Strand Training Complex Environmental Impact Statement (Navy 2011b); and
- Final Environmental Assessment for Pier 8 Replacement, Naval Base San Diego (Navy 2016).

3.3.2.1 Marine Habitats and Communities

The project area consists of the developed shorelines and piers on NBSD, from the Mole Pier to the southern boundary of NBSD, and the surrounding waters of San Diego Bay (refer to Figures 1-1, 2-1, 2-2 and 2-3). The only undeveloped terrestrial habitat in the vicinity is along Paleta Creek (Navy 2014a), which is north of the Mole Pier and would not be affected by any of the action alternatives. The south-central portion of San Diego Bay is recognized as a distinct hydrodynamic region of the bay, with physical and biological characteristics that also differ from areas north and south within the bay (Navy and POSD 2013; Merkel & Associates, Inc. 2018; Tierra Data, Inc. 2018).

Habitats of San Diego Bay are differentiated by elevation or depth, substrate, and man-made or natural biological features. Habitats associated within the project area include developed shoreline and artificial substrates such as pier pilings, and marine benthic (bottom), water column, and surface water habitat. Depths in the project area vary from -9 to -55 feet MLLW except along artificial shorelines, which rise steeply from the subtidal to dry land (Navy and POSD 2013). The associated habitats and communities are described in the following sections.

Shoreline and Artificial Substrates

The shoreline of the affected environment at both alternative sites consists of developed adjacent upland and artificial substrates. Artificial substrates comprise pier pilings, bulkheads, rock riprap, floating docks, seawalls, mooring systems, artificial reefs, and derelict ships and ship parts. These substrates form extensive artificial habitat along the NBSD shoreline. From the intertidal zone to deep subtidal habitat, the man-made structures support abundant invertebrates and seaweeds. California spiny lobsters (*Panulirus interruptus*), along with a variety of crabs, worms, oysters, mussels, barnacles, echinoderms, sponges, hydroids, sea anemones, bryozoans, and tunicates (sea squirts), inhabit artificial substrates in San Diego Bay (Navy and POSD 2013; Merkel & Associates, Inc. 2014). These areas may also provide refuge and feeding areas for juvenile and predatory fishes. Riprap niches are often filled with invertebrate fauna. Small mobile invertebrates, including nemertean worms (ribbon worms), amphipods, shrimp, decorator crabs, and gastropods, are common on piles (Navy and POSD 2013). Approximately 74 percent (45.4 miles) of the shoreline of San Diego Bay is armored by man-made structures that protect developed sites (Navy 2011b).

Although a number of potential negative impacts have been attributed to overwater structures (Nightingale and Simenstad 2001), wharves, docks, and piers in San Diego Bay provide increased three-dimensional substrate and cover that locally increase the productivity of benthic organisms as well as the species richness and abundance of fish compared to more open waters (Merkel & Associates, Inc. 2014; Navy 2016). However, many of the species that inhabit artificial structures in San Diego Bay (e.g., the recently discovered bryozoan *Watersipora subovoidea*) are nonindigenous and may displace or have other detrimental effects on native species (Ruiz and Geller 2015).

A hardened shoreline typically produces a very steep shore profile that can provide elevated roosting sites for bay waterbirds, such as California brown pelicans (*Pelicanus occidentalis californicus*), cormorants, and gulls, which allow them to conserve energy and avoid harsh weather conditions (Navy and POSD 2013). The surface roughness and complexity of a structure can affect its ability to provide refuge niches and allow water retention at low tides.

Subtidal Habitat

Subtidal habitats in San Diego Bay are differentiated by depth as follows (Navy and POSD 2013):

- Shallow subtidal (-2.2 to -12 feet MLLW);
- Moderately deep subtidal (-12 to -20 feet MLLW); and
- Deep subtidal (deeper than -20 feet MLLW).

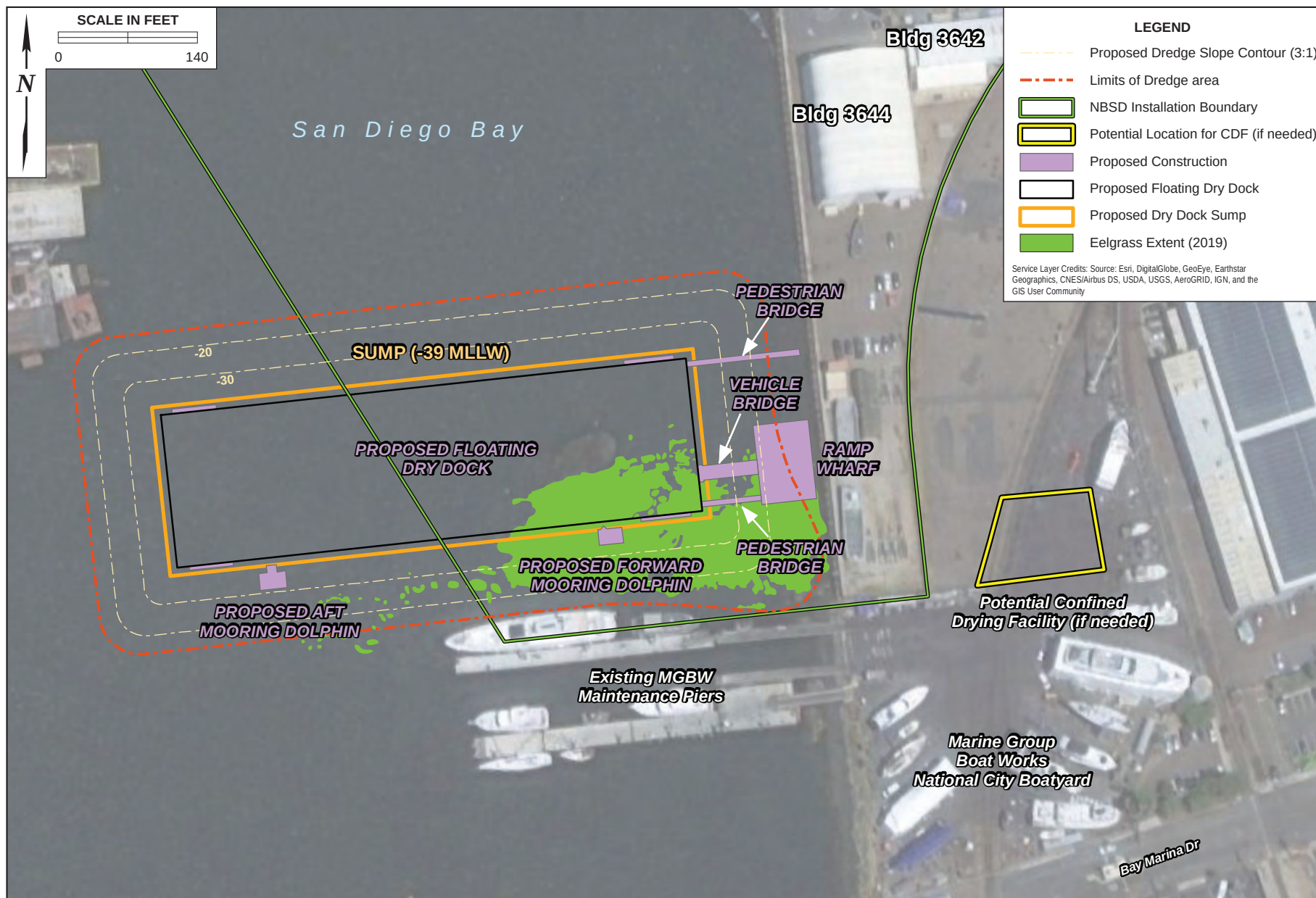
The occurrence of each with respect to the project area is discussed below.

Shallow subtidal habitats are highly productive and important in San Diego Bay, in part due to the presence of eelgrass (*Zostera marina*) beds and algal mats on shallow sandy to muddy substrates in many areas of the bay (Merkel & Associates, Inc. 2018; Navy 2002, 2011b; Navy and POSD 2013). Both eelgrass habitats and unvegetated shallows in this depth range are important to invertebrates, fish, and birds that prey on them (Navy and POSD 2013). Shallow subtidal habitat in San Diego Bay supports 12 species of fish that are indigenous to the bays and estuaries of Southern California (Allen et al. 2002; Navy and POSD 2013). Areas that would be dredged to support the floating dry dock at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers are predominantly shallow subtidal habitat, with depths of -9 to -17 feet MLLW (Mission Environmental LLC 2018). At the south berth of the Mole Pier, shallow subtidal habitat is limited to the near-vertical surfaces of artificial structures. Eelgrass is predominantly present along the western side and southern end of San Diego Bay, but has also been documented on the eastern side of the Bay to a lesser extent (Merkel & Associates, Inc. 2018; see Figure 3-2). Eelgrass is absent from the south berth of the Mole Pier. However, as of 2017, a 0.83-acre bed was present within the lease area of the near the existing MGBW maintenance piers (Merkel & Associates, Inc. 2018) (see Figure 3-3). The 28 October 2019 survey was performed by MTS, at the direction of MGBW, to validate and map the current presence of eelgrass in the vicinity of the existing MGBW maintenance piers. The results of this survey revealed that there were 36,081 sf (0.828 acre) of eelgrass beds occurring within and immediately adjacent to the existing MGBW maintenance piers. Several small patches of eelgrass were observed just outside of the project area, but were included in the coverage estimate. However, eelgrass mapped outside of the Project area made up an extremely small portion of the total mapped eelgrass habitat (MTS 2020; see Appendix B).



Eelgrass Beds at Naval Base San Diego

FIGURE
3-2



EA

Marine Group Boat Works COL Alternative with Eelgrass Extents

FIGURE
3-3

Moderately deep subtidal habitat in the project area includes all of area near the existing MGBW maintenance piers, and the near-vertical surfaces of artificial substrates within this depth range. All the remaining habitat is deep subtidal. For both the moderately deep and deep subtidal habitats, primary production by phytoplankton occurs in the overlying water column, but benthic primary production is limited because of low light penetration; algal mats and eelgrass beds are lacking. The base of the food chain for the benthic community is provided instead by organic detritus that originates in shallower water and drifts/sinks into deeper water. Fauna residing in subtidal benthic habitats (across all depths) include the warty sea cucumber (*Parastichopus parvimensis*) and a diversity of infaunal species, including suspension feeders, burrowers, and tube builders. Feeding by nematode and polychaete worms, clams, gastropod mollusks, brittlestars, crabs, isopods, and a wide variety of smaller crustaceans transforms detritus and small invertebrates into usable food for larger invertebrates and fishes. The soft bottom benthos provides other functional roles in addition to serving as a prey base for fish and birds. The less conspicuous mollusks, polychaete worms, small crustaceans, and other invertebrates living at the bottom of the bay mineralize organic wastes as it accumulates, consume algae, and return essential chemicals and organic matter to the water column (Navy and POSD 2013). Although a variety of organisms inhabit the waters of NBSD, the sediments in the area are historically known to be contaminated, and the associated biological communities have been considered degraded (Faurey et al. 1996, 1998). Typical deep subtidal fish species include round stingray (*Urobatis halleri*), spotted sand bass (*Paralabrax maculatofasciatus*), California halibut (*Paralichthys californicus*), barred sand bass (*Paralabrax nebulifer*), and bat ray (*Myliobatis californica*) (Navy and POSD 2013).

The deep subtidal water column is home to phytoplankton and zooplankton, including species that spend their entire lives (holoplankton), or only a portion of their life cycle (e.g., as eggs, larvae, or juveniles [meroplankton]) in the plankton. For the meroplankton, which includes many fish and invertebrates, an important function of the deep subtidal environment is transport into and out of the relatively warm, sheltered waters of the bay, which provide nursery habitats.

3.3.2.2 Fish and Wildlife

This section includes a description of fisheries and EFH; birds, most of which are protected under MBTA; and marine mammals, all of which are afforded federal protection under the MMPA. All sea turtles are listed under the ESA and are discussed in Section 3.3.2.3, *Threatened and Endangered Species*.

Fisheries

Numerous surveys have been conducted over the last few decades in San Diego Bay to quantify fish diversity and abundance. The most comprehensive surveys of the bay have been conducted by the Vantuna Research Group (Allen et al. 2002; Williams et al. 2015, 2016) and Martinez-Takeshita et al. (2015). These surveys have generally found much lower abundance, biomass, and diversity of fishes in the South-Central Bay than in other parts of San Diego Bay. Shallow subtidal habitat in San Diego Bay, including the southern part of the bay, is highly productive and provides important habitat for 12 species of fishes that are indigenous to Southern California bays and estuaries (Allen et al. 2002; Navy and POSD 2013).

Note that the South-Central Bay sites sampled in these studies were across San Diego Bay from NBSD at Glorietta Bay and the Naval Amphibious Base, and probably are not representative of the fish community associated with the NBSD piers. The South Bay sites that have been sampled are in the southern end of the bay, which is virtually all shallow subtidal and intertidal and supports extensive eelgrass beds (Allen

et al. 2002; Merkel & Associates 2018). These and other works related to fish and EFH were characterized by Merkel & Associates, Inc. (2014) and the Navy (2010).

Approximately 109 species of bottom-living and open-water fishes occur in San Diego Bay. There is a greater variety of fish species in the North Bay area than in the South Bay, and the greatest fish diversity can be found at artificial reefs. Increased levels of flushing found in the North Bay also increases food availability, the supply of larval recruits, and water quality (Navy 2010). Eelgrass beds in particular are recognized as highly productive and important nursery habitat for a number of fish species in San Diego Bay (Allen et al. 2002; Navy and POSD 2013; Merkel & Associates, Inc. 2014, 2018). While there is no commercial fishing within San Diego Bay, seven fish species inhabiting the bay support commercial fisheries elsewhere in Southern California waters. Examples of notable fishery populations found in San Diego Bay include California halibut and white seabass (*Atractoscion nobilis*). At least 58 species are involved in the recreational catch (Navy and POSD 2013).

While no surveys have been conducted within the project area, Merkel & Associates, Inc. (2014) have provided lists of San Diego Bay fish species that are associated with deep subtidal versus man-made structural habitats, based on the surveys of Pier 2 and Pier 8 (just north of the Mole Pier; refer to Figure 3-2). Despite much less intensive sampling than in the deep subtidal habitat, a large number of species have been documented around piers and other artificial structures, including most of the common species found in San Diego Bay. When comparably sampled, piers have been found to support a greater abundance and species diversity of fish than adjacent open water areas.

Fish species observed in transects along the edges of and/or underneath Pier 2 and Pier 8 included spotted sand bass (*Paralabrax maculatofasciatus*); barred sand bass (*P. nebulifer*); kelp bass (*P. clathratus*); black croaker (*Cheilotrema saturnum*); round stingray (*Urobatis halleri*); yellowfin croaker (*Umbrina roncadore*); white sea bass (*Atractoscion nobilis*); midshipman (*Porichthys* sp.); sargo (*Anisotremus davidsonii*); slough anchovy (*Anchoa delicatissima*); giant kelpfish (*Heterostichus rostratus*); and bay blenny (*Hypsoblennius gentilis*) (Merkel & Associates 2014). The same species would be expected to occur along the Mole Pier and potentially near the existing MGBW maintenance piers. In contrast, in deep subtidal habitat away from the piers, only one fish species, black croaker, was observed (next to a tire on the bottom), although other species considered likely to use this habitat include spotted sand bass; round stingray; barred sand bass; midshipman; and gobies (family Gobiidae). California spiny lobsters were also observed under Pier 2, but were not observed, and are not likely to occur, in the open deep subtidal habitat. Similar results would be expected in open water away from the south berth of the Mole Pier because of a lack of suitable habitat.

The shallow subtidal habitat near the existing MGBW maintenance piers is likely to support a fish community similar to that described for South-Central and South San Diego Bay by Allen et al. (2002). All of the fish species listed in the preceding paragraph are expected to occur at this location, with the addition of Southern California bay and estuary species that include pipefishes (*Syngnathus* spp.), California killifish (*Fundulus parvipinnis*), and striped mullet (*Mugil cephalus*) (Allen et al. 2002).

Essential Fish Habitat

Many marine habitats are critical to the productivity and sustainability of marine fisheries. The 1996 amendments to the MSFCMA set forth the EFH provisions to identify and protect important habitats of federally managed marine and anadromous fish species. Section 305(b)(2) of the MSFCMA directs each federal agency to consult with NMFS with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any EFH

identified under the MSFCMA. Implementing regulations for this requirement are in 50 CFR Part 600. Because the project area is located within an area designated as EFH for two Fishery Management Plans (FMPs) – the Pacific Coast Groundfish (Pacific Fishery Management Council [PFMC] 2016) and the Coastal Pelagic Species (PFMC 2016, 2019) – and may affect EFH, the Navy is required to consult with NMFS.

Of the 109 species of fish previously identified in San Diego Bay, 10 are managed by NMFS (PFMC 2016, 2016). Four are managed under the Coastal Pelagics FMP: northern anchovy (*Engraulis mordax*); pacific sardine (*Sardinops sagax*); pacific mackerel (*Scomber japonicus*); and jack mackerel (*Trachurus symmetricus*). Six species are covered under the Pacific Groundfish FMP and occur, although not in abundance, in San Diego Bay: California scorpionfish (*Scorpaena guttata*); grass rockfish (*Sebastes rastrelliger*); English sole (*Parophrys vetulus*); curlfin sole (*Pleuronichthys decurrens*); leopard shark (*Triakis semifasciata*); and soupfin shark (*Galeorhinus galeus*) (Navy 2010; Navy and POSD 2013). These species are discussed briefly below.

Coastal pelagic species are those fish that live in the water column in contrast to groundfish species that live near the sea floor. The coastal pelagic species fishery includes four finfish (Pacific sardine, Pacific [chub] mackerel, northern anchovy, and jack mackerel) and the invertebrate, market squid (PFMC 2019). Pelagic species can generally be found anywhere from the surface to a depth of 3,300 feet. San Diego Bay is entirely within the boundary of EFH for coastal pelagic species finfish. All except market squid are likely to occur in the bay. Finfish are highly transient and two, northern anchovy and Pacific sardine, can be found throughout the bay. Jack mackerel and Pacific mackerel are typically found in the North, North-Central, and South-Central Ecoregions of the bay (Allen et al. 2002). All the coastal pelagic fish species have been documented to occur in deep subtidal habitat, and all but the jack mackerel – which is less common and hence less likely to have been detected in the few surveys conducted – have been documented around man-made structures (Merkel & Associates, Inc. 2014).

The Pacific Coast Groundfish FMP manages 86 species over a large ecologically diverse area covering the entire West Coast of the continental U.S. Although groundfish are those fish considered demersal (fish that live on or near the seabed), they occupy diverse habitats at all stages in their life histories. EFH areas may be large because a species' pelagic eggs and larvae are widely dispersed, for example, or comparatively small, as is the case with the adults of many nearshore rockfishes, which show strong affinities to a particular location or type of substrate. However, the species rarity in all or parts of San Diego Bay makes it unlikely that any will occur the project area (Merkel & Associates, Inc. 2014). These species are curlfin sole, English sole, California scorpionfish, grass rockfish, leopard shark, and soupfin shark.

In addition to designating EFH, the PFMC is also responsible for identifying Habitat Areas of Particular Concern (HAPCs) for federally managed species. EFH that is considered to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation, also may be identified by NMFS as a HAPC. For types or areas of EFH to be considered HAPC, at least one of the following must be demonstrated:

- 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, negatively impacting the habitat type; and
- The rarity of the habitat.

HAPCs include seagrass (eelgrass), canopy kelp, rocky reef, and estuarine habitats along the Pacific coast (PFMC 2016). HAPCs may also include high-value intertidal and estuarine habitats; offshore areas of high habitat value or vertical relief; and habitats used for migration, spawning, and rearing of fish and shellfish. The PFMC has designated HAPC for groundfish only. The only HAPC within or adjacent to the alternative project sites is eelgrass, which is absent at the south berth of the Mole Pier site but is present at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers (refer to Figure 3-3). Estuarine habitat is associated with the Sweetwater Marsh (south of NBSD) and, to a very limited extent, upstream of the bay in the Paleta Creek channel (north of the Mole Pier (Navy 2014a; Navy and POSD 2013). NBSD is in a part of San Diego Bay characterized as seasonally hypersaline due to evaporation and reduced tidal flushing (Navy and POSD 2013). The project area does not provide estuarine habitat because freshwater inflows are limited to temporary runoff from the developed surroundings, and salinities average about 30 parts per thousand (Navy 2016). It is recognized, however, that Southern California bays, including San Diego Bay, are classified as estuarine HAPC by NMFS because of their importance as nursery habitat.

Birds

The MBTA prohibits the taking, killing, or possession of migratory birds or the parts, nests, or eggs of such birds, unless permitted by regulation. The MBTA protects nearly all wild birds that may be encountered on NBSD and in San Diego Bay. Species that are not protected are limited to the rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), and house sparrow (*Passer domesticus*).

Migratory bird conservation relative to nonmilitary readiness is addressed separately in a Memorandum of Understanding (MOU) developed in accordance with EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. The MOU between the DoD and USFWS was signed on 31 July 2006. DoD responsibilities discussed in the MOU include, but are not limited to, the following:

1. Obtaining permits for import and export, banding, scientific collection, taxidermy, special purposes, falconry, raptor propagation, and depredation activities;
2. Encouraging incorporation of comprehensive migratory bird management objectives in the planning of DoD planning documents;
3. Incorporating conservation measures addressed in Regional or State Bird Conservation Plans in INRMPS;
4. Managing military lands and activities other than military readiness in a manner that supports migratory bird conservation;
5. Avoiding or minimizing impacts on migratory birds, including incidental take and the pollution or detrimental alteration of the environments used by migratory birds; and
6. Developing, striving to implement, and periodically evaluating conservation measures for management actions to avoid or minimize incidental take of migratory birds, and if necessary, conferring with the service on revisions to these conservation measures.

The project area is located on the mainland side of the Central Bay and includes man-made structures and open-water habitat. Bird abundance and diversity are relatively low in the project area compared with the opposite (Coronado) shore and the South Bay (Navy and POSD 2013; Tierra Data, Inc. 2018). A number of species covered by the MBTA are found within the project area, including the species listed below. A number of the species covered under the MBTA are also federally listed or state-listed as threatened or

endangered. However, there are also many other species that occur in and around San Diego Bay and the project area that are not otherwise listed as threatened or endangered that would fall under the MBTA. These include species that are transiting or migrating through the area.

San Diego Bay is part of a major bird migratory pathway, the Pacific Flyway, and supports large populations of over-wintering birds traveling between northern breeding grounds and southern wintering sites, with over 300 migratory and resident bird species documented to use the bay (Navy and POSD 2013; Tierra Data, Inc. 2018). The most common birds along the developed NBSD shoreline and adjacent deep subtidal waters are waterfowl (ducks) and seabirds (gulls and terns), and would likely include the following species: surf scoter (*Melanitta perspicillata*), eared grebe (*Podiceps nigricollis*), brant (*Branta bernicla*), scap species (*Aythya* spp.), bufflehead (*Bucephala albeola*), elegant tern (*Thalasseus elegans*), western gull (*Larus occidentalis*), California gull (*Larus californicus*), Forster's tern (*Sterna forsteri*), California brown pelican (*Pelecanus occidentalis*), Heermann's gull (*Larus heermanni*), double-crested cormorant (*Phalacrocorax auritus*), mallard (*Anas platyrhynchos*), and great blue heron (*Ardea herodias*) (Tierra Data, Inc. 2018). Several species, as noted below, are considered sensitive by USFWS or the California Department of Fish and Wildlife (CDFW). (For more detailed information on the California least tern, see Section 3.3.2.3, *Threatened and Endangered Species*.)

Bird species that are not threatened or endangered but are of state or federal concern that have the potential to occur in the vicinity of the proposed project include the common loon (*Gavia immer*), double-crested cormorant, osprey (*Pandion haliaetus*), gull-billed tern (*Sterna nilotica*), California gull, black skimmer (*Rynchops niger*), great blue heron, black-crowned night heron (*Nycticorax nycticorax*), Forster's tern, and elegant tern. Most of these species are considered sensitive only where breeding or nesting occurs. These birds use intertidal flats, shallow-water habitat, or man-made structures for foraging or resting, similar to areas adjacent to the project area.

In the most recent, comprehensive bird surveys of San Diego Bay, slightly greater density and diversity of birds were observed at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers, compared with the south berth of the Mole Pier (Tierra Data, Inc. 2018).

Marine Mammals

Marine mammals are protected from taking under the MMPA. Taking is defined under the MMPA as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." The term harassment is defined under the MMPA as any act of pursuit, torment, or annoyance that has the potential to do one or both of the following:

- Injure a marine mammal or marine mammal stock in the wild; and/or
- Disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

The most frequently observed marine mammals in San Diego Bay are the California sea lion (*Zalophus californianus*), which often rest on buoys and other structures and occur throughout the North to North-Central Bay; coastal bottlenose dolphins (*Tursiops truncatus*), which are regularly seen in the North Bay; Pacific harbor seals (*Phoca vitulina*), which frequently enter the North Bay; and common dolphins (*Delphinus* spp.), which are rare visitors in the North Bay. California gray whales (*Eschrichtius robustus*) are occasionally sighted near the mouth of San Diego Bay during their winter migration (Navy and POSD 2013) and occasionally enter the bay (personal communication with Todd McConchie 2019).

The project area for marine mammals is determined by the limits of potential effects, which in this case are defined by acoustic zones of influence (ZOIs). There are no known haul outs or rookery sites for California sea lions or harbor seals in the project area.

California sea lions are primarily observed north of the Coronado Bridge (Merkel and Associates, Inc. 2008; Sorensen and Swope 2010; Graham and Saunders 2014; Tierra Data Inc. 2016) and sightings rates in the project area would be expected to be low based on Sorensen and Swope (2010), and more recent monitoring efforts in late 2019 and early 2020 for a quaywall repair project at the northern end of NBSD (Chollas Creek Quaywall Repairs, unpublished data). The more recent data recorded California sea lions observations at an average of 0.64 animals per monitoring day (Chollas Creek Quaywall Repairs, unpublished data). Given that there is a lack of density data in the project area, an accepted observation protocol is to assume that for every California sea lion observed there is one more unseen because California sea lions tend to travel in groups of two or more (Mellin et al 2018).

3.3.2.3 Threatened and Endangered Species

Two federally listed species may occur in the project area: green turtle (*Chelonia mydas*) and California least tern (*Sterna antillarum browni*). Each species is discussed below.

Green Turtle

The green turtle is the only species of marine reptile found in San Diego Bay. The San Diego Bay green turtle population is part of the East Pacific distinct population segment (DPS), which is listed as federally threatened under the ESA. Critical habitat has not been designated for the East Pacific DPS.

The Bay represents one of the green turtles' northernmost foraging habitats (MacDonald et al. 2012). Because this species is considered rare along the California coast, the resident turtles in San Diego Bay are considered both "noteworthy" and "extremely interesting" by members of the scientific community (Macdonald et al. 1990). The number of turtles using the bay is estimated to range between 40 and 60 animals most months of the year, increasing to 100 animals during peak migratory periods (Eguchi 2017). Based on the number of juveniles observed during the late 1980s and early 1990s, there appears to be some recruitment into the population (MacDonald and Dutton 1992). Additionally, an unknown number of green turtles have also been occupying habitats in Long Beach, and Seal Beach, California, for at least the past 50 years (Crear et al. 2016, 2017). This aggregation of green turtles has been primarily observed in the highly-urbanized San Gabriel River, which bisects two electricity-generating plants, and their numbers seem to have increased in recent years (Crear et al. 2017). Although it was previously accepted that green turtles were not historical residents of San Diego Bay, scientists have now concluded that green turtles would naturally have sought out the bay, especially during the summer months (Macdonald et al. 1990).

During the day, green turtles in San Diego Bay reside in the deeper portion of the now-defunct south bay power plant discharge channel, whereas at night, they feed in the south bay eelgrass beds, including those near Coronado Cays (Navy and POSD 2018; Stinson 1984). Green turtles are carnivorous from hatching until they reach juvenile size, at which point they gradually transition to a primarily herbivorous diet; they have also been described as opportunistic feeders, feeding on jellyfish, ctenophores, bivalves, and gastropods, if such prey items are readily available (Lemons et al. 2011). Adult sea turtles around the world are primarily herbivorous grazers of marine algae and grasses. Recent stable isotope diet analysis suggests that the San Diego Bay population also consumes various invertebrates, making this population predominantly omnivorous (Lemons et al. 2011). Stomach content analysis has revealed that San Diego

Bay green turtles also consume red algae (*Polsiphonia* sp.), sea lettuce (*Ulva* sp.), and various species of invertebrates found in the south bay (MacDonald and Dutton 1992; Lemons et al. 2011). A study by Seminoff et al. (2006), has broadened the understanding of green turtle foraging in San Diego Bay, indicating that adult green turtles in this population are likely more omnivorous than previously thought.

Between 2009 and 2011, the Navy, POSD, NMFS, and San Diego State University initiated tracking efforts to determine the movement patterns of green turtles in San Diego Bay. Using a combination of manual and automated acoustic telemetry, turtles' home ranges and movements throughout the bay were recorded and analyzed. Results from this study indicated at the time that the South Bay serves as important green turtle habitat. The study also found individual home range areas tend to be 0.8 and 3.4 square miles in size, and that each turtle primarily uses one or two areas (MacDonald et al. 2012). The home ranges of all turtles in the study were found to be exclusively located in the South Bay, near abundant eelgrass pastures and the power plants' warm water effluent (MacDonald et al. 2012).

In 2009, the San Diego Bay power plants decreased operations by 50 percent, shutting down two of four units, and were fully decommissioned by December 31, 2010 (Hill 2011). In an effort to evaluate how turtle behavior may have changed as a result of the power plant closures, the Navy and the Marine Turtle Ecology & Assessment Program at the NMFS Southwest Fisheries Science Center initiated a satellite tagging effort to detect fine-scale movements of turtles in the bay. The data collected since the inception of the post-closure program in 2011 indicate that turtles' movements in the bay are changing. Turtle home ranges increased in size by 12 percent when comparing pre-closure tags (2007–2010) with post-closure tags (2011–2016). The 50 percent utilization distribution (UD), which generally shows the most utilized areas or core home range, increased in size by 0.2 square kilometer and shifted to the northern side of outflow jetty. Overall, there was a trend of northern movement of home ranges following the power plant closure.

Additionally, it was determined that turtles in the bay may associate with or seek out thermal refugia, when possible, to avoid low water temperatures. The cold-water temperature inactivity threshold for East Pacific green turtles may be lower than previously thought (Madrak et al. 2016). In a recent study, there was a significant negative relationship between turtle size and water temperature after power plant closure, which led researchers to conclude that East Pacific green turtles exhibit clear responses in habitat use to changes in water temperature (Madrak et al. 2016).

In the aforementioned telemetry study, turtle home ranges were found to extend from the southern end of San Diego Bay northward to approximately to the Sweetwater River (Navy and POSD 2018). Occurrence of sea turtles at the south berth of the Mole Pier would likely be limited to migratory or wandering individuals. Because eelgrass is present within the existing MGBW maintenance piers location, sea turtles may forage within that habitat.

A federal recovery plan for the species lists the following threats as pertinent to the San Diego Bay population (NMFS and USFWS 1998):

- Limited information concerning turtles' home range and foraging patterns impedes habitat delineation and subsequent protection.
- Persistent marine debris, including plastic and other anthropogenic waste, remains a concern with respect to potential mortalities through entanglement or blockage of turtles' digestive tracts.
- Foraging habitat is subject to reduction and/or fragmentation caused by dredging and shoreline development.

- Disturbance and/or behavior modification results from various anthropogenic activities, most notably dredging and construction involving pile driving. Little information is available on defined thresholds or potential population-level impacts.
- Mortalities are caused by collisions with motorized vessels transiting the bay.

California Least Tern

The California least tern has been a federally listed and state-listed endangered species since 1970; however, there is no designated critical habitat for this species.

The California least tern breeds on sandy beach habitats of the California coast. California least terns overwinter in Central America and breed mainly in Baja California and Southern California, but a few colonies exist in the San Francisco Bay area (Caffrey 1993). During the nesting season, adult terns and their young feed almost entirely on small marine fish in the surface waters (i.e., the top 6 feet) of bays, river mouths, and near-shore ocean waters (Massey 1974; Collins et al. 1979; Massey and Atwood, 1981, 1984; Atwood and Minsky 1983; Atwood and Kelly 1984; Bailey 1984; Minsky 1984). The parents continue to feed and teach their young how to forage for some time after fledging. The peak of the topsmelt spawning season (April and May) occurs at the same time that least terns return from their southern wintering grounds (April) and begin nesting at Fiesta Island (May). The large numbers of topsmelt (*Atherinops affinis*) overall and the seasonal abundance (May through November) of the deepbody anchovy (*Anchoa compressa*) provide a timely and adequate forage base for the California least tern.

The presence of eelgrass is important as habitat for several prey species of the least terns, such as northern anchovy (*Engraulis mordax*), topsmelt, and jacksmelt (*Atherinopsis californiensis*). However, California least terns do not demonstrate any preference for feeding in eelgrass areas (Baird 1997).

California least terns are residents in San Diego Bay from late spring to early fall, with the breeding season beginning 1 April and ending 15 September. The least tern nesting population in the bay has increased dramatically from 187 in 1993 to an estimated 1,314 in 2016 (Navy 2006; Frost 2017) because of coordinated management strategies with USFWS and the Navy on Navy lands. These strategies include predator management, tern monitoring, site preparation of tern nesting colonies, and biological information gathering (USFWS and Navy 2004; Post et al. 2018).

The least tern nesting colonies closest to the project area are located approximately 2 miles across San Diego Bay at North Delta Beach, South Delta Beach, and Naval Amphibious Base Ocean Beach, all of which are on Navy land. All three nesting sites have foraging areas nearby on the western side of San Diego Bay. Other nesting colonies within the Central and South Bay are found at “D” Street, Chula Vista Wildlife Reserve (approximately 2 miles south of the project area), and South Bay Refuge (approximately 4 miles south of the project area), with the foraging areas located at the southwestern-most portion of the South Bay (USFWS and Navy 2004).

The foraging area nearest to the project area is located approximately 1.3 miles west of the Mole Pier on the other side of San Diego Bay. Previous studies suggest that abundance of California least tern prey species is low in the project area and California least terns are not expected to occur within the project area (Tierra Data, Inc. 2011; Navy and POSD 2013).

3.3.3 Environmental Consequences

This analysis focuses on fish and wildlife or habitat types that are important to the function of the ecosystem or are protected under federal or state law or statute. Regulatory requirements to be satisfied

for the Proposed Action prior to completion of the NEPA process include informal ESA Section 7 consultation with NMFS, respectively (see Appendix C); consultation with NMFS regarding project effects on EFH (see Appendix D); and receipt of an IHA from NMFS.

The Navy prepared and submitted a consultation letter to NMFS on 11 February 2020. After reviewing the consultation letter, NMFS provided a response on 25 March 2020 concurring with the Navy that the Proposed Action may affect, but is not likely to adversely affect federally listed species and/or federally designated critical habitats (see Appendix C).

In conformance with the Navy Policy Regarding EFH Assessments and Consultations (Navy 2011b), the Navy prepared and submitted an EFH Assessment for consultation with NMFS. On 14 April 2020, NMFS stated that there is no objection to the Navy's proposed compensatory mitigation and NMFS has no additional EFH Conservation Recommendations for the Proposed Action at this time (see Appendix D).

The Navy has prepared and submitted an application for an IHA for the proposed COL floating dry dock near the MGBW maintenance piers. A public notice from NMFS was published on 16 April 2020. Following the 30-day public noticing period, NMFS will consider issuance of an IHA for Alternative 2 (Preferred Alternative). The Navy has also prepared an IHA application for the proposed floating dry dock at the south berth of the Mole Pier. The Navy will submit the IHA application and obtain approval from NMFS prior to the initiation of any in-water construction-related activities associated with Alternative 1.

Because the Proposed Action would involve dredging and sediment discharge, a CWA Section 401 Water Quality Certification(s) from the San Diego RWQCB and a CWA Section 404 and RHA Section 10 permit(s) from USACE would be obtained before implementation of the Proposed Action.

3.3.3.1 Avoidance or Minimization Measures

The following avoidance and minimization measures would be followed during the proposed dredging and sediment disposal activities as well as demolition and construction activities:

1. A pre-dredging survey for *Caulerpa*, an invasive alga, would be conducted for both sediment collection and dredging activities consistent with NMFS and CDFW requirements. If *Caulerpa* is found in the study area during this survey, NMFS-approved *Caulerpa* Control Protocols would be followed.
2. A pre-and post-dredging and construction eelgrass survey would be conducted at the existing MGBW maintenance piers location.
3. A buffered visual monitoring zone will be employed to account for any marine mammals or green turtles that might approach the Level A acoustic ZOIs. The largest MMPA Level A acoustic ZOI for pile driving is 42 feet (12.8 meters) (see Table 3-8), which has been rounded to 43 feet (13 meters) for monitoring purposes, and adding a buffered shutdown ZOI at 82 feet (25 meters) for both pile driving and dredging activities would provide for a contractor to shutdown sound producing activities without exposing a marine species to potentially injurious noise. For all other in-water activities, a 33 feet (10 meters) shutdown ZOI would be employed to reduce the likelihood of physical interaction with a marine species.
4. If a marine mammal of which take is not authorized under the MMPA approaches the largest ZOI, pile driving would be stopped until the individual(s) has left the zone of its own volition, or has not been sighted for 15 minutes.

5. All stoppages and sightings of protected species within monitoring zones must be reported to the Navy Region Southwest Regional Environmental Coordinator's Office for inclusion in the annual report on the Maintenance and Construction Program.

3.3.3.2 Noise Impact Methodology

Dredging

Underwater noise associated with dredging activities has been estimated based on a previous study that used a bucket dredge in soft substrate in Cook Inlet, Alaska. Underwater noise associated with dredging operations measured up to 124 decibels (dB) at 493 feet (150 meters) (Dickerson et al. 2001).

Underwater Noise Propagation

Transmission loss (TL) underwater is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source until the source becomes indistinguishable from ambient sound. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, bottom composition and topography. A standard sound propagation model (i.e., practical spreading loss) was used to estimate the range from pile-driving activity to various expected SPLs at potential project structures. This model follows a geometric propagation loss based on the distance from the driven pile, resulting in a 4.5-dB reduction in level for each doubling of distance from the source. In this model, the SPL at some distance away from the source (e.g., a driven pile) is governed by a measured source level, minus the TL of the energy as it dissipates with distance. Practical spreading loss is generally used to estimate TL where bathymetry varies and empirical measurements are not available, as is the case in south-central San Diego Bay. The equation for TL with practical spreading loss is:

$$TL = 15 \log_{10} \left(\frac{R_1}{R_2} \right)$$

where

TL is the transmission loss in dB,

R_1 is the distance of the modeled SPL from the driven pile, and

R_2 is the distance from the driven pile of the initial measurement.

The degree to which underwater noise propagates away from a noise source is dependent on a variety of factors, most notably by bathymetry and the presence or absence of reflective or absorptive conditions, including the sea surface and sediment type. The TL model described above was used to calculate the expected noise propagation from each installation method, using representative source levels to estimate the ZOI or area exceeding the noise criteria.

Underwater Noise from Pile Driving

The intensity of pile driving sound is greatly influenced by factors such as the type of pile, the type of driver, and the physical environment in which the activity takes place. To determine reasonable SPLs from pile driving, studies with similar properties to the proposed project were evaluated. Table 3-6 presents received SPL at a distance of 33 feet (10 meters) from the pile, with root mean square (RMS) and peak levels relative to 1 microPascal (μPa) and cumulative SELs relative to 1 μPa squared second during impact pile driving.

Table 3-6 Underwater Noise Source Levels Modeled for Impact Pile Driving

<i>Pile Type</i>	<i>Pile Diameter</i>	<i>Peak (dB re 1 μPa)</i>	<i>RMS (dB re 1 μPa)</i>	<i>SEL (dB re 1 μPa² sec)</i>
Concrete	20- and 24-inch	188	176	166
Steel pipe	24-inch	207	194	178
	16-inch	182	163	158

Source: Caltrans 2015**Notes:**

All SPLs are unattenuated; single-strike SEL are the proxy sources levels presented for impact pile driving and were used to calculate distances to permanent threshold shift (PTS) onset thresholds; source levels for 20- and 24-inch concrete square and octagonal are assumed to be the same.

Abbreviations:

dB re 1 μ Pa = decibels referenced to a pressure of 1 microPascal (measures underwater SPL)

dB re 1 μ Pa² sec = decibels referenced to a pressure of 1 microPascal squared per second

(measures underwater SEL)

RMS = root mean square

SEL = sound exposure level

SPL = sound pressure level

Source levels associated with non-impulsive (i.e., continuous) sound sources, any of which may be used, are provided in Table 3-7. These sources include: 1) a vibratory driver to assist the installation steel piles; 2) use of high-pressure water jetting to install concrete piles; and 3) pile clippers for removal of concrete piles. Data from the most similar activities reported in the Acoustic Compendium for San Diego Bay (NAVFAC SW 2018) or by the California Department of Transportation (Caltrans) (Caltrans 2015) have been used as proxies for project activities at each of the project sites. Each of these sources is assumed to operate for 10 minutes; this is a conservative assumption given that the contractor would be allowed flexibility to combine and use the most efficient methods. For the purpose of generating Level B take estimates, the maximum RMS SPL is the only relevant criterion; peak SPLs and SELs for continuous noise sources are not usually measured and would only exceed thresholds less than a meter from the source.

Table 3-7 Underwater Noise Source Levels Modeled for Nonimpulsive Sources

<i>Method</i>	<i>Pile Type</i>	<i>RMS SPL (dB re 1 μPa)</i>
Vibratory install or extraction	All steel and concrete piles	160 ¹
High-pressure water jetting	All steel and concrete piles	158 ²
Large hydraulic pile clipper	All concrete piles	161 ³

Source:

¹ Caltrans 2015, based on 24-inch steel sheet pile (no data on vibratory installation or extraction of concrete piles);

² NAVFAC SW 2018b, high-pressure jetting as used on 16-inch round and 24-inch by 30-inch concrete piles;

³ Clipper used to assist in removal of 24-inch square concrete piles at the mudline

Notes:

All SPLs are unattenuated.

Abbreviations:

dB re 1 μ Pa = decibels referenced to a pressure of 1 microPascal (measures underwater SPL)

RMS = root mean square

SPL = sound pressure level

The TL model described above was used to calculate the expected noise propagation from pile driving. For vibratory and impact behavioral zones and peak injury zones, a representative source level was used to estimate the area exceeding the noise criteria. For vibratory and impact behavioral zones and peak injury zones, a representative source level (refer Table 3-6 and Table 3-7) was used to estimate the area

exceeding the noise criteria. For impact pile-driving distances to the permeant threshold shift (PTS) onset thresholds, the TL model described above incorporated frequency weighting adjustments by applying the auditory weighting function over the entire 1-second SEL spectral datasets from impact pile driving. For vibratory pile-driving distances to the PTS thresholds, the TL model described above incorporated the auditory weighting functions for each hearing group, using a single frequency as described in the NMFS Spreadsheet (NMFS 2018). For impact pile-driving distances to the PTS thresholds the TL model described above incorporated frequency weighting adjustments by applying the auditory weighting function over the entire 1-second SEL spectral datasets from impact pile driving.

To quantitatively assess exposure of California sea lions to pile driving noise levels over the NMFS threshold guidance, the potential number of sea lions in the project area for all pile driving activities were multiplied by the number of days of noise generating activities (refer to Table 2-1 for the number of days per activity).

$$\text{Exposure estimate} = N \times \text{number of days of noise generating activities}$$

where

N = Four sea lions per day potentially in the ensonified area (i.e., ZOI).

The following assumptions were used to calculate potential exposures to impact and vibratory pile driving noise for each threshold:

- Each animal can be “taken” via Level B harassment once every 24 hours.

The density of California sea lions within the vicinity of the south berth of the Mole Pier or the MGBW maintenance piers is unknown. Previous surveys in San Diego Bay have shown very few California sea lions in the area (Merkel and Associates, Inc. 2008; Sorensen and Swope 2010; Graham and Saunders 2014; Tierra Data Inc. 2016). Two California sea lions observed during a survey in 2010 (Sorensen and Swope 2010) and up to three animals per day have been observed in the north of NBSD during recent monitoring for the Chollas Creek Quaywall Repairs (unpublished data). Per direction received from NMFS in March 2020 during review of the IHA application, given that California sea lions travel in pairs a conservative estimate of four California sea lions per day ($N = 4$) was used as an estimate of the potential animals in the area on any given day.

Injury and behavioral effects thresholds for marine mammals, sea turtles, and fish are based on peak or RMS SPL, and on the cumulative SEL (SEL_{cum}), which is calculated as follows:

- For impact pile driving,

$$SEL_{cum} = \text{single-strike SEL (dB)} + 10 \log_{10} (\text{number of strikes})$$

- For vibratory driving or extraction, or other nonimpulsive sound sources,

$$SEL_{cum} = \text{one-second SEL} + 10 \log_{10} \times \text{number of seconds the source operates.}$$

Pile driving can also generate airborne noise that could potentially result in disturbance to marine mammals that are hauled out; however, due to the absence of haul outs in the project area, the potential for acoustic harassment by airborne noise is considered negligible.

3.3.3.3 No Action Alternative

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

3.3.3.4 Alternative 1 Potential Impacts

The ROI for the analysis of effects to biological resources associated with Alternative 1 includes the footprints of demolition and construction necessary to install the floating dry dock, the areas of sediment dredging and disposal necessary to accommodate vessel traffic, the area of the dry dock itself, and operational impacts. Project activities may affect biological resources as a result of increased noise, turbidity, shading, and other direct disturbances. Detailed descriptions are provided below. Because Alternative 1 would involve dredging activities, a CWA Section 401 Water Quality Certification from the San Diego RWQCB and a CWA Section 404 and RHA Section 10 permit from USACE would be obtained prior to the initiation of any in-water construction activities. The Navy has prepared an IHA application for the proposed floating dry dock at the south berth of the Mole Pier. The Navy will submit the IHA application and obtain approval from NMFS prior to the initiation of any in-water construction-related activities.

Impacts on biological resources associated with Alternative 1 would occur during dredging, sediment transport and disposal, as well as during demolition and construction activities, including partial demolition of a mooring wharf and construction of two mooring dolphins and fender piles. In-water construction activities may affect biological resources as a result of increased turbidity, shading, noise, and other direct disturbances. A detailed description as it relates to potential impacts on species is provided below.

Turbidity

Turbidity is expected to increase short-term during pile removal, dredging, and disposal of dredged sediments as well as pile installation. The size and shape of the turbidity plume from pile driving and dredging and disposal are difficult to quantify because of variability in naturally occurring conditions, such as wind and currents, and type of dredging equipment. Consequently, it is difficult to predict the specific areas that may be influenced by the plume.

Dredging activities for Alternative 1 would cause minor and short-term impacts on existing unvegetated soft-bottom benthic communities and any marine species within the immediate areas through exposure to short-term changes in suspended sediments, turbidity, dissolved oxygen, or light diffusion. Elevated turbidity levels and associated resuspended sediments would decrease to background levels within a period of several hours after dredging activities cease (USACE 2009, 2012). Sediment resuspension, increased turbidity, or chemical changes would be limited to the areas of bottom disturbance and would persist for the duration of dredging activities. Turbidity would vary spatially based on currents and sediment grain size. Increased turbidity may result in temporary decreases in light penetration and levels of dissolved oxygen. The clamshell bucket dredge method would likely be used because it causes less turbidity than the cutter head/hopper dredge method. Increases in turbidity would be low because of the physical characteristics (i.e., mainly sand) of the dredged sediments and would be limited to the immediate vicinity of the operation. Decreases in levels of light penetration and dissolved oxygen would occur only within a few hundred feet of the dredging site and would end several hours after cessation of dredging activities, making a permanent decline in aquatic primary productivity unlikely. Toxicity testing within the area has shown that chemical concentrations of material near the dredge prism are not toxic.

Therefore, acute toxicity, bioaccumulation, or sublethal chronic impacts on marine organisms associated with remobilization and resuspension of chemicals would be negligible.

Pile removal and installation activities are likely to increase turbidity in the immediate vicinity, for example, when high-pressure water jetting is used. Turbidity monitoring during jetting to remove caissons for the Fuel Pier Replacement Project revealed relatively minor if any changes, with only localized decreases in water clarity that dissipated within 11 minutes or less (NAVFAC SW 2017). Turbidity associated with pile removal and installation would have localized, intermittent negative effects on the quality of habitat and impacts on marine organisms throughout the areas of pile removal and installation at the proposed dry dock locations.

As described in Section 3.2, *Water Resources*, following emplacement, operation of the floating dry dock could result in potential water quality impacts. However, sediment resuspension would be minimal; dry docking evolutions (i.e., lowering and raising the floating dry dock) are slow and do not substantially disturb the underlying sediments. Therefore, long-term impacts to biological resources would be less than significant.

Marine Habitats and Communities

In-water construction activities would cause minor and short-term impacts on existing unvegetated soft-bottom benthic communities within the Approach Area, Turning Basin, and Sump. Organisms occurring in the immediate area would be lost or displaced during dredging activities, either directly by equipment and noise associated with these activities or indirectly by exposure to short-term changes in suspended sediments, turbidity, dissolved oxygen, or light diffusion. Elevated turbidity levels and associated resuspended sediments would decrease to background levels within a period of several hours after dredging activities cease (USACE 2009, 2012). Potential impacts on plankton communities could include a localized decrease in primary productivity due to reduced photosynthesis. However, sediment resuspension, increased turbidity, or chemical changes would be limited to the areas of bottom disturbance and would persist for the duration of dredging activities. Turbidity would vary spatially based on currents and sediment grain size. Turbidity plumes from demolition, dredging, and pile driving are expected to persist for several hours following disturbance. Therefore, the increased turbidity would not significantly affect benthic or water column habitats in the project area.

As described in Section 2.3.2.1, *Dredging*, dredging activities necessary to accommodate the proposed floating dry dock at the south berth of the Mole Pier would largely include maintenance dredging to a depth of -36 feet MLLW within the Approach Area and -37 feet within the Turning Basin. However, there would be limited areas within the outer radius of the Turning Basin that would extend into the shallower portions of the channel shoulders and may require new dredging. Additionally, the Sump would be expanded by a total of 1.40 acres. This change in bathymetry would result in long-term impacts to the productivity of the affected marine habitats.

Following the completion of in-water construction activities, the emplacement of the proposed floating dry dock would shade approximately 2.62 acres. The south berth of the Mole Pier was once the site of AFDM 14 “Steadfast” until 1998 (approximately 528 feet by 118, shading 1.43 acres), and since 2002 has provided a berth for the USS Curtiss (approximately 600 feet by 100, shading 1.4 acres). The new proposed floating dry dock would be approximately 83 percent larger than the AFDM 14 “Steadfast”, resulting in long-term shading of marine habitats.

An assessment of ecological functional loss was undertaken to assess the effects of the proposed floating dry dock at the south berth of the Mole Pier (Marine Taxonomic Service, Ltd [MTS] 2020). The analysis

methodology applied focuses on the loss of habitat value with increasing depth within the shallow bay and incorporates bay coverage effects on reduction of benthic productivity based on diminished light levels. The loss of ecological value with depth has been noted in prior impact assessments and mitigation programs within developed bays. Differing value of habitat by depth range is also recognized in the San Diego Bay INRMP (U.S. Navy and Port of San Diego 2013). In most instances, the difference in value by depth is reflected as functional lift being generated by increasingly shallow submergence in subtidal environments. Thus, shallow water is considered to be of greater ecological value than deep water. This is principally related to increasing benthic primary productivity at shallow depths, increasing circulation due to wave and swell surge influence, and increasing temperature in shallow waters (Merkel & Associates, Inc. 2020).

To evaluate the effects of bay coverage on ecological function, the footprint of the proposed floating dry dock was overlain on the existing bathymetry at the south berth of the Mole Pier. As described in the analysis prepared by MTS (2020), because all of the shaded area is deeper than -29 feet MLLW, the shading associated with the proposed floating dry dock was determined to not further reduce or otherwise affect ecological function in the underlying area. Additionally, no direct eelgrass impact analysis was performed since no eelgrass occurs within south berth of the Mole Pier (Merkel & Associates 2018). Therefore, the impact analysis for the proposed floating dry dock has been based on comparison of the existing bathymetry derived from the 2014 condition survey (Merkel and Associates, Inc. and CLE Engineering 2015) and a bathymetric surface generated from the dry dock engineering study (Navy 2018a). The subtraction of the existing and proposed bathymetric surfaces yielded the extent of elevational change anticipated as well as the area over which change would occur. This approach allowed for independent calculation of functional loss in each area and a separate consideration of policy issues with respect to maintenance dredging versus new dredging (Merkel & Associates, Inc. 2020).

Alternative 1 would result in an 8.48-percent reduction in ecological value as a result of the proposed floating dry dock. This would translate into a loss of function equivalent to 0.53 acres of unvegetated soft bay bottom. The proposed floating dry dock itself is 2.62 acres in size and would be located in waters ranging from -49 to -56 feet MLLW. Within the Approach Area and Turning Basin, deepening of the area would result in a functional loss of 0.78 percent over the 21.39 acres. This translates into a functional loss equivalency of 0.17 acre. As previously described, this is predominantly associated with maintenance dredging and thus may be reasonably treated differently from the impacts associated with new dredging (Merkel & Associates, Inc. 2020).

The mitigation for anticipated ecological function impacts is proposed to be addressed following the methodology outlined by MTS (2020) and Merkel & Associates, Inc. (2020b). This mitigation is based on providing offsetting ecological lift equivalent to the quantified loss through replacement with eelgrass habitat through the Navy Eelgrass Mitigation Bank.

As discussed in MTS (2020), eelgrass habitat is considered to provide 1,020 percent (10.2 acres of unvegetated soft bottom equals 1 acre of eelgrass habitat) of the ecological function of similar unvegetated soft bottom habitat. This is based on the median value of studies documenting faunal organism density for eelgrass. To calculate the equivalent eelgrass habitat needed to offset project impacts, the area equivalency of impacted soft bottom has been divided by the difference in functional value between eelgrass and unvegetated soft bottom.

All project-related impacts would be mitigated using 0.084-acre worth of bank credits – including additional mitigation need from water column functional loss – released from the U.S. Navy's San Diego

Bay eelgrass habitat credits (Merkel & Associates, Inc. 2020a, 2020b). With the implementation of the proposed mitigation, impacts to marine habitats would be less than significant. A survey for *Caulerpa* consistent with NMFS and CDFW requirements would be conducted before initiating in-water project activities (NMFS 2008). If *Caulerpa* is found in the project area during this survey, NMFS-approved *Caulerpa* Control Protocols would be followed. Therefore, implementation of this alternative would not result in significant impacts on special aquatic sites associated with the spread of *Caulerpa*.

Fish and Wildlife

Birds

Project activities would result in increases in noise and human activity and decreases in water quality in the project area during demolition, dredging, pile-driving activities, and sediment transport and disposal. These activities would disturb marine birds, and nonmarine birds that may forage in the project area, including California least tern, osprey, and California brown pelican. Dredging activities would occur within a 4.79-acre area, less than 0.1 percent of San Diego Bay, and would last a maximum of 14 weeks; pile driving is estimated to take up to 10 weeks and demolition activities are estimated to take no more than 4 weeks for a total of 28 weeks of in-water and over-water construction duration. Birds would likely avoid the project area during these activities. Dredging and sediment disposal would also result in small-scale alterations in foraging conditions and/or prey availability in the immediate vicinity of project activities. The project area is routinely subject to elevated noise and activity of workers and equipment associated with common industrial practices. Because the project area is developed, and similar resting and foraging habitats occur nearby, common shorebirds and water birds would move to other nearby, similar habitats if disturbed and then return when the Proposed Action is completed.

Sediment disposal at Nearshore Replenishment Sites would occur offshore and would not affect any western snowy plover habitats along the coast, including those at Naval Air Station North Island. Therefore, implementation of this alternative would not have a significant adverse effect under the MBTA and there would be no significant impacts on other nonmigratory marine bird habitat or populations.

Marine Mammals

Potential impacts on marine mammals associated with Alternative 1 would be primarily from noise generated during dredging and pile-driving activities or vessel movement during sediment transportation. Dredging and pile-driving operations would result in the generation of noise from dredge engine and exhaust, crane engine and exhaust, vibratory and impact pile driver, high-pressure water jetting, pile clipping, rope and bucket water operations, and various boom and grab actions, including the bucket hitting the bottom during dredging, and the bucket closing and opening during construction. As described in Section 3.3.3.2, *Noise Impact Methodology*, underwater noise associated with dredging operations was measured up to 124 dB at 493 feet (150 meters) (Dickerson et al. 2001), which is just below the average range of normal background noise levels expected in San Diego Bay (Dahl and Dall'Osto 2019).

For the analysis of underwater acoustic impacts from pile driving and extraction under Alternative 1, the ZOIs for sound-generating activities are depicted in Figure 3-4. As shown in the figure, land and man-made barriers limit the transmission of sound in various directions. The only marine mammal with a reasonable possibility of occurrence within these ZOIs is the California sea lion. California sea lions could be subject to two types of harassment under the MMPA: Level A (i.e., minor injury consisting of hearing loss in the form of PTS onset); and Level B (i.e., behavioral disturbance and/or temporary hearing impairment in the form of a temporary threshold shift [TTS]).

Table 3-8 Calculated Radial Distance to Underwater Acoustic Thresholds and Area of ZOIs within the Thresholds from Pile Driving and Removal at the South Berth of the Mole Pier

<i>Activity Description/ Assumed Source Sound Levels at 10 meters¹</i>	<i>Pile Installation Method²</i>	<i>Minor Injury</i>	<i>(PTS Onset) Level A³</i>	<i>Behavioral Disturbance^{4,5}</i>	<i>Level B⁶</i>
		<i>Radial Distance (m)</i>	<i>ZOI Area (km²)</i>	<i>Radial Distance (m)</i>	<i>ZOI Area (km²)</i>
24-inch octagonal concrete	Impact Pile Driver	2	NA	117	0.021-0.028 (0.028/NA) [Source 1] (0.021/NA) [Source 2]
	High Pressure Water Jetting	<1	NA	1,359	2.08 (1.09/0.99)
24-inch steel	Impact Pile Driver	13	NA	1,848	3.68 (2.76/0.92)
	Vibratory Pile Driver	<1	NA	2,512	6.49 (4.94/1.55)
16-inch steel	Impact Pile Driver	<1	NA	16	0.008 (0.0008/NA) [Source 1] (0.0008/NA) [Source 2]
Large hydraulic pile clipper	NA	<1	NA	2,154	4.56 (2.60/1.96)

Notes:

¹ Sound source levels measured at 33 feet (10 meters) distance.

² See Table 3-6 and Table 3-7 for source levels used to calculate the acoustic ZOIs.

³ Distances to Level A thresholds were calculated based on SEL_{cum} using the 2018 NMFS User Spreadsheet (NMFS 2018), which assumes practical spreading loss. Project assumptions include: maximum of 600 strikes per pile, 10-minute duration for all non-impulsive sounds except for high-pressure water jetting (20 minutes), 1 pile installed per day for mooring dolphin structural piles and 3 piles per day for the wharf and vehicle bridge piles. Weighting Factor Adjustments of 2 kilohertz (kHz) for impact pile driving and 2.5 kHz for non-impulsive sounds, and the representative frequency range for Otariids.

⁴ Distances to Level B thresholds were calculated using practical spreading loss model.

⁵ Level B ZOIs for continuous noise sources were calculated to the average ambient underwater noise value of 126 dB re 1 µPa within the project area (Dahl and Dall'Osto 2019).

⁶ Level B ZOI areas were calculated separately for open water versus areas around piers where the structure's influence on sound propagation is uncertain.

Abbreviations:

dB re 1 µPa = decibels referenced to a pressure of 1 microPascal

km² = square kilometers

NA = Not Applicable

PTS = permanent threshold shift

RMS = root mean square

SEL = sound exposure level

SEL_{cum} = cumulative sound exposure level over 24 hours

ZOI = Zone of Influence (area encompassed within acoustic threshold boundary)

The NMFS (2018) threshold and methodology for calculating the distance to the Level A (PTS onset) threshold are used to determine the area of the Level A ZOI for each pile installation activity. For intermittent noise sources (e.g., impact pile driving), the threshold criteria are 204 dB re 1 µPa²-sec SEL, or 232 dB re 1 µPa peak and for continuous noise sources (e.g., vibratory pile driving) the threshold criteria is 219 dB re 1 µPa²-sec SEL. If Level A ZOIs are less than 33 feet (10 meters), then a minimum 33-foot (10-meter) shutdown is required to reduce the likelihood for a physical interaction with project-related

equipment. Under Alternative 1, impact pile driving of 24-inch steel piles is the only project-related activity expected to have a Level A acoustic ZOI beyond the 33-foot (10-meter) physical interaction ZOI (43 feet [13 meters]). To further reduce the likelihood of Level A takes, a buffered shutdown zone out to 82 feet (25 meters) would be implemented to halt activities that could potentially injure a marine mammal that is near in-water construction activities. Takes would be limited to the potential for Level A (minor injury due in the form of PTS) and Level B harassment (behavioral responses and possible TTS). However, with the implementation of a buffered shutdown zone of 82 feet (25 meters), no Level A takes would be anticipated. Previously established thresholds and the aforementioned practical spreading loss model were used to determine the extent of the Level B takes for these activities.

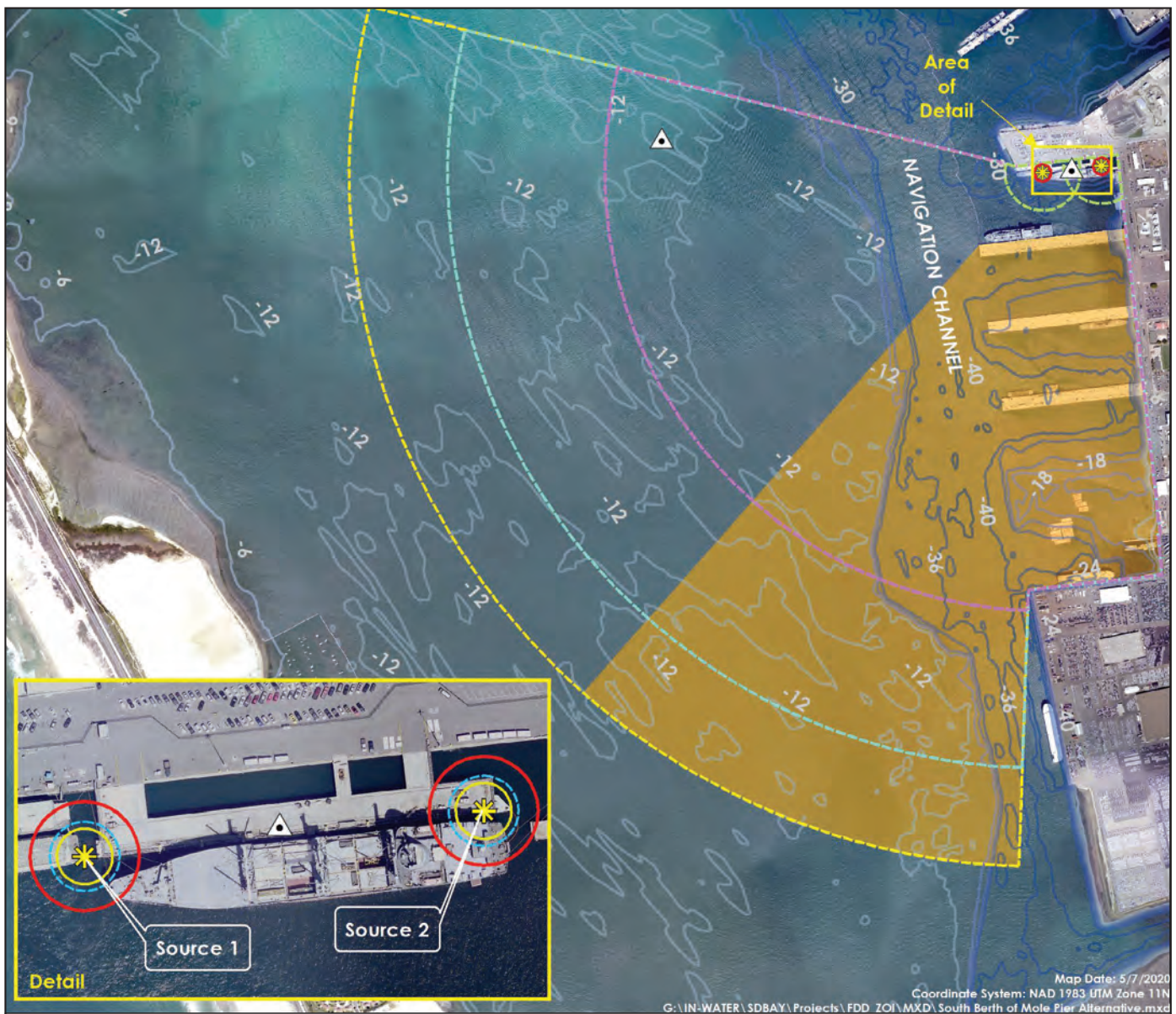
Potential Level B takes would occur if sea lions are present within any of the ZOIs identified in Table 3-8 and Figure 3-4. There are no known haulouts in the vicinity, although there are structures, such as buoys, that could be used. Sea lions observed in the area would likely be swimming and/or foraging. A conservative estimate of four California sea lions per day ($N = 4$) was multiplied by the number of days of noise generating activities ($N = 60$) (refer to Table 2-1), which equates to a Level B take estimate of 240 California sea lions. The anticipated take of California sea lions would be in the form of non-lethal, temporary harassment and is expected to have a negligible impact on this species. In addition, the taking would not have an immitigable adverse impact on the availability of these species for subsistence use.

The Navy has prepared an IHA application for the proposed floating dry dock at the south berth of the Mole Pier. The Navy will submit the IHA application and obtain approval from NMFS prior to the initiation of any in-water construction-related activities.

Individual California sea lions may be exposed to SPLs during pile driving operations at NBSD that may result in Level B harassment. Any California sea lions which are taken (i.e., harassed), may change their normal behavior patterns (e.g., swimming speed, foraging habits, etc.) or be temporarily displaced from the area of construction. Any takes would likely have only a minor effect on individuals and no effect on the population. The sound generated from vibratory pile driving is non-pulsed (i.e., continuous) which is not known to cause injury to marine mammals. Mitigation is likely to avoid most potential adverse underwater impacts to sea lions from impact pile driving. Nevertheless, some level of impact is unavoidable.

Given the short daily duration of noise associated with individual pile driving and the relatively small areas being affected, pile driving activities associated with the Proposed Action are not likely to have a permanent, adverse effect on any EFH, or population of fish species. Therefore, pile driving is not likely to have a permanent, adverse effect on California sea lion foraging habitat in the vicinity.

The proposed activities at NBSD are not expected to have any habitat-related effects that could cause significant or long-term consequences for individual California sea lions or the population. As previously discussed, California sea lions do not occur in large numbers nor are they expected to use the project area as frequent foraging habitat.



△ Representative PSO Monitor

✱ Notional source location 1 and 2 – hydraulic chain saw: 150 dB rms; small hydraulic pile clipper, timber-plastic: 154 dB rms; water jetting installation/extraction: 158 dB rms; large hydraulic pile clipper, concrete: 161 dB rms

Bathymetry in Feet below MLLW

6	30
12	36
18	40
24	



SCALE IN FEET



LEGEND

- Buffered Shutdown ZOI
- All pile sizes (25 m)
- Level A ZOI
- 24-inch steel impact driving (13 m)
- Level B ZOIs
- 16-in steel impact pile driving (16 m)
- 24-inch octagonal concrete impact pile driving (117 m)
- Water jetting (1,359 m)
- Large hydraulic pile clipper (2,154 m)
- 24-inch steel impact driving and vibratory pile installation/extraction for all pile sizes (1,848 m)
- Uncertain sound propagation around piers

EA

Underwater Sound Propagation from Pile Driving and Removal Activities at the South Berth of Mole Pier Alternative Naval Base San Diego

FIGURE 3-4

As discussed in Section 3.5, *Transportation*, minimal increases in marine vessel traffic would result from implementation of Alternative 1. Further, vessels would follow speed limits and BMPs, including visual scanning for marine mammals, to avoid vessel strikes. All measures described in Section 3.3.3.1, *Avoidance or Minimization Measures*, would be implemented to avoid or minimize potential impacts on marine mammals. Short-term disruptions to pre-dredge foraging or movement behaviors would be temporary, restricted to the 90-day dredging activity duration, and not significant, and wildlife activities would return to normal upon dredging completion. Therefore, with the incorporation of all applicable BMPs and avoidance and minimization measures, impacts to marine mammals under Alternative 1 would be less than significant.

Green Turtles

Green turtles in San Diego Bay are more common in the South Bay where larger areas of eelgrass are present. Demolition, dredging, and pile-driving activities have the potential to disturb green turtles in the immediate vicinity because of vessel movement, construction-related noise, and water quality degradation. Vessel movement is associated with transportation of the floating dry dock, in-water construction and demolition, and all stages of dredging, including transit to and from the project area, transit to and from the deposition site, and operation of the dredger. Collision with vessels is a known cause of injury and mortality to green turtles. However, given the slow speed of dredgers, this type of collision is unlikely. Further, other support vessels (e.g., barges) are limited in number, will be required to maintain established speeds, and are consistent with baseline conditions. Direct injury from the use of a clam shell dredge is also a concern for green turtles resting on the bottom; however, clam shell dredgers have been found to be loud enough that green turtles are alerted to their presence and can move to avoid the dredge (NOAA 2010).

Potential impacts on green turtles from implementation of the Proposed Action would primarily be from impact pile driving. The threshold value for injury to green turtles from impact pile driving is 204 dB re 1 $\mu\text{Pa}^2\text{-sec SEL}$, or 232 dB re 1 μPa peak (Navy 2017). The peak SPL and cumulative SEL thresholds would not be approached at a distance more than 46 feet (14 meters) from the source during any activity. With the imposition of an 82-foot (25-meter) buffered shutdown zone for green turtles, the potential for acoustic injury would be avoided.

During impact pile driving, green turtles are expected to avoid exposure to SPL of 175 dB re 1 μPa RMS or greater (Navy 2017). Behavioral reactions would not rise to the level of take under the ESA unless they result in a significant curtailment of feeding, movement, and other activities affecting fitness. During impact pile driving of the 24-inch steel piles (the loudest sound source), this threshold value would be reached within a distance of 607 feet (185 meters) from the source, based on a source level of 194 dB re 1 μPa RMS (refer to Table 3-6). Regardless of in-water activity, both the 82-foot (25-meter) buffered shutdown zone and the 607-foot (185-meter) zone will be monitored for green turtles. Given the lack of feeding areas (i.e., eelgrass) in the project area and ample space for green turtles to move through the area at a distance of greater than 607 feet (185 meters) from construction, behavioral avoidance would have minor, inconsequential effects that would not rise to a level of take under the ESA. As a result, the Navy has determined that the action may affect, but is not likely to adversely affect, green turtles, and the Navy has consulted (informally under Section 7 of the ESA) with NMFS on that basis; the Navy prepared and submitted a consultation letter to NMFS on 11 February 2020 (see Appendix C). The consultation letter provided a description of the Proposed Action, including background information and proposed avoidance and minimization measures, as well as potential impacts to species listed under the ESA. After reviewing the consultation letter, NMFS issued a letter on 25 March 2020 concurring with the

Navy that the Proposed Action may affect, but is not likely to adversely affect federally listed and/or federally designated critical habitats.

Underwater sound levels associated with impact pile driving the concrete piles would be 176 dB re 1 μ Pa RMS at 33 feet (10 meters). As such, the Navy will incorporate the BMPs as described in Section 2.5, *Best Management Practices Included in the Action Alternatives*, to survey for the presence of green turtles before, during, and after pile removal activities. If green turtles are found in the 82-foot (25-meter) safety buffer zone, pile-driving activities would be halted until the green turtles have voluntarily left the safety buffer zone. As such, green turtles would likely hear noise associated with the proposed impact pile-driving activities but would not be injured or disturbed.

As stated above, sound pressure levels of dredging operations (measured up to 124 dB re 1 μ Pa at 493 feet [150 meters]) would be less than or equal to background noise in an industrial harbor (126 dB RMS re 1 μ Pa), depending on proximity to the activity. Further dredging activities would occur within a 4.79-acre area in San Diego Bay and would last for a period of 14 weeks and at night (6:00 p.m. to 6:00 a.m.), 5 days per week; therefore, these impacts would be temporary and limited in their geographic scope and would be less than significant. All appropriate BMPs described in Section 2.5, *Best Management Practices Included in the Action Alternatives*, would be implemented to ensure no significant impacts on turtles.

Fisheries

Impacts on fish communities in the project area would be primarily associated with noise and with disturbance of bottom sediments and unvegetated soft bottom habitat during demolition, dredging, and pile-driving activities. Sediment resuspension and increased turbidity would be limited to the areas of bottom disturbance and would persist for several hours following the disturbance. Fish present during project activities are capable of avoiding project equipment and areas affected by increased turbidity and increased noise from dredging. Greater potential for impacts would exist if there were substantial amounts of fine sediments and organisms in the potential dredging areas. Subject to the terms and conditions identified in the project-specific CWA Section 404 and RHA Section 10 permits issued by USACE, precautionary measures would be implemented to minimize turbidity associated with dredging activities. Precautionary measures may include operational controls implemented by the dredge operator, such as reducing bucket speed. A turbidity threshold may be adopted or alternative measures identified during the project-specific USACE permitting process would be implemented. Impacts on fish species would be temporary and limited in nature because of the focused duration of dredging activities and the quantity of sediment (86,121 cy) dredged in a 4.79-acre area of San Diego Bay. Therefore, implementation of this alternative would not result in significant impacts on fish communities.

Fish species occurring in the immediate area would be displaced during project activities, either directly by equipment and noise associated with these activities or indirectly by short-term changes in suspended sediments, turbidity, dissolved oxygen, and light diffusion. Based on a previous study conducted in both coarse sand/gravel and unconsolidated sediment, the noise associated with bucket/clamshell dredging operations is anticipated to reach up to 124 dB at 493 feet (150 meters) when the bucket contacts the bottom (Jones et al. 2015). Based on these noise levels, the potential for acoustic disturbance from dredging is negligible (see below).

Thresholds for fish mortality, injury, and TTS from pile driving are shown in Table 3-9. These thresholds are used in the *Hawaii-Southern California Training and Testing Final EIS/OEIS* (Navy 2018b) and represent best available science (Popper et al. 2014). Use of a threshold dB value for behavioral responses is not supported, although a threshold of 150 dB has been used (Caltrans 2015). The likelihood of behavioral

responses is qualitatively considered to be high within tens of meters, intermediate within hundreds of meters, and low at thousands of meters (Popper et al. 2014). Fish monitored visually and with acoustic tags during the Fuel Pier Replacement Project exhibited only brief startle responses and no habitat displacement during pile driving (NAVFAC SW 2014).

Table 3-9 Sound Exposure Criteria for Fish Mortality, Injury, and TTS from Impact Pile Driving

<i>Fish Hearing Group</i>	<i>Onset of Mortality</i>		<i>Onset of Injury</i>		<i>TTS</i>	<i>Behavior</i>
	<i>SEL_{cum}</i>	<i>SPL_{peak}</i>	<i>SEL_{cum}</i>	<i>SPL_{peak}</i>	<i>SEL_{cum}</i>	<i>RMS</i>
Fishes without a swim bladder	> 219	> 213	> 216	> 213	NC	150
Fishes with a swim bladder not involved in hearing	210	> 207	203	203	> 186	150
Fishes with a swim bladder involved in hearing	207	>207	203	> 207	186	150
Fishes with a swim bladder and high-frequency hearing	207	> 207	203	> 203	186	150

Source: Navy 2018b

Notes:

SEL_{cum} = Cumulative sound exposure level (decibel referenced to 1 microPascal squared seconds [dB re 1 μPa²-s]).

SPL_{peak} = Peak sound pressure level (decibel referenced to 1 microPascal [dB re 1 μPa]).

">" indicates that the given effect would occur above the reported threshold.

TTS = temporary threshold shift.

NC = effects from exposure to sound produced by impact pile driving is considered to be unlikely; therefore, no criteria are reported.

SEL_{cum} at the 33-foot (10-meter) source distance is calculated as:

$$SEL_{cum} = \text{Single-strike SEL} + 10 \log_{10} (\text{number of strikes per day})$$

For each pile, 600 pile strikes are assumed.

For nonimpulsive sources, SEL_{cum} at the 33-foot (10-meter) source distance is calculated as:

$$SEL_{cum} = \text{One-second RMS SPL} + 10 \log_{10} (\text{number of seconds of operation per day})$$

For the nonimpulsive sources, up to 10 minutes (600 seconds) operation of the equipment is assumed.

TL in dB from the 33-foot (10-meter) source distance is estimated using the assumption of "practical spreading loss" as follows:

$$TL = 15 \log_{10} \left(\frac{R1}{R2} \right)$$

where R1 is the measured distance and R2 is the source level distance (33 feet [10 meters]).

This equation is used to compute the distances to the effects thresholds for fish, with TL being equal to the difference between the source level and the threshold value. For the analysis of acoustic impacts from pile driving, the maximum potential ZOI where fish could detect project-related sound is the same as that depicted in Figure 3-4. As shown in the figure, land barriers limit the transmission of sound in various directions.

Table 3-10 presents the calculated impact ranges on mortality, injury, and TTS for each pile type. These ranges apply to fishes with swim bladders, with minor differences between the different groups in Table 3-9. For fishes without a swim bladder (e.g., sharks), no thresholds are exceeded beyond 3 feet (1 meter) from the pile. The table also provides the distances within which the nominal behavioral disturbance threshold of 150 dB would be exceeded. Threshold distances from impulsive and nonimpulsive sources are also summarized in the bullets that follow.

Table 3-10 Mortality, Injury, TTS, and Behavior Impact Ranges (meters) for Fish from Impulsive and NonImpulsive Underwater Noise Construction Methods

Pile Size and Type	Onset of Mortality		Onset of Injury		TTS	Behavior (150 dB RMS)
	SEL _{cum}	SPL _{peak}	SEL _{cum}	SPL _{peak}	SEL _{cum}	
Impulsive Sources						
16-inch Steel Pipe	0	< 0	1	< 0	10	74
24-inch Steel Pipe	8	< 10	15	< 10	208	8,577
20-and 24-inch Concrete	1	<1	2	< 1	33	541
Nonimpulsive Source						
Pile Clipper (concrete)	NA	NA	NA	NA	15	54
Vibratory Pile Driver/Extractor (all)	<1	NA	<1	NA	13	46
Water Jetting (all)	0	NA	1	NA	10	34

Notes:

Distances represent maximum theoretical distances from the source within which thresholds would be exceeded, except where sound transmission is blocked by natural or manmade barriers.

SEL_{cum} = Cumulative sound exposure level (dB re 1 μ Pa²-s).

SPL_{peak} = Peak sound pressure level (dB re 1 μ Pa).

TTS = temporary threshold shift, based on a maximum of 600 pile strikes per day, or 10 minutes' use of nonimpulsive source, and 1 pile installed/day; ranges are for fish with a swim bladder. For fish with swim bladders not involved in hearing, the TTS would be less than the reported range(s).

- For impact pile driving the 20- to 24-inch octagonal and square concrete piles, the potential for mortality would only exist at less than 3 feet (1 meter) from the pile, and potential injury thresholds would not extend more than 6 feet (2 meters) from the pile. The potential for TTS would exist within 108 feet (33 meters) from the pile. Threshold distances are less for all of the nonimpulsive sources, with the potential for TTS existing within 49 feet (15 meters) during use of the pile clipper. Behavioral effects may be anticipated at 1,774 feet (541 meters) from the pile during impact driving, but only within 111 feet (34 meters) to 177 feet (54 meters) from the pile during the use of nonimpulsive sources.
- For impact driving the 24-inch steel pipes, the potential for mortality would exist within 33 feet (10 meters). Potential injury thresholds would extend to 52 feet (16 meters), and the potential for TTS would exist within 682 feet (208 meters). Use of a vibratory pile driver-extractor (the loudest nonimpulsive source that could be used on 24-inch steel piles) results in smaller distances, less than 3 feet (1 meter) for potential mortality or injury, and potential TTS within 43 feet (13 meters). During impact driving, the potential for behavioral effects (150 dB RMS) would extend to shore (or other obstructions) in all directions from the source, but as previously discussed for marine mammals, sound transmission from deep into shallow water (crossing the navigation channel) would be smaller than calculated (Dall and Dall'Osto 2019). In addition, fish are routinely exposed to sound sources levels from 141 dB RMS to 186 dB RMS from vessel traffic in San Diego Bay (Galli et al., 2003; Matzner & Jones 2011; McKenna 2011). During pile driving use of non-impulsive

sources, the potential for behavioral effects is only within 111 feet (34 meters) to 150 feet (46 meters) from the pile during the use of nonimpulsive sources.

- For impact driving the 16-inch steel pipe piles, the potential for mortality would only exist at much less than 3 feet (1 meter) from the pile, and potential injury thresholds would not extend more than 3 feet (1 meter) from the pile. The potential for TTS would exist within 33 feet (10 meters) of the pile. The initial use of water jetting would have the same ZOIs as impact driving, whereas the initial use of a vibratory driver would result in potential mortality within 1.5 feet (0.5 meter), injury within 3 feet (0.9 meter), and TTS within 43 feet (13 meters). Behavioral effects may be anticipated 74 meters from the pile during impact driving, but only within 111 feet (34 meters) to 177 feet (54 meters) from the pile during the use of nonimpulsive sources.

As the foregoing calculations indicate, relatively small portions of the project area would be affected, and the effects on fisheries would be temporary and limited to the duration of sound-generating activities. These impacts are considered less than significant.

Essential Fish Habitat

Four managed coastal pelagic fish species (jack mackerel, northern anchovy, Pacific mackerel, and Pacific sardine) and seven managed groundfish species (curlfin sole, California scorpionfish, English sole, grass rockfish, leopard shark, soupfin shark, and spring dogfish) are likely to occur in the project area (Navy 2000; Allen et al. 2002; Pondella and Williams 2009, and Williams et al. 2016). Northern anchovy and Pacific sardine can be found throughout San Diego Bay. Jack mackerel were found only on the North Bay survey area and Pacific mackerel were found at all locations except South Bay (Allen et al. 2002). All of these species are highly transient, are not tied to artificial substrates, and routinely experience turbid and noisy conditions from natural processes and ship traffic within San Diego Bay. Impacts from demolition, dredging, and pile-driving activities of Alternative 1 would be the same as described for other fish communities in the fisheries discussion above. Namely, noise associated with these activities would temporarily displace EFH species within a limited scope, although no fish would be injured. Other effects would occur from increased suspended sediments and turbidity and increased underwater noise levels from demolition, dredging, and pile-driving activities. These impacts would result in minimal adverse effects per the MSFCMA and are not considered significant under NEPA.

As discussed previously, turbidity plumes would be expected to persist for several hours following disturbance. Subject to the terms and conditions in the project-specific USACE Section 404 and Section 10 permits, avoidance and minimization measures would be implemented to alleviate turbidity associated with dredging activities. Avoidance and minimization measures may include turbidity monitoring or other alternative measures developed during the USACE permitting process. A turbidity threshold would be adopted, or alternative measures identified during the project-specific USACE permitting process.

Although the outer edges of piers support increased fish biomass, abundance, and species richness, EFH species expected to occur in the project area are highly mobile and are not closely tied to artificial substrates. If present, such species would likely leave the immediate project area during demolition, dredging, and pile driving, and would return when completed.

An indirect effect of the temporary reduction in invertebrate populations would be a reduction in forage base for fish and other organisms feeding on invertebrates. Nevertheless, colonization of the sands would be expected to begin almost immediately, and development of the invertebrate prey base would proceed naturally. This alternative would result in the disposal of 86,121 cy of sediment at a Nearshore Replenishment Site(s). Replenishment would occur at one or more potential sites along an approximately

12-mile stretch of beach. Therefore, because of the relatively rapid recovery rates of sandy subtidal invertebrates, direct and indirect impacts on marine organisms within the Nearshore Replenishment Site are expected to be less than significant. Further, nearshore replenishment provides beneficial beach nourishment, which is ultimately positive for marine organisms and coastal ecology. The Nearshore Replenishment Sites and LA-5 ODMDS have been previously reviewed and permitted for replenishment activities (SANDAG 2008a) and dredged sediment disposal (USEPA 1987). During that process, evaluations for these sites as receiving locations for dredge deposit had been performed for impacts on habitat, and BMPs have been identified for implementation during dredge deposition. Implementation of the Proposed Action would follow all required protocols established at replenishment/disposal sites. Hence, there would be minimal, short-term adverse effects on EFH from dredging per the MSFCMA, which would not be significant under NEPA.

The Navy recognizes the shading of approximately 2.62 acres of deep subtidal habitat as a potential adverse effect on EFH for groundfish, and impacts to EFH under the Magnuson-Stevens Act are discussed in more detail in the EFH Assessment. As previously described, on 14 April 2020, NMFS stated that there is no objection to the Navy's proposed compensatory mitigation and NMFS has no additional EFH Conservation Recommendations for the Proposed Action at this time (see Appendix D).

Benthic Invertebrates

Disposal of sediment at the Nearshore Replenishment Site would result in direct burial impacts on marine biota. The loss of benthic organisms within the replenishment site footprint is an expected and unavoidable impact of beach replenishment projects. Most invertebrates within the replenishment site footprint are not expected to survive, but some mobile animals would be able to burrow out from the outer or leading edges of the beach fills. Sediment disposal would result in a temporary reduction in benthic invertebrate biomass and alteration of the benthos species composition at the replenishment site. Although full recovery of the benthic community after a disturbance may take a few years (Merkel & Associates, Inc. 2010), the forage base would begin to establish almost immediately after cessation of the disturbance. Recovery may occur by migration of invertebrates from unaffected surrounding areas as well as settlement from the plankton.

In summary, the implementation of Alternative 1 would result in minor and short-term impacts on existing unvegetated soft-bottom benthic communities within the project area; however, sediment resuspension, increased turbidity, or chemical changes would be limited to the areas of bottom disturbance and would persist for several hours following disturbance. The proposed dredge area is, and would remain, deep subtidal habitat. As such, no permanent change would result from dredging. Demolition, dredging, and pile-driving activities would not result in significant impacts on marine plants or special aquatic sites. A survey for *Caulerpa* would be conducted before initiating in-water project activities, consistent with NMFS and CDFW requirements. Impacts on marine biota from sediment disposal would be temporary and less than significant. Therefore, implementation of this alternative would not result in significant impacts on habitats and communities and no significant effects on marine communities or special aquatic sites would occur.

Invasive Species

As previously described the floating dry dock would be procured by Naval Sea Systems Command PMS 325 (refer to Section 2.1, *Proposed Action*) and then barged to south berth of the Mole Pier (refer to Section 2.3.2.8, *Floating Dry Dock Emplacement*). Prior to transport the floating dry dock would be cleaned

and coated with antifouling paint/coating. Upon arrival to NBSD, the floating dry dock would be inspected and cleaned again, if necessary, prior to emplacement.

The operation of the floating dry dock would not result in any known impact related to the introduction of invasive species. Although there is a potential for invasive species (e.g., *Undaria pinnatifida*) to be introduced via attachment on boat hulls, the increase in ship traffic attributable to the floating dry dock would be negligible as it is anticipated that the floating dry dock would be used to the Pacific Fleet. The Navy would continue to comply with the *Regional Biosecurity Plan for Micronesia and Hawaii* as well as all implementation strategies regarding ballast water, hull fouling, and invasive species detection and response from the *Final Integrated Natural Resources Management Plan Naval Base San Diego (June 2014)* and *San Diego Bay Integrated Natural Resources Management Plan (March 2013)*.

With implementation of all applicable BMPs and avoidance and minimization measures, no significant impact on biological resources would result under Alternative 1.

3.3.3.5 Alternative 2 (Preferred Alternative) Potential Impacts

Alternative 2 would have the same types of impacts as Alternative 1, but they would occur in a different location, begin from different initial conditions, and, in most respects, have greater magnitudes and durations. The same avoidance and minimization measures would apply to all alternatives. The description of impacts focuses on similarities with and differences from Alternative 1.

Turbidity

No demolition activities would be required under Alternative 2. However, more piles would be required to construct the mooring dolphins and ramp wharf and vehicle bridge necessary to support the COL floating dry dock near the existing MGBW maintenance piers (refer to Table 2-2). Additionally, dredging under Alternative 2 would require excavating a larger volume than Alternative 1, it would take proportionately longer (i.e., 27 weeks under Alternative 2 versus 14 weeks under Alternative 1).

Marine Habitats and Communities

Existing marine conditions are predominantly soft-bottom shallow subtidal habitat; a small area of intertidal rip-rap armor is located in the southeast of the project area along the quaywall. Under Alternative 2, dredging would convert approximately 5.5 acres of shallow subtidal habitat, representing approximately 0.13 percent of shallow subtidal habitat in San Diego Bay (Navy and POSD 2013), to moderately deep and deep subtidal habitat. The dredge footprint would include 3-to-1 side slopes (extending upward to shallow subtidal depths) around a Sump area of 2.14 acres. Dredging would remove an eelgrass bed estimated to occupy 0.83 acres (Merkel & Associates, Inc. 2018; MTS 2020). The actual area of impact for eelgrass would be determined by pre- and post-dredging surveys (refer to Section 2.5, *Best Management Practices Included in the Action Alternatives*). Subsequent to dredging, the floating dry dock and accessory structures would shade approximately 2.1 acres that have been converted to deep subtidal habitat.

As described for Alternative 1, an assessment of ecological functional loss was undertaken to assess the effects of the proposed floating dry dock at the existing MGBW maintenance piers location (MTS 2020). To evaluate the effects of dredging and bay coverage on ecological function, the footprint of the proposed COL floating dry dock was overlain on the existing bathymetry at the existing MGBW maintenance piers location. The subtraction of the existing and proposed bathymetric surfaces yielded the extent of elevational change anticipated as well as the area over which change would occur. This approach allowed

for independent calculation of functional loss in each area and a separate consideration of policy issues with respect to maintenance dredging versus new dredging (Merkel & Associates, Inc. 2020).

The mitigation approach for impacts to marine habitats followed a systematic approach to evaluate 1) applicability of existing mitigation policies (i.e., for eelgrass), 2) assessment of project benefits and *de minimis* impacts, and 3) development of science- and data-based ratios to mitigate for existing habitat values (i.e., those not regulated under established policy) (MTS 2020).

As described for Alternative 1, mitigation need for Alternative 2 would be offset by utilizing credits from an established regional eelgrass mitigation bank. Thus, the basis for both in-kind mitigation of resources (i.e., eelgrass-to-eelgrass) and out-of-kind mitigation (e.g., soft-bottom habitat to eelgrass) will be eelgrass bank credits. The MTS (2020) analysis serves the basis for out-of-kind mitigation; the findings of this analysis describe that if an existing eelgrass mitigation bank is used to offset project impacts a total of 1.084 acre of credit would need to be used (MTS 2020; Merkel & Associates, Inc. 2020b).

All project-related impacts would be mitigated using 1.084-acre worth of bank credits – including additional mitigation need from water column functional loss – released from the U.S. Navy’s San Diego Bay eelgrass habitat credits (MTS 2020; Merkel & Associates, Inc. 2020b). With the implementation of the proposed mitigation, impacts to marine habitats would be less than significant.

Fish and Wildlife

Birds

Impacts on birds would be similar to those of Alternative 1, but of substantially greater duration. Dredging and sediment disposal would require approximately 27 weeks, and the mooring dolphin construction would require up to 10 weeks. As noted previously, bird density and diversity are greater at the Alternative 2 location than the Alternative 1 location (Tierra Data, Inc. 2018), probably because there is less human activity and the shallower depths provide better foraging opportunities. These conditions would be degraded by construction and operations at the Alternative 2 site. While the impacts on birds would be greater than those described for Alternative 1, they are considered less than significant because bird use of the habitat is still relatively low (Navy and POSD 2013), dredging activities would occur at night when birds are less active and/or not necessarily within the immediate vicinity of the activity, and the reduction of foraging opportunities within this relatively small area is not expected to result in any changes to bird populations in San Diego Bay.

Marine Mammals

As described for Alternative 1, potential impacts on marine mammals under Alternative 2 would primarily be from noise generated during pile-driving activities during construction. No long-term noise effects would occur as a result of the proposed project.

The analysis of acoustic impacts follows the same methodology as that for Alternative 1, using NMFS-approved thresholds and models (NMFS 2018a, 2018b; see Table 3-11). Figure 3-5 shows the acoustic harassment ZOIs for Alternative 2. Because of the consistency of source levels and durations, the same ZOIs apply to both alternatives, although the shape and area of the ZOIs differ because of differences in the source location and shoreline topography.

Table 3-11 Calculated Radial Distance to Underwater Acoustic Thresholds and Area of ZOIs within the Thresholds from Pile Driving and Removal Near the MGBW Maintenance Piers

<i>Activity Description/ Assumed Source Sound Levels at 10 meters¹</i>	<i>Pile Installation Method²</i>	<i>Minor Injury</i>	<i>(PTS Onset) Level A³</i>	<i>Behavioral Disturbance^{4,5}</i>	<i>Level B⁶</i>
		<i>Radial Distance (m)</i>	<i>ZOI Area (km²)</i>	<i>Radial Distance (m)</i>	<i>ZOI Area (km²)</i>
24-inch octagonal concrete	Impact Pile Driver	4 ⁷	NA	117	0.027-0.043 (0.043/NA) [Source 1] (0.036/NA) [Source 2] (0.027/NA) [Source 3]
	High Pressure Water Jetting	<1	NA	1,359	2.75 (1.57/1.18)
24-inch steel	Impact Pile Driver	13	NA	1,848	3.68 (2.76/0.92)
	Vibratory Pile Driver	<1	NA	2,512	6.49 (4.94/1.55)

Notes:

¹ Sound source levels measured at 33 feet (10 meters) distance.

² See Table 3-6 and Table 3-7 for source levels used to calculate the acoustic ZOIs.

³ Distances to Level A thresholds were calculated based on SEL_{cum} using the 2018 NMFS User Spreadsheet (NMFS 2018), which assumes practical spreading loss. Project assumptions include: maximum of 600 strikes per pile, 10-minute duration for all non-impulsive sounds except for high-pressure water jetting (20 minutes), 1 pile installed per day for mooring dolphin structural piles and 3 piles per day for the wharf and vehicle bridge piles. Weighting Factor Adjustments of 2 kHz for impact pile driving and 2.5 kHz for non-impulsive sounds, and the representative frequency range for Otariids.

⁴ Distances to Level B thresholds were calculated using practical spreading loss model.

⁵ Level B ZOIs were calculated to the average ambient underwater noise value of 126 dB re 1 µPa within the project area (Dahl and Dall'Osto 2019).

⁶ Level B ZOI areas were calculated separately for open water versus areas around piers where the structure's influence on sound propagation is uncertain.

⁷ Per Table 2-1 impact pile driving for the mooring dolphins and wharf/bridges were 1 per day and 3 per day, respectively. The impact pile driving ZOI associated with the wharf/bridges resulted in the larger of the two ZOIs at 13.1 feet (4 meters).

Abbreviations:

dB re 1 µPa = decibels referenced to a pressure of 1 microPascal

km² = square kilometers

NA = Not Applicable

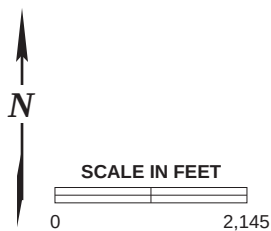
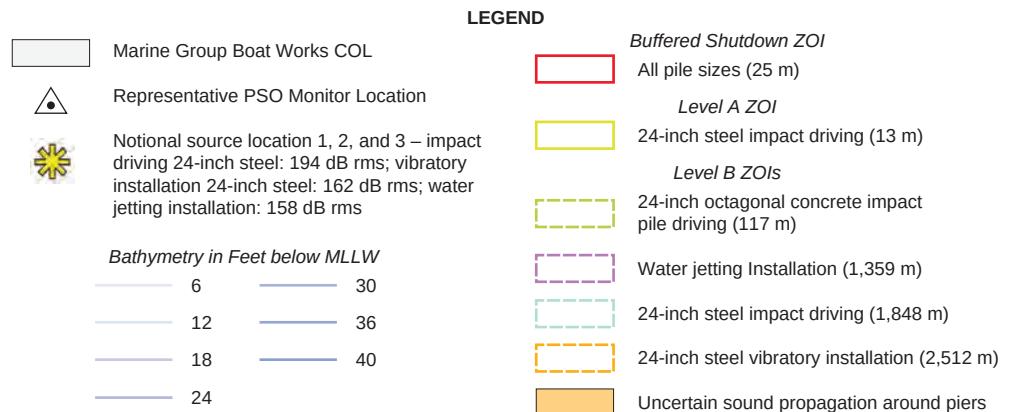
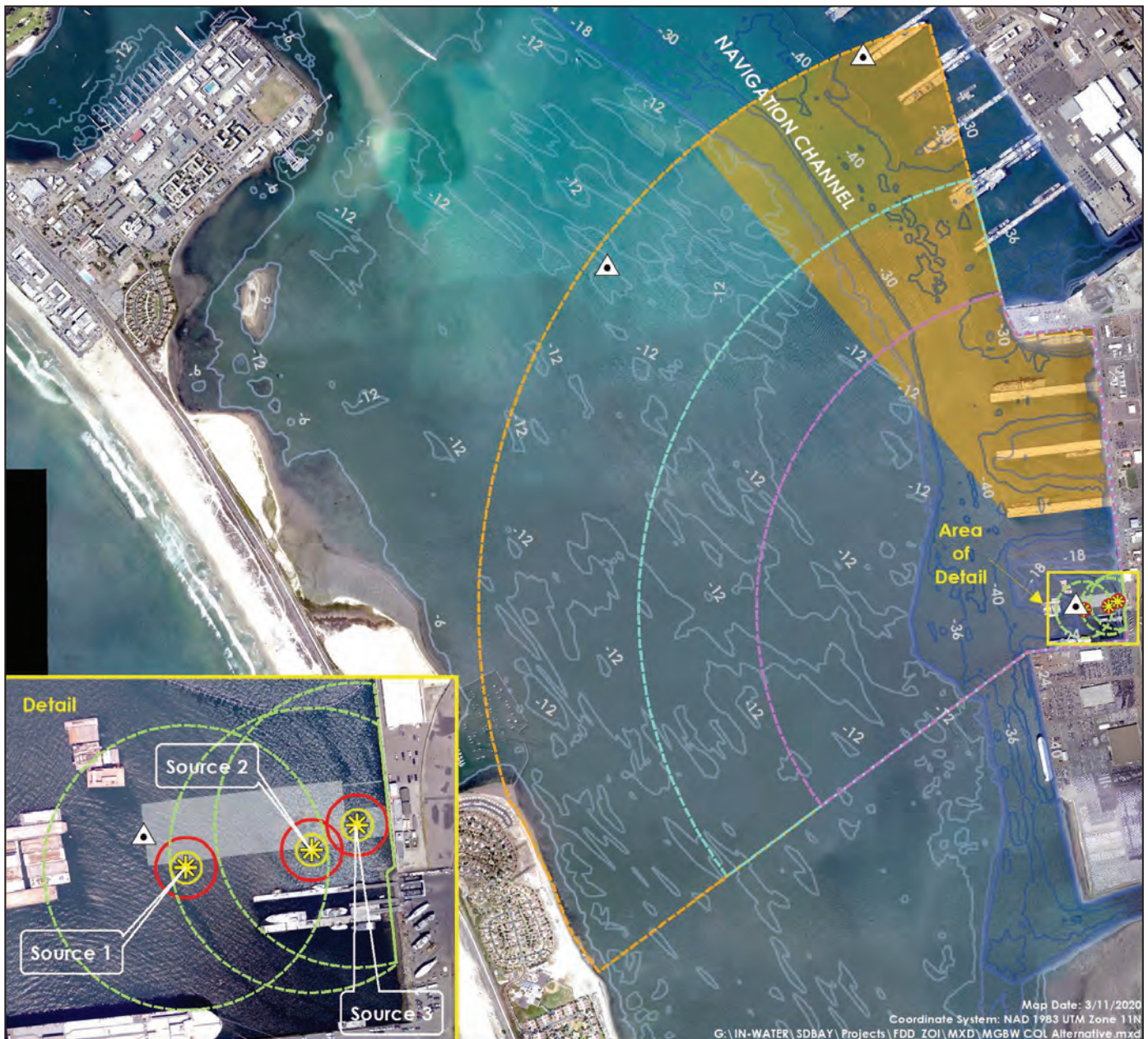
PTS = permanent threshold shift

RMS = root mean square

SEL = sound exposure level

SEL_{cum} = cumulative sound exposure level over 24 hours

ZOI = Zone of Influence (area encompassed within acoustic threshold boundary)



EA

**Underwater Sound Propagation from Pile Installation Activities
 at the Marine Group Boat Works Maintenance Piers Location
 Naval Base San Diego**

**FIGURE
 3-5**

Pile installation activities under this alternative are described in Table 2-2. As described for Alternative 1, there would be no Level A take under Alternative 2. Pursuant to the MMPA Section 101(a)(5)(D)2, the Navy has submitted an application to the NMFS for an IHA for the incidental, but not intentional, Level B take of California sea lions during pile driving activities as part of the installation of the proposed COL floating dry dock, for a 1-year period beginning on approximately 15 September 2020. A conservative estimate of four California sea lions per day ($N = 4$) was multiplied by the number of days of noise generating activities ($N = 60$) (refer to Table 2-2), which equates to a Level B take estimate of 240 California sea lions. The anticipated take of California sea lions would be in the form of non-lethal, temporary harassment and is expected to have a negligible impact on this species. In addition, the taking would not have an immitigable adverse impact on the availability of these species for subsistence use.

The same protective measures applied under Alternative 1 would apply to Alternative 2. Therefore, there would be no significant impacts on marine mammals under Alternative 2.

Green Turtles

As for Alternative 1, dredging has the potential to cause minor disturbance to green turtles, but no injuries due to collisions with vessels or equipment are anticipated because of the slow pace of the activity and the use of trained observers to watch for turtles and require work stoppage if a turtle were to approach within 82 feet (25 meters) of the activity.

During all activities, turtles are expected to avoid exposure to an underwater root-mean-square (rms) SPL of 175 dB re 1 μ Pa or greater (Navy 2017). Behavioral reactions would not rise to the level of take under the ESA unless they result in a significant curtailment of feeding, movement and other activities affecting fitness. During impact driving the 24-inch steel piles (the loudest sound source), this threshold value would be reached within a distance of 185 m from the source, assuming a source rms SPL of 194 dB re 1 μ Pa. For all other activities, this threshold value would be reached at much shorter distances. Given the lack of feeding areas (i.e., eelgrass at the project site would be removed during dredging activities, prior to construction) in the project area and ample space for turtles to move through the area at a distance of greater than 607 feet (185 meters) from construction, behavioral avoidance, if and when it occurs, would have minor, inconsequential effects on movement, foraging, and overall fitness. This would not rise to a level of take under the ESA. As a result, the Navy has determined that impact driving the 24-inch steel piles may affect, but is not likely to adversely affect green turtles.

Dredging would remove 0.83 acre of eelgrass, representing potential foraging habitat, at the existing MGBW maintenance piers location. Use of this particular location by turtles is undocumented, and may be unlikely because of the relative isolation of the location and ongoing Navy and MGBW industrial activity in the immediate vicinity. Eelgrass apparently established in this area only recently as it was not known to occur there prior to the most recent survey in 2017 (Merkel & Associates, Inc. 2018). Additionally, as previously described, eelgrass removal would be mitigated in conformance with the California Eelgrass Mitigation Policy using the Navy Eelgrass Mitigation Bank. As a result, the Navy has determined that the action may affect, but is not likely to adversely affect, green turtles, and the Navy has consulted (informally under Section 7 of the ESA) with NMFS on that basis; the Navy prepared and submitted a consultation letter to NMFS on 11 February 2020. The consultation letter provided a description of the Proposed

² 16 U.S.C. § 1371(a)(5); 50 CFR Part 216, Subpart I.

Action, including background information and proposed avoidance and minimization measures, as well as potential impacts to species listed under the ESA. After reviewing the consultation letter, NMFS provided a response on 25 March 2020 concurring with the Navy that the Proposed Action may affect, but is not likely to adversely affect federally listed species and/or federally designated critical habitats (see Appendix D).

Fisheries

Dredging impacts would be as described for Alternative 1, being very localized, but of substantially longer duration (approximately 27 weeks versus 14 weeks). The habitat would be altered to a greater degree under Alternative 2, converted from moderately deep to deep subtidal habitat.

Distances to thresholds for fish mortality, injury, and TTS would be the same for Alternative 2 as for Alternative 1 (refer to Table 3-9). For fishes without a swim bladder (e.g., sharks), no thresholds are exceeded beyond 1 meter from the pile. Other threshold distances are as follows:

- For the 24-inch octagonal concrete piles, the potential for mortality would only exist at less than 1 meter from the pile, and potential injury thresholds would not extend more than 6 feet (2 meters) from the pile. The potential for TTS would exist within 108 feet (33 meters) from the pile.
- For the 24-inch steel pipes, the potential for mortality would exist within 33 feet (10 meters). Potential injury thresholds would extend to 49 feet (15 meters), and the potential for TTS would exist within 208 meters.

As the foregoing indicates, relatively small portions of the project area would be affected, and the effects on fisheries would be temporary, limited to the duration of sound-generating activities. These impacts would be considered less than significant.

Essential Fish Habitat

Alternative 2 would eliminate approximately 5 acres of shallow subtidal benthic habitat, converting it to moderately deep and deep subtidal habitat. Subsequent to dredging, the floating dry dock and accessory structures would shade approximately 2.1 acres that have been converted to deep subtidal habitat. Given the depths of excavation, habitat values would be degraded, probably for several years before sediment characteristics and fish, invertebrate, and microbial communities would approach those of the surrounding deep subtidal areas that have been dredged in the past. These are considered adverse effects on EFH under the MSFCMA and would require consultation with NMFS prior to implementation of Alternative 2 (see Appendix D).

The effects of shading in deep subtidal habitat would be relatively minor given the attenuation of light with depth (Merkel & Associates 2014). Effects of the new mooring dolphin structures on water circulation would be minor, if any, given the prevalence of piers and other barriers to circulation such as the National City Marine Terminal.

Impacts from dredging and pile-driving activities of Alternative 2 would be the same as described for other fish communities in the fisheries discussion above. Namely, dredging activities would remove EFH (eelgrass) and, as previously described, convert shallow subtidal habitat to moderately deep and deep subtidal habitat. Noise associated with dredging activities would temporarily displace EFH species within a limited scope, although no fish are expected to be injured. Other effects would occur from increased suspended sediments and turbidity and increased underwater noise levels from pile-driving activities. These impacts would result in minimal adverse effects per the MSFCMA (warranting consultation with NMFS) but are not considered significant under NEPA. As previously described, on 14 April 2020, NMFS

stated that there is no objection to the Navy's proposed compensatory mitigation and NMFS has no additional EFH Conservation Recommendations for the Proposed Action at this time (see Appendix D).

Benthic Invertebrates

The impacts of Alternative 2 on benthic invertebrates would be similar to, but more extensive and/or persistent than, those of Alternative 1. In particular, dredging would deeply excavate and eliminate moderately shallow subtidal benthic habitat and the associated invertebrate community within a 2.13-acre footprint. Recolonization and recovery, to the point of resembling the disturbed condition of surrounding (previously dredged) deep subtidal habitat, would probably take at least several years. The impacts of mooring dolphin construction and emplacement of the dry dock and associated structures on invertebrate communities would be minor from the perspective that they would occur on deeply excavated substrate that lacks an invertebrate community, at least initially. The habitat will be too deep (light levels are too low) to be significantly affected by shading, whereas the structures of the mooring dolphin would be colonized, enhancing invertebrate biomass and diversity (Merkel & Associates 2014). As discussed for Alternative 1, sediment disposal would have temporary impacts on the invertebrate community at the disposal site(s). Collectively the impacts of Alternative 2 are considered less than significant because they affect a small portion (0.2 percent) of the moderately deep subtidal habitat of San Diego Bay (Navy and POSD 2013) and would be partially ameliorated over time with establishment of the deep subtidal benthic and piling-associated invertebrate communities.

Invasive Species

As previously described the floating dry dock would be procured by proposed floating dry dock would be procured by MGBW, constructed at a shipyard outside of San Diego, and then barged to the existing MGBW maintenance piers location (refer to Section 2.3.3.7, *Floating Dry Dock Emplacement*). Prior to transport the floating dry dock would be cleaned and coated with antifouling paint/coating. Upon arrival to NBSD, the floating dry dock would be inspected and cleaned again, if necessary, prior to emplacement.

The operation of the floating dry dock would not result in any known impact related to the introduction of invasive species. Although there is a potential for invasive species (e.g., *Undaria pinnatifida*) to be introduced via attachment on boat hulls, the increase in ship traffic attributable to the floating dry dock would be negligible as it is anticipated that the floating dry dock would be used to the Pacific Fleet. The Navy would continue to comply with the *Regional Biosecurity Plan for Micronesia and Hawaii* as well as all implementation strategies regarding ballast water, hull fouling, and invasive species detection and response from the *Final Integrated Natural Resources Management Plan Naval Base San Diego (June 2014)* and *San Diego Bay Integrated Natural Resources Management Plan (March 2013)*.

With implementation of all applicable BMPs and avoidance and minimization measures, no significant impact on biological resources would result under Alternative 2.

3.3.3.6 Alternative 3 Potential Impacts

Under Alternative 3 two floating dry docks would be installed concurrently at the south berth of the Mole Pier and the southern extent of NBSD near the existing MGBW maintenance piers. Sound levels associated with dredging as well as pile extraction/installation activities at the two locations would be similar to those previously described for Alternative 1 and Alternative 2 (refer to Table 3-6). Potential turbidity impacts at the two locations from dredging and pile extraction/installation would also be similar to those previously described for Alternative 1 and Alternative 2. These plumes are expected to settle out of the water column within several hours. Impacts on the benthic fish and invertebrate communities

would also be additive. As described for Alternative 1 and Alternative 2 the benthic community would gradually be colonized by the organisms that inhabit the surrounding areas. Alternative 3 would have similar impacts on birds as Alternative 1 and Alternative 2, which would generally be minor as bird use of the area is relatively low (Navy and POSD 2013). The analysis of acoustic impacts associated with pile extraction/installation follows the same methodology as described for Alternative 1 and Alternative 2, using NMFS-approved thresholds and models (NMFS 2018a, 2018b). The number of Level B takes for marine mammals under Alternative 3 would be additive between Alternative 1 and Alternative 2 (i.e., 480 Level B takes of California sea lions). As described for Alternative 1 and Alternative 2, with the implementation of all appropriate BMPs described in Table 2-3, as well as avoidance and minimization measures described above, impacts to biological resources would be less than significant.

3.4 Airborne Noise

This discussion of airborne noise includes the types or sources of airborne noise and the associated sensitive receptors in the human environment. Airborne and underwater noise in relation to biological resources and wildlife species is discussed in the Section 3.3, *Biological Resources*.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. The perception and evaluation of sound involves three basic physical characteristics:

- Intensity – the acoustic energy, which is expressed in terms of sound pressure, in dB
- Frequency – the number of cycles per second the air vibrates, in Hertz
- Duration – the length of time the sound can be detected

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and the sensitivity of the individual. While aircraft are not the only sources of noise in an urban or suburban environment, they are readily identified by their noise output and are given special attention in this EA.

3.4.1 Basics of Sound and A-Weighted Sound Level

The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times higher than those of sounds that can barely be detected. This vast range means that using a linear scale to represent sound intensity is not feasible. The dB is a logarithmic unit used to represent the intensity of a sound, also referred to as the sound level. All sounds have a spectral content, which means their magnitude or level changes with frequency, where frequency is measured in cycles per second or Hertz. To mimic the human ear's nonlinear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies to replicate human sensitivity. It is common to add the "A" to the measurement unit in order to identify that the measurement has been made with this filtering process. In this discussion and analysis of airborne noise, the dB unit refers to A-weighted decibels (dBA). The human ear perceives changes in loudness on the logarithmic scale:

- 3 dB: Barely perceptible;

- 5 dB: Quite noticeable;
- 10 dB: Dramatic – twice or half as loud; and
- 20 dB: Striking – fourfold change.

Figure 3-6 (Cowan 1994) provides a chart of A-weighted sound levels from typical noise sources. Some noise sources (e.g., air conditioner, vacuum cleaner) are continuous sounds that maintain a constant sound level for some period of time. Other sources (e.g., automobile, heavy truck) are the maximum sound produced during an event such as a vehicle pass-by. Other sounds (e.g., urban daytime, urban nighttime) are averages taken over extended periods of time. A variety of noise metrics have been developed to describe noise over different time periods, as discussed below.

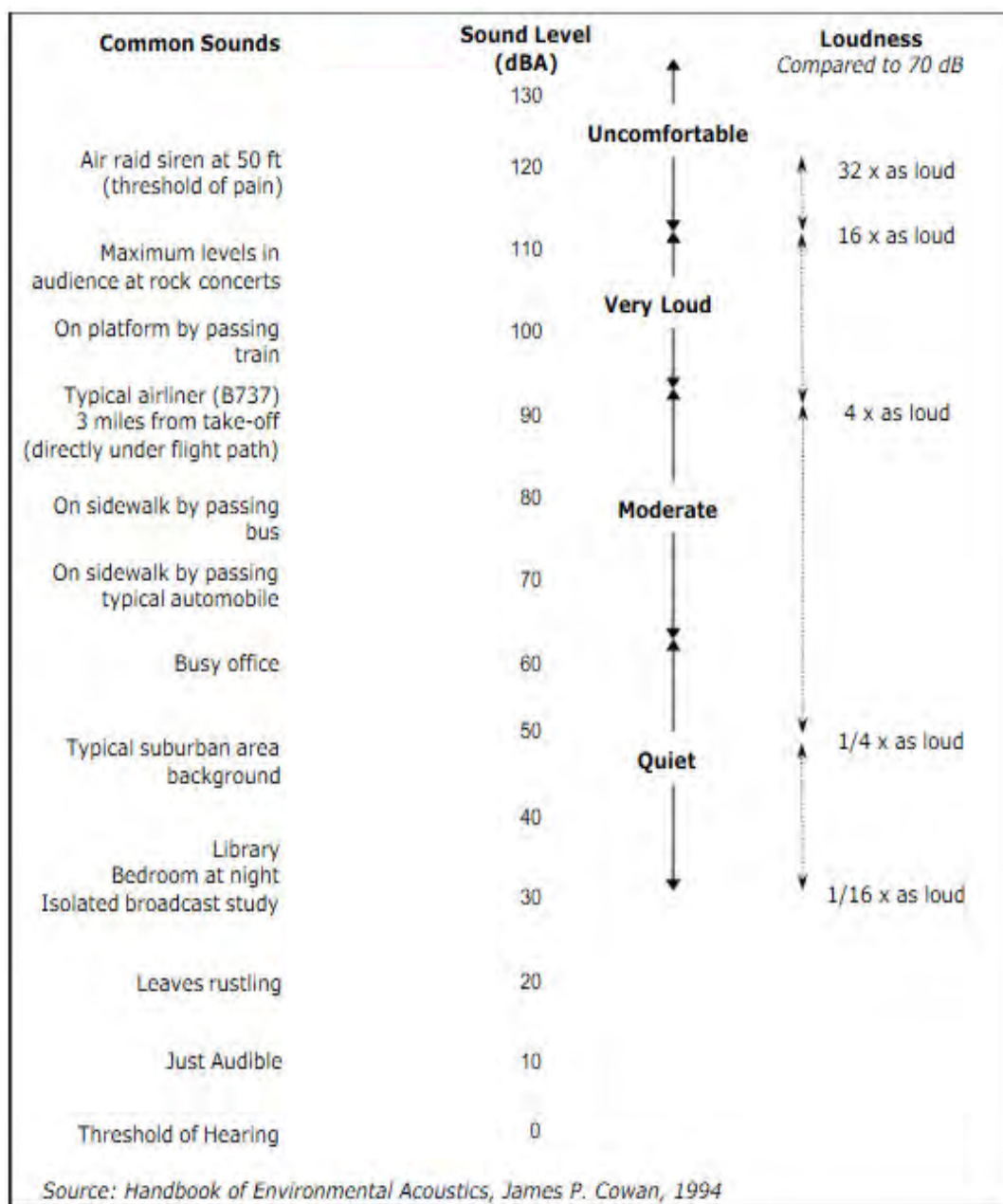
3.4.2 Noise Metrics

A “metric” is defined as a system for measuring or quantifying a particular characteristic of a subject. Because noise is a complex physical phenomenon, different noise metrics help to quantify the noise environment. While the day-night average sound level (DNL) and community noise equivalent level (CNEL) noise metrics are the most commonly used tools for analyzing noise generated at an airfield, the DoD has been developing additional metrics (and analysis techniques). These supplemental metrics and analytical tools provide more detailed noise exposure information for the decision process and improve the discussion regarding noise exposure.

3.4.2.1 Day-Night Average Sound Level

The DNL metric is the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. (acoustic night). DNL values are average quantities, mathematically representing the continuous sound level that would be present if all of the variations in sound level that occur over a 24-hour period were averaged to have the same total sound energy. The DNL metric quantifies the total sound energy received and is therefore a cumulative measure, but it does not provide specific information on the number of noise events or the individual sound levels that occur during the 24-hour day. DNL is the standard noise metric used by the U.S. Department of Housing and Urban Development, Federal Aviation Administration, USEPA, and DoD. Studies of community annoyance in response to numerous types of environmental noise show that DNL correlates well with impact assessments; there is a consistent relationship between DNL and the level of annoyance. Most people are exposed to sound levels of 50 to 55 dB DNL or higher on a daily basis. Research has indicated that about 87 percent of the population is not highly annoyed by outdoor sound levels below 65 dB DNL (Federal Interagency Committee on Urban Noise [FICUN] 1980).

Figure 3-6 A-Weighted Sound Levels from Typical Sources



3.4.2.2 Community Noise Equivalent Level

CNEL is a noise metric adopted as a standard by the State of California. The CNEL metric is similar to the DNL metric and is also an energy-averaged sound level measurement. DNL and CNEL provide average noise levels taking into consideration and applying penalties for annoyance from intrusive events that occur during evening and nighttime hours. Both DNL and CNEL are measures of cumulative noise exposure over a 24-hour period, with adjustments to reflect the added intrusiveness of noise during certain times of the day. However, while DNL considers one adjustment period, CNEL reflects two adjustment periods. DNL includes a single adjustment period for night, in which each aircraft noise event at night (defined as 10:00 p.m. to 7:00 a.m.) is counted 10 times. CNEL adds a second adjustment period where each aircraft noise event in the evening (defined as 7 p.m. to 10 p.m.) is counted three times. The nighttime adjustment is equivalent to increasing the noise levels during that time interval by 10 dB. Similarly, the evening adjustment increases the noise levels by approximately 5 dB.

3.4.2.3 Sound Exposure Level

The SEL metric is a composite metric that represents both the intensity of a sound and its duration. Individual time-varying noise events have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. SEL provides a measure of total sound energy of the entire acoustic event, but it does not directly represent the sound level heard at any given time. SEL captures the total sound energy from the beginning of the acoustic event to the point when the receiver no longer hears the sound. It then condenses that energy into a 1-second period of time and the metric represents the total sound exposure received. The SEL has proven to be a good metric to compare the relative exposure of transient sounds, such as aircraft overflights, and is the recommended metric for sleep disturbance analysis (DoD Noise Working Group 2009).

3.4.2.4 Maximum Sound Level

The highest A-weighted sound level measured during a single event where the sound level changes value with time is called the maximum A-weighted sound level or L_{max}. During time-varying noise events, the noise level starts at the ambient or background noise level, rises to the maximum level to the receptor, and returns to the background level as the noise recedes into the distance. L_{max} defines the maximum sound level occurring for a fraction of a second. SEL is usually greater than the L_{max} because it occurs over a longer period of time and the L_{max} occurs instantaneously.

3.4.2.5 Number of Events above a Threshold Level

The Number of Events above a Threshold Level metric provides the total number of noise events that exceed a selected noise level threshold during a specified period of time (DoD Noise Working Group 2009). Combined with the selected noise metric, L_{max} or SEL, the Number of Events Above metric is symbolized as N_{AXX}metric (NA = number of events above, XX = dB level, metric = L_{max} or SEL). For example, the L_{max} and SEL Number of Events Above metrics are symbolized as NA₇₅L_{max} and NA₇₅SEL, respectively, with 75 dB as the example dB level.

3.4.2.6 Equivalent Sound Level

A cumulative noise metric useful in describing noise is the equivalent sound level (Leq). Leq is the continuous sound level that would be present if all of the variations in sound level occurring over a specified time period were smoothed out as to contain the same total sound energy. The same calculation

for a daily average time period such as DNL or CNEL but without the penalties is a 24-hour equivalent sound level, abbreviated Leq(24). Other typical time periods for Leq are 1 hour and 8 hours.

3.4.3 Noise Effects

An extensive amount of research has been conducted regarding noise effects including annoyance, speech interference, sleep disturbance, noise-induced hearing impairment, nonauditory health effects, performance effects, noise effects on children, effects on domestic animals and wildlife, property values, structures, terrain, and archaeological sites. These effects are summarized below.

3.4.3.1 Annoyance

The primary effect of noise exposure on communities is long-term annoyance, defined by USEPA as any negative subjective reaction on the part of an individual or group. The scientific community has adopted the use of long-term annoyance as a primary indicator of community response and there is a consistent relationship between DNL/CNEL and the level of community annoyance (Federal Interagency Committee on Noise 1992).

3.4.3.2 Potential Hearing Loss

People living in high-noise environments for an extended period of time (40 years) can be at risk for hearing loss called noise-induced permanent threshold shift (NIPTS), which is a permanent change in hearing level, or threshold, caused by exposure to noise (USEPA 1982). According to USEPA (1974), changes in hearing level of less than 5 dB are generally not considered noticeable. There is no known evidence that a NIPTS of less than 5 dB is perceptible or has any practical significance for the individual affected. Furthermore, the variability in audiometric testing is generally assumed to be plus or minus 5 dB. The preponderance of available information on hearing loss risk is from the workplace with continuous exposure throughout the day for many years.

Based on a report by Ludlow and Sixsmith (1999), there were no major differences in audiometric test results between military personnel, who as children, had lived in or near installations where fast jet operations were based, and a similar group who had no such exposure as children. Hence, for the purposes of this EA, the limited data are considered applicable to the general population, including children, and are used to provide a conservative estimate of the risk of potential hearing loss.

DoD policy directive requires that hearing loss risk be estimated for the at-risk population, defined as the population exposed to DNL greater than or equal to 80 dB (DoD 2009). To assess the potential for NIPTS, the Navy generally uses the 80 dB DNL noise contour (or in California 80 dB CNEL) as a threshold to identify the exposed population who may be at the most risk of possible hearing loss from aircraft noise (USEPA 1982; DoD Noise Working Group 2009). However, it should be recognized that characterizing noise exposure in terms of DNL and CNEL overestimates hearing loss risk but suffices when nighttime operations are 5 percent or less than the total operations. When nighttime operations are greater than 5 percent, Leq(24) is recommended for calculating potential hearing loss since hearing loss is a physical phenomenon because of the sound level and independent of annoyance. Thus, the additional penalties applied by CNEL for evening and nighttime operations do not accurately portray the NIPTS. This EA calculates potential hearing loss using Leq(24) to achieve the accuracy necessary for the larger amount of nighttime and evening operations.

3.4.3.3 Speech Interference

Speech interference is a primary cause of annoyance for communities. Speech interference can cause disruption of routine activities, such as enjoyment of radio or television programs, telephone use, or family conversation, giving rise to frustration or irritation. In extreme cases, speech interference may cause fatigue and vocal strain to individuals who try to communicate over the noise. In this EA, speech interference is measured by the number of daily indoor events (from 7:00 a.m. to 10:00 p.m.) that exceed 50 dB Lmax at selected locations. This metric also accounts for noise level reduction provided by buildings with windows open or closed.

3.4.3.4 Classroom Criteria and Noise Effects on Children

Research suggests that environments with sustained high background noise can have variable effects, including effects on learning and cognitive abilities and various noise-related physiological changes. Research on the impacts of aircraft noise, and noise in general, on the cognitive abilities of school-aged children has received more attention in recent years. Several studies suggest that aircraft noise can affect the academic performance of school children. Physiological effects in children exposed to aircraft noise and the potential for health effects have been the focus of limited investigation (DoD Noise Working Group 2009).

Analyses for school-aged children are similar to speech interference by using the indoor number of events exceeding 50 dB Lmax, but also has the added restriction of using an outdoor equivalent noise level of 60 dB Leq(9). This value represents a level that a person with normal hearing can clearly hear a speaker (teacher) speaking at a level of 50 dB indoors in a classroom setting.

3.4.3.5 Sleep Disturbance

The disturbance of sleep is a major concern for communities exposed to nighttime noise. In this EA, sleep disturbance uses the SEL noise metric and calculates the probability of awakening. The results are then presented as a percent probability of people awakening (USEPA 1974).

3.4.3.6 Workplace Noise

In 1972, the National Institute for Occupational Safety and Health (NIOSH) published a criteria document with a recommended exposure limit of 85 dB as an 8-hour time-weighted average. This exposure limit was reevaluated in 1998 when NIOSH made recommendations that went beyond conserving hearing by focusing on the prevention of occupational hearing loss. Following the reevaluation using a new risk assessment technique, NIOSH published another criteria document in 1998, which reaffirmed the 85-dB recommended exposure limit (NIOSH 1998).

3.4.4 Nonauditory Health Effects

Studies have been conducted to examine the nonauditory health effects of aircraft noise exposure, focusing primarily on stress response, blood pressure, birth weight, mortality rates, and cardiovascular health. Exposure to noise levels higher than those normally produced by aircraft in the community can elevate blood pressure and also stress hormone levels. However, the response to such loud noise is typically short in duration; after the noise goes away, the physiological effects reverse and levels return to normal. In the case of repeated exposure to aircraft noise, the connection is not as clear. The results of most cited studies are inconclusive, and it cannot be conclusively stated that a causal link exists between aircraft noise exposure and the various type of nonauditory health effects that were studied (DoD Noise Working Group 2009).

3.4.4.1 Noise Effects on Children

A review of the scientific literature indicated that there has not been a tremendous amount of research in the area of aircraft noise effects on children. The research reviewed does suggest that environments with sustained high background noise can have variable effects, including effects on learning and cognitive abilities and various noise-related physiological changes. Research on the impacts of aircraft noise, and noise in general, on the cognitive abilities of school-aged children has received more attention in recent years. Several studies suggest that aircraft noise can affect the academic performance of schoolchildren. Physiological effects in children exposed to aircraft noise and the potential for health effects have been the focus of limited investigation (DoD Noise Working Group 2009).

3.4.4.2 Noise Effects on the Elderly

Based upon a study by the Harvard School of Public Health, older people exposed to noise, especially at higher levels, may experience an increased risk of hospitalization for cardiovascular disease (BMJ 2013). In particular, this study concluded a statistically significant association between exposure to aircraft noise and risk of hospitalization for cardiovascular diseases among older people living near airports.

3.4.5 Regulatory Setting

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dB over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dB and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dB. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits.

Land use compatibility with differing noise levels is regulated at the local level, although the federal government has established suggested land use compatibility criteria for different noise zones (FICUN 1980). Based on the FICUN Land Use Guidelines, residential areas and schools are considered compatible up to 65 dB DNL; outdoor recreational activities such as fishing and golfing are compatible with noise levels up to 70 dB DNL; and parks are compatible with noise levels up to 75 dB DNL (FICUN 1980).

The Noise Element of the City of San Diego General Plan provides land use and noise compatibility guidelines and amendments to noise elements of the City of San Diego's Plan were approved in 2015 (City of San Diego 2008, 2015). The City of San Diego has an exterior noise level standard of 65 dB CNEL for noise-sensitive land uses (e.g., residential areas, hospitals, child care facilities). This standard protects sensitive land uses such as these from high noise levels and guides the city's future planning decisions (City of San Diego 2007). The City of San Diego construction noise ordinance places a restriction of an average sound level (Leq) of 75 dB or less during the 12-hour period from 7:00 a.m. to 7:00 p.m. (City of San Diego 2010a). The ordinance also limits construction activity outside of these hours and during certain days (i.e., Sundays and major holidays) where it may create an excessive impact on neighboring sites (City of San Diego 2010a).

For listeners with normal hearing and fluency in the language, complete sentence intelligibility can be achieved when the signal-to-noise ratio (i.e., the difference between the speech level and the level of the interfering noise) is in the range of 15 to 18 dB (Lazarus 1990). The American National Standard Institute recommends at least a 15-dB signal-to-noise ratio in classrooms, to ensure that children with hearing

impairments and language disabilities are able to enjoy high speech intelligibility (American National Standards Institute [ANSI] 2002). As such, provided that the average adult male or female voice registers a minimum of 50 dB Lmax in the rear of the classroom, the American National Standard Institute standard requires that the continuous background noise level indoors must not exceed a Leq of 35 dB (assumed to apply for the duration of school hours).

3.4.6 Affected Environment

Many components may generate noise and warrant analysis as contributors to the total noise impact. The federal government supports conditions free from noise that threaten human health and welfare and the environment. Response to noise varies, depending on the type and characteristics of the noise, distance between the noise source and whoever hears it (the receptor), receptor sensitivity, and time of day. A noise sensitive receptor is defined as a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities often include residential dwellings, hospitals, nursing homes, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive cultural practices, some domestic animals, or certain wildlife species. Potentially noise-sensitive wildlife species are discussed in Section 3.3, *Biological Resources*.

NBSD can generally be characterized as an urban environment because of its location within and adjacent to the City of San Diego, City of National City, and POSD. The installation is surrounded by various noise sources, including marine terminals and industrial shipbuilding and repair facilities to the north and south; industrial, commercial, and residential uses to the east; and naval and POSD activities in San Diego Bay to the west. Harbor Drive (four-lane roadway) as well as railroad and light rail tracks also traverse the installation. The ambient noise environment at the NBSD waterfront area is affected by a variety of industrial activities, but the primary noise sources are ship repair equipment used on the piers; marine terminal operations; ship and vehicular traffic associated with NBSD and the surrounding Port District; and air traffic associated with Naval Air Station North Island, the U.S. Coast Guard Air Station, and San Diego International Airport. Navy and civilian personnel at NBSD are exposed to a diverse range of sounds associated with support of the NBSD mission.

Residences, schools, parks, hospitals, religious facilities, recreational facilities, open space, and parks are considered noise sensitive. NBSD is divided into two sections, referred to as the “wet side” and “dry side.” Most noise-sensitive land uses are on the dry side of the installation, including residences and a child care center (i.e., NBSD Child Development Center), which are within 0.5 mile and north of the piers. The closest religious facility (i.e., NBSD Chapel), on the western side of the installation, is within 0.5 mile and north of the piers. There are several parks, picnic areas, and outdoor recreational facilities scattered throughout NBSD. Mariner Park, which includes an outdoor amphitheater, is approximately 3,200 feet to the north of NBSD. The nearest school, Balboa Elementary School, is approximately 1 mile northeast, on the eastern side of I-5. The Naval Station San Diego Historic District is approximately 1,550 feet to the northwest of NBSD. In addition, there are residences, parks, and recreational facilities along the shores of San Diego Bay.

3.4.6.1 Installation Noise Environment

Airborne Noise

The City of San Diego noise ordinances specify separate noise limits for ambient noise and construction noise levels (City of San Diego 2010a). Therefore, in this EA, construction noise is analyzed independently of ambient noise levels at the project site and the surrounding area.

The NBSD waterfront area is an industrial area, where ambient (i.e., background) noise levels are typically higher than in residential areas. Common daytime outdoor ambient sound levels for industrial areas are up to 67 dB. Although the project site is located on Navy property and is not subject to municipal requirements; for comparison, the City of San Diego allows ambient noise levels up to 75 dB in industrial areas (City of San Diego 2007).

Six sensitive receptors to the east of the Mole Pier and a location south of the southern NBSD property boundary were identified as potential sensitive receptors. These points – including three residential areas, two schools, and a park located in National City – represent areas with a range of land uses that could be sensitive to elevated noise levels. In general, the points describe an arc to the southeast, east, and northeast around the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers.

Typical ambient noise levels range from 40 dB (quiet residential area) to 84 dB (diesel truck traveling at 40 miles per hour at a 50-foot distance) in urban areas (City of San Diego 2015). Vehicle traffic on roadways that provide the main access to NBSD (e.g., Harbor Drive and I-5) is the main source of ambient noise in the residential neighborhood of National City. Periodic aircraft noise from San Diego International Airport and military aircraft on Naval Air Station North Island is audible. Noise from trucks, along with periodic construction and repair of Navy vessels in the area (north of NBSD), also contributes to the ambient sound levels. The City of San Diego exterior and construction noise ordinances apply at the NBSD property boundary, which is approximately 1 mile northeast of the Mole Pier. The proposed dredge footprint extends from the shoreline and ends before entering the federal channel where barges and other ships routinely transit. The project site is also in the environment of a military waterfront where barges, military ships, ship and facility maintenance operations routinely occur. As such, the proposed nighttime dredging is consistent with current dredging standards in San Diego Bay and area military land uses. Because significant nighttime noise is currently not experienced, it will also not be experienced after the addition of this proposed dredging operation.

3.4.7 Environmental Consequences

Analysis of potential airborne noise impacts includes estimating likely airborne noise levels from the action alternatives and determining potential effects to nearby sensitive receptor sites.

The primary factor considered in determining the significance of noise effects is the extent or degree to which implementation of the alternatives would affect baseline noise environments. The primary issue of concern with regard to noise is the potential for impacts on humans and wildlife. Significant noise impacts would occur if implementation of the alternatives would have one or both of the following direct or indirect effects:

- Increase ambient outdoor CNEL levels at noise-sensitive land uses beyond the 65 dB CNEL land compatibility standard for residential, education, and health care land uses; or
- Establish noise-sensitive land use (e.g., residential, education, health care uses, places of worship, etc.) in areas exposed to outdoor ambient noise levels that are higher than the 65-dB CNEL land use compatibility standard.

Less stringent guidelines are applied to temporary noise sources that are restricted to daytime hours (e.g., most construction and demolition activities) unless they affect noise-sensitive land uses and result in CNEL levels more than 10 dB above the respective land use compatibility criteria.

Impact analysis in this section is limited to airborne noise and its impact on sensitive receptors. The significance of noise impacts on marine biological resources is considered in Section 3.3, *Biological Resources*.

3.4.7.1 Avoidance and Minimization Measures

Airborne noise associated with emplacement and operation of a floating dry dock(s) would be generally consistent with the industrial waterfront area and would not significantly alter the overall airborne noise environment. Noise from dredging is relatively quiet in comparison with San Diego Bay's ambient sound levels and the duration of the activity would be temporary. Similarly, demolition and construction noise would be generally consistent with the industrial nature of NBSD and would not significantly alter the overall noise environment. Therefore, none of the three action alternatives would require the need for avoidance and minimization measures to further reduce airborne noise within the NBSD region.

3.4.7.2 No Action Alternative

Airborne Noise

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to ambient airborne noise levels at NBSD. Industrial activities currently being conducted in the area would continue, and the area's ambient noise environment would remain unchanged. Therefore, no significant impacts due to the noise environment would occur with implementation of the No Action Alternative.

3.4.7.3 Alternative 1 Potential Impacts

Airborne Noise

Dredging activities at the south berth of the Mole Pier would produce noise from the dredging equipment, tugboats and barges, and human activity associated with the estimated 20 workers onsite. Dominant noise sources associated with dredging may include dredge engine and exhaust noise; crane engine and exhaust noise; rope noise and bucket water splash; and various noises associated with the boom and grab, the bucket hitting the bottom during dredge, and the bucket closing and opening during construction. No blasting would take place. Dredging operations would take place between 6:00 p.m. and 6:00 a.m., Monday through Friday, for a duration of approximately 14 weeks.

Noise emissions from mechanical dredging have several different temporal variants that result in short, sudden noise peaks. Often this noise is caused by the occasional scraping of a dredge bucket (e.g., clamshell shovel) along a deck or a sudden impulse sound level as the dredge bucket is opened and emptied onto the barge. Quantitative data for airborne noise levels associated with mechanical dredging are not readily available. Therefore, as a conservative measure in assessing potential noise from dredging activities, data (based on the use of a backhoe and clamshell shovel) were obtained from the Federal Highway Administration Roadway Construction Noise Model program, which identified noise levels from an operating backhoe as 73.6 dB Leq at 50 feet and 43.5 dB Leq at 1,600 feet (U.S. Department of Transportation [USDOT] 2006). With the occasional occurrence of a clamshell shovel dropping, the noise levels increased to 80.3 dB Leq at 50 feet and 51.0 dB Leq at 1,600 feet (USDOT 2006).

Demolition and construction activities required under Alternative 1 would generally occur on weekdays during daylight hours and would involve the use of standard construction equipment ranging from trucks and cranes to pile drivers, all of which would create noise. The tugboat used to move and position the crane barge would also generate some noise, but the noise would be consistent with the ambient noise environment characteristic of NBSD. The sound level of the impact pile driver during construction would

dominate and would almost exclusively determine the total sound level emanating from the south berth of the Mole Pier. While the maximum sound level of a piece of construction equipment may vary considerably depending on factors such as maintenance, age, activity, and load, most impact pile drivers generally produce a peak noise level of approximately 114.4 dB at a distance of 50 feet (NAVFAC SW 2018). Thus, when the impact pile driver is operating, it would be the predominant noise source, and it would determine the maximum noise levels in the project vicinity.

Noise levels decrease with increasing distance from the source. Under normal conditions when sound propagation is unhindered by intervening terrain, noise decreases approximately 6 dB with each doubling of the distance. This means that at a distance of approximately 100 feet from the pile driver location, the peak noise level would be approximately 108.4 dBA; at 200 feet, it would be 102.4 dBA; and so on. At a distance of 6,400 feet or about 1.2 miles, the peak noise level would be reduced to approximately 73 dB.

To consider potential noise impacts resulting from the emplacement of a floating dry dock at the south berth of the Mole Pier, three residential areas, two schools, and a park located in National City were identified for assessment. These sensitive receptors are located in a southeastern, eastern, and northeastern arc around the Mole Pier and reflect representative sensitive land uses in the immediate vicinity of NBSD (see Table 3-12).

Based on noise attenuation from distance alone, intermittent, exterior noise levels noise associated with impact pile driver use would be approximately 78 dB Leq at the nearest sensitive receptor. Additionally, with the intervening structures located between and blocking the line-of-sight between the project site and the nearest sensitive receptor, noise levels would be further reduced by between 5 and 10 dB (USDOT and Federal Transit Administration [FTA] 2006). Therefore, demolition, dredging, and construction, including overnight work, would result in intermittent noise levels above 65 dB. However, given the intermittent and temporary nature of these noise levels, no sensitive receptors would experience ambient outdoor noise levels greater than 65 dB DNL (i.e., over a 24-hour period). Further, construction activities would not conflict with the City of San Diego construction noise ordinance places a restriction of an average sound level (Leq) of 75 dB or less during the 12-hour period from 7:00 a.m. to 7:00 p.m. (City of San Diego 2010a). Therefore, noise-related impacts would be less than significant.

Table 3-12 Noise Levels at Representative Receptor Points in National City

<i>Receptor Point</i>	<i>Distance</i>		<i>Construction-Related Noise (dB)</i>
	<i>Miles</i>	<i>Kilometers</i>	
Residential (W 20th St & Wilson Ave)	0.8	1.3	75.86
Residential (W 17th St & Wilson Ave)	0.7	1.1	77.02
Residential (W Plaza Blvd & Hoover Ave)	0.8	1.3	75.86
National City Middle School	1.2	1.9	72.34
Kimball School	0.9	1.4	74.84
Kimball Park	1.0	1.6	73.93

Source: Navy 2016; Navy and POSD 2013

Barges transporting dredged sediments to a Nearshore Replenishment Site (or LA-5 ODMS) would also be a source of noise associated with the dredging operations. The sediment transport barges would join with existing vessel traffic in the San Diego Harbor Channel and noise levels would be comparable to ambient noise levels. However, ambient noise in San Diego Bay is characterized by commercial shipping, military vessel movement, and private vessel movement and the addition of one to two barge round trips

to a Nearshore Replenishment Site or LA-5 ODMDS for in-water disposal or to NBSD for drying and upland disposal. These barge trips would be consistent with existing airborne noise generation and would not create a noticeable increase in the number of ships or the sound levels associated with current vessel movements in San Diego Bay. Further, any noise resulting from the sediment transport barges would be transitory and temporary. As such, overall impacts from transporting the dredge material to a Nearshore Replenishment Site or LA-5 ODMDS would not be significant. Sediment disposal at Nearshore Replenishment Sites would occur offshore of coastal areas used for recreation; however, the noise generation associated with operation of the dredged sediment transportation would be functionally similar to that of operation of private fishing and recreational vessels typical in these areas. Sediment disposal at LA-5 ODMDS would occur offshore and out of range of perception of noise-sensitive receptors. Therefore, sediment disposal at a Nearshore Replenishment Site(s) or LA-5 ODMDS would not generate significant noise to affect sensitive receptors along the transportation route or at the selected disposal site.

Under the upland disposal option, dredged sediments would be transported to the CDF at NBSD, allowed to dry, and then transported via truck to the Otay Landfill located approximately 12.2 miles from NBSD via the San Diego regional road network. The most likely route from NBSD would include Harbor Drive, I-5, State Highway 54, and Interstate 805 (I-805). Each of these roadways is used by personal and commercial/industrial traffic and transportation of dredged sediments via truck to the Otay Landfill would be consistent with existing roadway airborne noise generation and would not create a substantial increase in the number of vehicles (see Section 3.5, *Transportation*) or the sound levels associated with traffic on the regional road network. This conclusion is consistent with the findings from the NEPA analysis for the NBSD Pier 12 Replacement Project (Navy 2011a), which assessed the generation and transport of approximately 13,000 cy of demolition and 479,455 cy of dredged sediment, more than seven times the amount of material that would be generated and potentially transported under Alternative 1. Further, the Otay Landfill is an existing permitted waste disposal facility and is not considered a noise-sensitive receptor. Therefore, upland sediment disposal would not generate significant noise to affect sensitive receptors along the transportation route or at the Otay Landfill.

Operationally, noise associated with ship maintenance at the floating dry dock would be consistent with the ambient noise environment of an industrial waterfront area. Noise generated at the south berth of the Mole Pier would be consistent with that produced from various ship support services, such as supplies and minor repair or maintenance, at NBSD. As such, given the context of the existing noise environment, the implementation of Alternative 1 would result in neither a long-term adverse impact on noise nor a significant increase in noise exposure at nearby sensitive receptors.

3.4.7.4 Alternative 2 (Preferred Alternative) Potential Impacts

Airborne Noise

Dredging activities at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would produce noise from the same dredging equipment, tugboats, barges, and human activity as described previously for Alternative 1. However, dredging operations would take place for a substantially longer duration of approximately 6 months (i.e., 27 weeks).

As with Alternative 1, construction activities required under Alternative 2 would also generally occur on weekdays during daylight hours and would involve the same standard construction equipment ranging from trucks and cranes to pile drivers, all of which would create noise. The duration for construction of the in-water and landside improvements, necessary to accommodate the floating dry dock, would be

approximately 6 months and would take place concurrently with the dredging activities, which would have an additive effect on airborne noise generation.

The nearest sensitive receptors to the southern edge of the NBSD property boundary include the same six sensitive receptors described for Alternative 1 (see Table 3-13). Other sensitive receptors in the vicinity include Mariner Park, Balboa Elementary School, and the Naval Station San Diego Historic District; however, these receptors are located farther from the project site (refer to Section 3.4.7.3). Based on noise attenuation from distance alone, intermittent, exterior noise levels noise associated with impact pile driver use would be approximately 78 dB Leq. Additionally, with the intervening structures located between and blocking the line-of-sight between the southern edge of the NBSD property boundary near the existing MGBW maintenance piers and the nearest sensitive receptors, noise levels would be further reduced by between 5 dB and 10 dB (USDOT and FTA 2006). This level of exterior noise is similar to that described for Alternative 1; however, as discussed previously, the overall duration of noise emissions would be longer under Alternative 2. Dredging and construction operations, including overnight work, would result in intermittent noise levels above 65 dB. However, given the intermittent and temporary nature of these noise levels, no sensitive receptors would experience ambient outdoor noise levels greater than 65 dB DNL (i.e., over a 24-hour period). Further, construction activities would not conflict with the City of San Diego construction noise ordinance places a restriction of an average sound level (Leq) of 75 dB or less during the 12-hour period from 7:00 a.m. to 7:00 p.m. (City of San Diego 2010a). Therefore, noise-related impacts would be less than significant.

Table 3-13 Noise Levels at Representative Receptor Points in National City

<i>Receptor Point</i>	<i>Distance</i>		<i>Construction-Related Noise (dB)</i>
	<i>Miles</i>	<i>Kilometers</i>	
Residential (W 20th St & Wilson Ave)	0.8	1.3	75.86
Residential (W 17th St & Wilson Ave)	0.8	1.3	75.86
Residential (W Plaza Blvd & Hoover Ave)	1.2	1.9	72.34
National City Middle School	1.4	2.2	71
Kimball School	0.9	1.4	74.84
Kimball Park	1.2	1.9	72.34

Source: Navy 2016; Navy and POSD 2013

Barges transporting dredged sediments to a Nearshore Replenishment Site (or LA-5 ODMDS) would also be a source of noise associated with the dredging operations. As described for Alternative 1, sediment transport barges would join with existing vessel traffic in the San Diego Harbor Channel and noise levels would be comparable to ambient noise levels (refer to Section 3.4.7.3 for a discussion of sediment transport and disposal noise). Therefore, sediment disposal at a Nearshore Replenishment Site(s) or LA-5 ODMDS would not generate significant noise to affect sensitive receptors along the transportation route or at the selected disposal site.

Under the upland disposal option, dredged sediments would be transported to the CDF at NBSD, allowed to dry, and then transported via truck to the Otay Landfill located approximately 12.2 miles from NBSD via the San Diego regional road network. The most likely route from NBSD would be the same as the route for Alternative 1 and would include Harbor Drive, I-5, State Highway 54, and I-805. Each of these roadways is used by personal and commercial/industrial traffic and transportation of dredged sediments via truck to the Otay Landfill would be consistent with existing roadway airborne noise generation and would not create a substantial increase in the number of vehicles (see Section 3.5, *Transportation*) or the sound

levels associated with traffic on the regional road network. This conclusion is consistent with the findings from the NEPA analysis for the NBSD Pier 12 Replacement Project (Navy 2011a), which assessed the generation and transport of approximately 13,000 cy of demolition and 479,455 cy of dredged sediment, a much greater amount of material than the amount that would be generated and potentially transported under Alternative 2. Further, the Otay Landfill is an existing permitted waste disposal facility and is not considered a noise-sensitive receptor. Therefore, upland sediment disposal would not generate significant noise to affect sensitive receptors along the transportation route or at the Otay Landfill. As such, given the context of the existing noise environment, the implementation of Alternative 2 would result in neither a long-term adverse impact on noise nor a significant increase in noise exposure at nearby sensitive receptors.

3.4.7.5 Alternative 3 Potential Impacts

Airborne Noise

The implementation of Alternative 3 would result in the construction of two floating dry docks and associated impacts of airborne noise would be similar in type to those described for Alternative 1 and Alternative 2, but additive. Noise emissions would occur for the same overall 6-month duration as proposed in Alternative 2; however, the intensity of airborne noise is likely to be greater than those described for Alternative 1 and/or Alternative 2 because construction activities at the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would occur concurrently. The primary noise that would be emitted from the project sites would be from the impact pile driver. However, as previously described for Alternative 1 and Alternative 2, noise emissions decrease as distance from the source increases. Peak noise levels reaching the sensitive receptors would be approximately 78 dB Leq based on noise attenuation from distance. Additionally, with the intervening structures located between and blocking the line-of-sight between the project site and the receptors, noise levels would be further reduced by between 5 and 10 dB (USDOT and FTA 2006). Therefore, as with Alternative 1 and Alternative 2, construction activities would result in intermittent noise levels above 65 dBA. However, given the intermittent and temporary nature of these noise levels, no sensitive receptors would experience ambient outdoor noise levels greater than 65 dB DNL (i.e., over a 24-hour period). Further, construction activities would not conflict with the City of San Diego construction noise ordinance, which places a restriction of an average sound level (Leq) of 75 dB or less during the 12-hour period from 7:00 a.m. to 7:00 p.m. (City of San Diego 2010a). Therefore, noise-related impacts would be less than significant.

As described for Alternative 1 and Alternative 2, barges transporting dredged sediments to a Nearshore Replenishment Site (or LA-5 ODMS) would also be a source of noise associated with the dredging operations. However, sediment transport barges would join with existing vessel traffic in the San Diego Harbor Channel and noise levels would be comparable to ambient noise levels (refer to Section 3.4.7.3 for a discussion of sediment transport and disposal noise). Therefore, noise associated with sediment disposal at a Nearshore Replenishment Site(s) or LA-5 ODMS would not generate significant noise to affect sensitive receptors along the transportation route or at the selected disposal site.

Under the upland disposal option, dredged sediments would be transported to the CDF at NBSD, allowed to dry, and then transported via truck to the Otay Landfill located approximately 12.2 miles from NBSD via the San Diego regional road network. The most likely route from NBSD would include Harbor Drive, I-5, State Highway 54, and I-805. Each of these roadways is used by personal and commercial/industrial traffic and transportation of dredged sediments via truck to the Otay Landfill would be consistent with

existing roadway airborne noise generation and would not create a substantial increase in the number of vehicles (see Section 3.5 *Transportation*) or the sound levels associated with traffic on the regional road network. This conclusion is consistent with the findings from the NEPA analysis for the NBSD Pier 12 Replacement Project (Navy 2011a), which assessed the generation and transport of approximately 13,000 cy of demolition and 479,455 cy of dredged sediment, a much greater amount of material than the amount that would be generated and potentially transported under Alternative 3. Further, the Otay Landfill is an existing permitted waste disposal facility and is not considered a noise-sensitive receptor. Therefore, upland sediment disposal would not generate significant noise to impact sensitive receptors along the transportation route or at the Otay Landfill. As such, given the context of the existing noise environment, the implementation of Alternative 3 would result in neither a long-term adverse impact on noise nor a significant increase in noise exposure at nearby sensitive receptors.

3.5 Transportation

This discussion of transportation includes all of the air, land, and sea routes with the means of moving passengers and goods. A transportation system can consist of any or all of the following: roadways, bus routes, railways, subways, bikeways, trails, waterways, airports, and taxis, and can be looked at on a local or regional scale.

Marine vessel circulation in San Diego Bay is regulated by the U.S. Coast Guard navigation standards and other general navigational standards, which are enforced by the San Diego Harbor Police. Compliance with the International Rules of the Road for lighting and day markers is also required. However, these are general standards and do not comprise a formal marine traffic system for large vessels.

Land traffic is commonly measured through average daily traffic and design capacity. These two measures are used to assign a roadway with a corresponding level of service (LOS). The LOS designation is a professional industry standard used to describe the operating conditions of a roadway segment or intersection. The LOS is defined on a scale of A to F that describes the range of operating conditions on a particular type of roadway facility. LOS A through LOS B indicates free flow travel. LOS C indicates stable traffic flow. LOS D indicates the beginning of traffic congestion. LOS E indicates the nearing of traffic breakdown conditions. LOS F indicates stop-and-go traffic conditions and represents unacceptable congestion and delay.

3.5.1 Affected Environment

NBSD is located in downtown San Diego close to I-5 and Interstate 15 (I-15), and can be accessed by an intercity and commuter rail line, the San Diego Trolley, Coaster Commuter Rail, Amtrak Intercity Rail, and local/express buses (Navy 2014a). The installation is situated on the eastern side of San Diego Bay, and landside access to the NBSD is provided by Harbor Drive, – a two-lane public road connecting the installation as it extends south along the eastern side of the bay.

Between I-5 and Navbase Way (near the NBSD entrance gate), Harbor Drive has 17,000 average daily trips (ADT) (City of San Diego 2010b). Within NBSD, Harbor Drive also serves as the main roadway along San Diego Bay, while 32nd Street extends along the uplands of the installation and is connected to Main Street. Landside access to the south berth of the Mole Pier is provided via Senn Street off of Surface Navy Boulevard. Parking for personal vehicles is available along Harbor Drive at designated lots.

San Diego Bay is actively used by commercial, recreational, and military vessels, and it has multiple facilities to serve boaters, including 18 public marinas, four private yacht clubs, 55 boat yards, over

8,280 recreational boat slips, and four naval complexes (Naval Base Point Loma, Naval Air Station North Island, Naval Amphibious Base Coronado, and NBSD), with multiple piers, a cruise ship terminal, and ferry service.

Access to the major piers and berthing areas in San Diego Bay is via the main channel, which is clearly buoyed and charted. While there is relatively little major commercial shipping traffic (approximately 40 cargo and cruise ships entering monthly; no more than about five per day), there is a large amount of recreational boat traffic. There is no formal control of the channel by the POSD; however, a harbor common radio channel is voluntarily used by large ships and the Navy. The Navy has a traffic monitor at NBSD. This monitor is used by all Navy ships while in the harbor, providing location data and proposed vessel navigational routes. Navy ships are berthed at NBSD, Naval Amphibious Base Coronado, Naval Base Point Loma, and Naval Air Station North Island.

Key elements of the water navigation system include the open bay, marine terminal, ship navigation corridor, main ship channel, Navy ship berthing/anchorage, restricted areas, boat navigation corridor, recreational craft berthing, commercial fishing berthing, and small craft anchorage and mooring. A ship navigation corridor extends from the mouth of San Diego Bay to the National City limit. The purpose of the ship navigation channel is to provide adequate draft for ship maneuverability, safe transit, and access to marine terminals, marine related industrial areas, and military bases. Pursuant to the Harbor Safety Plan (amended in 2005), ship corridors are maintained at adequate depths and widths to eliminate hazardous conflicts in the harbor among ships, small craft, and structures. Further, aquatic activities incompatible with vessel traffic in marked ship and boat channels and restricted area are prohibited.

The main ship channel, which is maintained by USACE, provides a depth of -47 feet MLLW and width that ranges from 600 to 2,000 feet from the San Diego Bay entrance to berthing areas on Naval Air Station North Island; a depth of -47 feet MLLW and widths varying from 600 to 1,900 feet from the berthing areas on Naval Air Station North Island to the Tenth Avenue Marine Terminal; and a depth of -37 feet MLLW and a width varying from 600 to 1,350 feet from the Tenth Avenue Marine Terminal down to National City Marine Terminal (POSD 2009). Naval vessels, including cruisers and amphibious assault ships, can travel as far south as NBSD.

Boat navigation corridors are those water areas delineated by navigational channel markers or by conventional waterborne traffic movements and are designated by their predominant traffic and general physical characteristics. Boat navigation corridors range from 6 to 21 feet in depth and provide access to the more remote areas of San Diego Bay. These channels are generally too shallow and too narrow to accommodate larger ships.

The remaining open waters of San Diego Bay are quite shallow, ranging in depth from 2 to 17 feet, and comprise a large portion of the bay. Shallow draft sailboats and power boats use areas for recreation and travel.

Uncontrolled boat anchorage is allowed in the open area of San Diego Bay, except where prohibited by other uses. Ship anchorage areas for ocean-going ships are located primarily in the area north of the "B" Street Pier, but include all of the navigable water of the harbor except designated channels, cable and pipeline areas, special anchorages, and Naval Restricted areas. Vessels anchoring in portions of the harbor, other than the areas discussed above, leave a free passage for other craft and are prohibited from unreasonably obstructing vessel approaches to the wharves in the harbor.

The major ships using the channel, other than merchantmen (approximately 40 per month), are Navy amphibious assault ships that are homeported at NBSD (these ships are assisted by tugs between their

berths and the San Diego-Coronado Bay Bridge and have steerage under pilot when they reach the berthing areas) and cruise ships that make port in San Diego Bay about 2 to 3 times weekly.

Beyond the dredging site and the San Diego Bay mouth, the affected environment would vary for each dredged sediment disposal option.

Nearshore Replenishment – Beneficial Reuse Option

Nearshore replenishment would involve removal of dredged sediment and relocation to a nearshore site. The nearshore replenishment option involves loading the dredged sediment into barges and transporting it to a Nearshore Replenishment Site for beneficial reuse. The Nearshore Replenishment Site would be located at one of the following sites: Naval Air Station North Island beach, located approximately 4 miles from the project site; Naval Base Coronado Silver Strand Boat Lanes (Naval Base Coronado Silver Strand Training Complex beach), located approximately 2.5 miles from the project site; or another suitable location[s] identified during the permitting process. For this option, the ROI would be vessel transportation with San Diego Bay and the Pacific Ocean.

Ocean Disposal Option

The ocean disposal option would involve loading dredged sediment into barges and transporting it using a single tug to LA-5 ODMDS rather than to one of two identified Nearshore Replenishment Sites to the south of San Diego Bay, as discussed above. LA-5 ODMDS is a designated offshore open-water disposal site located on the ridged slope of the continental shelf at a depth of approximately 100 fathoms (600 feet), 5.4 nautical miles from Point Loma, off the San Diego Coast.

Upland Disposal Option

Truck transportation between NBSD and the Otay Landfill would most likely proceed south along Harbor Drive to I-5, to Highway 54, to I-805, and finally to Main Street. Of this route, the portion of I-5 between Harbor Drive and Highway 54 and a portion of I-805 between Highway 54 and Telegraph Canyon Road is operating at LOS F, while all other portions of the route are operating at LOS A-D (SANDAG 2008b). The Caltrans 2017 Traffic Census for the State Highway System reports 128,066 ADT for the section of I-5 operating at LOS F and 252,667 ADT for the section of I-805 operating at LOS F (Caltrans 2018).

3.5.2 Environmental Consequences

Impacts on ground traffic and transportation are analyzed by considering the possible changes to existing traffic conditions and the capacity of area roadways from proposed increases in commuter and construction traffic.

For the purpose of this analysis, a significant impact on landside vehicle transportation would reduce the LOS of a given roadway to an F rating or permanently add vehicle trips to a roadway currently assigned to LOS F that would demonstrate exacerbation of traffic congestion. A significant impact on vessel transportation would occur if implementation of the alternatives would result in substantial reduction in current safety levels in terms of vessel maneuvering, vessel congestion, recreational boat access, or commercial fishing activity.

3.5.2.1 Avoidance and Minimization Measures

Traffic associated with emplacement and operation of a floating dry dock(s) would be generally consistent with the existing conditions at NBSD and the surrounding vicinity. In particular, construction equipment/materials delivery trucks would be similar to the existing industrial waterfront character and

associated truck traffic at NBSD. Under the upland disposal option for dredged sediments, between 7,177 truck trips (Alternative 1) and 20,927 truck trips (Alternative 3) would be required. These trips would be scheduled such that they avoid the weekday and weekend peak hour traffic periods along local and regional roads and highways. No other avoidance and minimization measures would be necessary to further reduce transportation impacts within the NBSD region.

3.5.2.2 No Action Alternative

Under the No Action Alternative, the emplacement and operation of a floating dry dock, including all required dredging and sediment disposal as well as all required demolition and construction activities, would not occur and there would be no change to landside traffic conditions or vessel operations at NBSD. Therefore, no significant short-term or long-term impacts on traffic would occur with implementation of the No Action Alternative.

3.5.2.3 Alternative 1 Potential Impacts

Under Alternative 1, landside traffic impacts would include construction work commutes and construction equipment/materials deliveries that do not arrive via barge on the water-side of the south berth of the Mole Pier. Construction workers would arrive at the Harbor Drive Gate 9 entrance and proceed via West 8th Street, Cummings Road, and Mole Road to parking adjacent to the south berth of the Mole Pier. Additional parking exists along Harbor Drive near the entrance gate. The estimated 20 construction workers (conservatively assumed to be arriving via single occupancy personal vehicle) would likely commute during peak hour traffic periods (i.e., typically between the hours of 7:00 a.m. and 9:00 a.m. as well as 4:00 p.m. and 6:00 p.m.); however, these commutes would add a negligible amount of daily trips to Harbor Drive totaling to less than 1 percent of the existing ADT along that roadway. Additionally, these construction worker trips would be temporary, lasting for a period of approximately 28 weeks. Construction equipment/materials delivery would occur at various times throughout the day. Given the limited number of piles and the limited area of pier deck proposed for demolition and construction, daily construction vehicle trips would be minimal. As with construction worker trips, truck trips associated with construction equipment/materials delivery as well as demolition debris hauling would be temporary. Additionally, landside construction equipment would be stored onsite adjacent to the south berth of the Mole Pier for the duration of the demolition and construction to limit construction-related truck trips. Given the small number of construction worker and other construction-related trips needed for landside access relative to existing traffic demand along Harbor Drive, landside traffic impacts would be negligible.

Under Alternative 1, one or a combination of the following disposal options would occur.

Nearshore Replenishment – Beneficial Reuse Option

For this option, the ROI would be vessel transportation within San Diego Bay and south from the bay mouth to one or more of the Nearshore Replenishment Sites. The principal difference between the individual replenishment sites is the distance of transit from the bay mouth to selected disposal site.

The primary source of traffic-related impacts under the nearshore replenishment option would be vessel transportation within San Diego Bay and Pacific Ocean. Under this option, Alternative 1 involves loading the 86,121 cy of dredged sediment into barges and transporting the material to a Nearshore Replenishment Site for beneficial reuse. The maximum daily dredging production rate is expected to be 1,231 cy. The Nearshore Replenishment Site would be located at Naval Air Station North Island, approximately 4 miles from the project site; Naval Base Coronado Silver Strand Boat Lanes (Naval Base

Coronado Silver Strand Training Complex beach), located approximately 2.5 miles from the project site; or another suitable location identified during the permitting process.

The roundtrip durations from the dredging site to the Nearshore Replenishment Site would vary depending on the site selected (5 to 6 hours for Naval Air Station North Island, and 10 to 12 hours for Naval Base Coronado Silver Strand Boat Lanes). Reloading each trip would take another 6 to 8 hours. Barges would be equipped with electronic tracking devices to document that material releases occurred within the disposal site boundaries, as specified in the proposed dredging permit. Approximately two barge trip per day would be necessary over the approximately 14-week duration to transport the dredged sediment from the Mole Pier to the selected Nearshore Replenishment Site (assuming that the contractor uses two 1,000-cy-capacity barges). Project barge tug/barge traffic levels in San Diego Bay and the Pacific Ocean would be temporary and negligible in comparison to the approximately 40 cruise and cargo ship trips per month as well as regular military vessel, commercial fishing, and personal recreational vessel traffic. Further, project tug/barge traffic would abide by existing charts and buoyed navigation channels. Therefore, there would be no significant impacts on vessel transportation as a result of Alternative 1.

Ocean Disposal Option

For this option, the ROI would be vessel transportation within San Diego Bay and the Pacific Ocean between NBSD and LA-5 ODMDS.

The primary source of traffic-related impacts under the ocean disposal option would be vessel transportation within San Diego Bay and Pacific Ocean. The ocean disposal option would involve loading the 86,121 cy of dredged sediment into a barge and transporting it to LA-5 ODMDS. As with the beneficial reuse option, approximately two barge trip per day would be necessary over the approximately 14-week duration to transport the dredged sediment with one tug and barge loading at the dredge site while the other is in transit to and from LA-5 ODMDS.

Round trip from the Mole Pier to LA-5 ODMDS is expected to take approximately 10 to 12 hours and reloading each trip would take another 6 to 8 hours. The barges would be equipped with electronic tracking devices to document that material releases occur within the disposal site boundaries. Project barge tug/barge traffic levels in San Diego Bay and Pacific Ocean would be temporary and negligible in comparison to the approximately 40 cruise and cargo ship trips per month as well as regular military vessel, commercial fishing, and personal recreational vessel traffic. Further, project tug/barge traffic would abide by existing charts and buoyed navigation channels. There would be no significant impacts on vessel transportation as a result of Alternative 1.

Upland Disposal

For this option, the ROI would be landside truck transit from the Mole Pier dredging site to the NBSD CDF, and then from the Navy drying facility to the Otay Landfill.

The primary source for traffic-related impacts under the upland disposal option would be truck trips between NBSD and the upland disposal site at the Otay Landfill. The upland disposal option would involve loading the 86,121 cy of dredged sediment into 12-cy-capacity trucks and transporting the material to a designated site such as the Otay Landfill, located approximately 11.6 miles (round trip) from NBSD, the nearest upland CDF. Transporting sediment from the upland CDF to the Otay Landfill would require approximately 7,177 truck trips over the duration of Alternative 1, as governed by the rate of drying of sediment to a point where it is suitable for transport and disposal. These truck trips would compose less than 1 percent of the existing ADT along the haul route, including I-5 and I-805. Additionally, truck trips

would avoid peak hour travel times along local and regional roads and highways, including I-5 and I-805. Therefore, there would be no significant impacts on traffic as a result of Alternative 1.

3.5.2.4 Alternative 2 (Preferred Alternative) Potential Impacts

Landside traffic under Alternative 2 would include construction work commutes and construction equipment/materials deliveries that do not arrive via barge on the water-side. Construction workers would arrive at the West 19th Street Gate 53 entrance and proceed via West 19th Street and Womble Street to parking adjacent to the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Additional parking exists along Harbor Drive near the entrance gate. The estimated 20 construction workers (conservatively assumed to be arriving via single occupancy personal vehicle) would likely commute during peak hour traffic periods (i.e., typically between the hours of 7:00 a.m. and 9:00 a.m. as well as 4:00 p.m. and 6:00 p.m.); however, these commutes add a negligible amount of daily trips to Harbor Drive, totaling to less than 1 percent of the existing ADT along that roadway. Additionally, these construction worker trips would be temporary, lasting for a period of approximately 8 months. Construction equipment/materials delivery would occur at various times throughout the day. Given the number of piles and the area of pier deck proposed for construction under Alternative 2, the number of daily construction vehicle trips would be moderate. As with construction worker trips, truck trips associated with construction equipment and/or materials delivery would be temporary. Landside construction equipment would be stored onsite adjacent to the southern edge of the NBSD property boundary near the existing MGBW maintenance piers for the project duration to limit construction-related traffic demand. Given the small number of construction worker and equipment transport trips needed for landside access to the southern edge of the NBSD property boundary near the existing MGBW maintenance piers relative to existing traffic demand along Harbor Drive, landside traffic impacts would be negligible.

Under Alternative 2, one or a combination of the previously described dredged sediment disposal options would occur. Transportation impacts would differ from those of Alternative 1 because of a substantial increase in the amount of dredged sediment. There would be similar traffic-related impacts in the San Diego Bay and Pacific Ocean from the same type and size of vessel that would transport dredged sediment under the nearshore replenishment option and the ocean disposal option. However, the duration for transporting and disposing the dredged sediment would increase to approximately 6 months because of the greater volume of dredge material required under Alternative 2 (i.e., 165,000 cy). Estimated time intervals and distances for travel between the Nearshore Replenishment Sites and the LA-5 ODMDS would be similar for Alternative 2, and the barges would similarly be equipped with electronic tracking devices to document the material releases occur within the disposal site boundary. The maximum daily dredge production rate would be 1,223 cy. Traffic-level impacts would be temporary and negligible in comparison with the approximately 40 cruise and cargo ship trips per month as well as military vessel, commercial fishing, and personal recreational vessel traffic. Further, project tug/barge traffic would abide by existing charts and buoyed navigation channels. There would be no significant impacts on vessel transportation as a result of Alternative 2.

For the upland disposal option, the primary source for traffic-related impacts would be truck trips between NBSD and upland disposal site at the Otay Landfill. This option would involve loading the 165,000 cy of dredged sediment into 12-cy-capacity trucks and transporting the material to a designated site. Transporting sediment from the upland CDF to the Otay Landfill would require approximately 13,750 truck trips, which would be spread across the approximately 8-month construction period and potentially beyond, depending on drying time. However, as with Alternative 1, truck trips would avoid

peak hour travel times along local and regional roads and highways, including I-5 and I-805. Therefore, there would be no significant impacts on traffic as a result of Alternative 2.

3.5.2.5 Alternative 3 Potential Impacts

The implementation of Alternative 3 would result in the construction of two floating dry docks and associated impacts on water resources would be similar in type to those described for Alternative 1 and Alternative 2, but additive. Construction material deliveries and demolition debris would be transported landside via truck. Dredged materials would be transported via barge to pre-determined sediment disposal sites at either the Nearshore Replenishment Site or LA-5 ODMDS. If sediment characterization and chemistry analyses determine that the dredged material must be disposed of at the certified upland disposal site at Otay Landfill, then approximately 7,177 truck trips would be required for the dredged sediment from the south berth of the Mole Pier and approximately 13,750 truck trips would be required for dredged sediment from the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Therefore, under Alternative 3, approximately 20,927 truck trips would be required to transport the dredged materials for the upland disposal option. As previously described, NBSD and the surrounding vicinity are an industrial area that receives numerous truck trips per day. The truck trips that may be required for the upland disposal option under Alternative 3 would be consistent with the industrial character of the Navy installation and would also be temporary in nature. Additionally, truck trips would avoid peak hour travel times along local and regional roads and highways, including I-5 and I-805. Therefore, there would be no significant impacts on traffic as a result of Alternative 3.

3.6 Hazardous Materials and Wastes

This section discusses hazardous materials, hazardous waste, toxic substances, and contaminated sites.

3.6.1 Regulatory Setting

Hazardous materials are defined by 49 CFR Section 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR Part 173.” Transportation of hazardous materials is regulated by USDOT regulations.

Hazardous wastes are defined by CERCLA and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (42 19 U.S.C. Section 6901 *et seq.*, as amended by the Hazardous and Solid Waste Amendments), as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may 1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These wastes are called universal wastes and their associated regulatory requirements are specified in 40 CFR Part 273. Four types of waste are currently covered under the universal wastes regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps, such as fluorescent light bulbs.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM),

polychlorinated biphenyls, and lead-based paint. USEPA is given authority to regulate special hazard substances by the TSCA. Asbestos is also regulated by USEPA under the CAA and CERCLA.

Hazardous materials and wastes are also controlled under the California Code of Regulations and these regulations are implemented by the California Environmental Protection Agency Department of Toxic Substances Control and the local Certified Unified Program Agency. The San Diego County Department of Environmental Health acts as the Certified Unified Program Agent under authorization from the California Environmental Protection Agency to implement state environmental requirements. The Navy is required to comply with these acts and all DoD requirements, as well as management plans specific to NBSD.

EPCRA (42 U.S.C. Section 11001 *et seq.*) includes four major provisions:

1. Emergency planning (Sections 301–303)
2. Emergency release notification (Section 304)
3. Hazardous chemical storage reporting requirements (Sections 311–312)
4. Toxic chemical release inventory (Section 313)

Section 311 of EPCRA requires that facilities have Safety Data Sheets for chemicals held above certain quantities, and that they submit either copies of these sheets or a list of the chemicals held to the Local Emergency Planning Committee and local fire department. Facilities that need to report EPCRA Section 311 must also submit an annual inventory report (Tier I or Tier II form) for the same chemicals. This inventory report must be submitted to the State Emergency Response Commission and local fire department by 1 March of each year. The information submitted under Sections 311 and 312 is available to the public from the Local Emergency Planning Committees and State Emergency Response Commissions. Any hazardous materials and wastes generated dredging activities would be subject to installation-wide EPCRA reporting.

3.6.2 Affected Environment

The Navy has implemented a strict Hazardous Material Control and Management Program and a Hazardous Waste Minimization Program for all activities. These programs are governed Navy-wide by applicable Office of the Chief of Naval Operations Instructions and at the installation by specific instructions issued by the Base Commander. The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes.

3.6.2.1 Hazardous Materials

Industrial activities at NBSD require the installation to use, handle, and store hazardous materials, including oils, lubricants, cleaners, hydraulic fluids, and fuels (i.e., gasoline and diesel) (Navy 2012a).

3.6.2.2 Hazardous Waste

Industrial activities generate various quantities of hazardous wastes, such as oils, lubricants, hydraulic fluids, paint, paint thinners, cleaners, degreasers, solvents, and batteries. NBSD is a large-quantity generator of hazardous wastes. A large-quantity generator generates more than 2,200 pounds (1,000 kilograms) of hazardous waste, or more than 2.2 pounds (1 kilogram) of acutely hazardous waste, per month (Navy 2012a).

3.6.2.3 Special Hazards – Asbestos-Containing Materials, Lead Based Paint, Polychlorinated Biphenyls

Buildings constructed before 1970 are more likely to contain ACM. Pipe or other insulation, ceiling tiles, exterior siding, roof shingles, and sprayed-on soundproofing are some of the materials found in older buildings that may contain asbestos. Buildings built before 1978 may contain lead-based paint (Navy 2006).

3.6.2.4 Defense Environmental Restoration Program

As of 2011, 24 active Installation Restoration Program sites were identified at NBSD. Of these sites, 8 (Sites 3, 5, 7, 8, 9, 11, 12, and 13) have been closed and require no further action. Sites 14, 15, 16, and 19 were never officially established because these sites were termed Solid Waste Management Units under the Resource Conservation and Recovery Act before being implemented in the Installation Restoration Program. The remaining sites (Sites 1, 2, 4, 6, 10, 17, 18, 20, 22, 23, and 24), including Munitions Response Program Site 100, continue under various stages of investigation and remedial action and will remain open until the nature and extent of contamination is fully characterized, or the necessary cleanup actions completed. The Navy has also identified 30 Solid Waste Management Units, which have since been closed with regulatory concurrence (Navy 2014a).

3.6.3 Environmental Consequences

The hazardous materials and wastes analysis contained in the respective sections address issues related to the use and management of hazardous materials and wastes as well as the presence and management of specific cleanup sites at NBSD.

Impacts from hazardous materials and hazardous wastes would occur if implementation of the Proposed Action would increase human health risks or environmental exposure as a result of the storage, use, transportation, or disposal of these substances. The significance of impacts associated with hazardous materials and wastes is based on the toxicity of the substance, the quantity of the substance involved, the risk of exposure, and the method of disposal.

3.6.3.1 Avoidance and Minimization Measures

The avoidance and minimization measures that would be implemented to address hazards and hazardous materials would be identical those described in Section 3.2, *Water Resources*. These avoidance and minimization in demolition and construction activities limit potential impacts related to hazardous materials and wastes.

3.6.3.2 No Action Alternative

Under the No Action Alternative, emplacement and operation of a floating dry dock, including all required dredging and sediment disposal as well as all required demolition and construction activities, would not occur and there would be no change to hazardous materials and wastes at NBSD.

3.6.3.3 Alternative 1 Potential Impacts

The ROI for hazardous materials and hazardous wastes for Alternative 1 is NBSD and San Diego Bay. Alternative 1 would involve dredging the south berth of the Mole Pier to an operational depth of -55 feet MLLW. The total estimated volume of dredged sediment would be 86,121 cy.

Sediment samples from the Mole Pier dredging footprint are currently being collected and tested in accordance with regulations in 40 CFR Parts 220–228. The forthcoming sediment characterization report will be provided to USEPA and USACE for review and comment on potential sediment disposal options. The sediment characterization and chemistry tests will include analyses to assess whether the sediment meets the allowable parameters for unconfined ocean disposal. Sediments are expected to be consistent across the entire dredge footprint and are expected to exhibit the same characteristics and be found suitable for unconfined aquatic disposal through Tier II Green Book testing results to be verified by USEPA and USACE (See Section 3.2, *Water Resources*). However, if sediment testing results show that hazardous substances are present in the dredged sediment, an Accident Prevention Plan would be required. Additionally, all dredged sediment disposal operations performed for Alternative 1 would comply with CWA Section 404 and would be in accordance with a dredging permit issued by USACE, and a CWA Section 401 Water Quality Certification from the San Diego RWQCB. If hazardous substances are present in the dredged sediment, avoidance and minimization measures would be taken to prevent adverse impacts from hazardous materials or substances.

Demolition and construction contractors would be required to park their vehicles within an on-shore staging area, where they would be allowed to store fuels for small portable equipment use following approval from the NBSD Public Works Office and Fire Department (Navy 2016). No vehicle fueling or maintenance would take place at the project site (Navy 2016). Contractors would be subject to all federal, state, and San Diego County requirements for hazardous materials and hazardous waste management and would be required to follow the Hazardous Waste Management Plan (HWMP) (Navy 2016). In addition, a site-specific construction SWPPP would be developed and implemented by the demolition and construction contractor that would incorporate BMPs designed to minimize the potential for hazardous material releases during demolition and construction activities. Any hazardous materials and wastes generated during construction and operational activities would also be subject to installation-wide EPCRA 312 and 313 reporting requirements (Navy 2016).

Operationally, contractors working on the floating dry dock would be permitted to store hazardous materials and wastes associated maintenance activities, subject to the conditions in the HWMP and all applicable federal, state, and County of San Diego requirements (Navy 2016). These regulations include the Resource Conservation and Recovery Act (RCRA); U.S. Department of Transportation (DOT) Hazardous Materials Regulations (CFR Title 49), California Health and Safety Code, and San Diego County Code, Title 6, Division 8, in combination with operational BMPs. Any accidental releases of these materials due to spills or leaks would be cleaned and reported consistent with the above-mentioned regulations. Through the implementation of the HWMP, there would be no increase in human health risk or environmental exposure to hazardous materials or hazardous wastes.

Overall, implementation of Alternative 1 would not result in increased human health risk or environmental exposure. Alternative 1 would not result in significant impacts from hazardous materials and wastes.

3.6.3.4 Alternative 2 (Preferred Alternative) Potential Impacts

Alternative 2 would involve dredging at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers to an operational depth of -39 feet MLLW. Given the existing water depth at this site – ranging from approximately -9 to -17 feet MLLW – the total estimated volume of dredged sediment would be 165,000 cy.

All procedures for the collection and analyzation of sediment samples that described for Alternative 1 would also be used to collect and test sediment from the proposed dredging footprint. A sampling analysis

plan has been prepared by Mission Environmental LLC on behalf of MGBW and was reviewed and approved by USACE and USEPA on 9 January 2020. An Accident Prevention Plan would be required if triggered by hazardous substances in the sediment analysis, and all dredged sediment disposal operations would comply with Section 404 of the CWA, a dredging permit issued by USACE, and a CWA Section 401 Water Quality Certification from the San Diego RWQCB. Any hazardous materials and wastes generated during construction and operational activities would also be subject to installation-wide EPCRA 312 and 313 reporting requirements (Navy 2016).

Additionally, the same procedures would apply to construction contractors for the site-specific SWPPP to incorporate BMPs during construction activities. Operationally, contractors working on the floating dry dock would be permitted to store hazardous materials and wastes associated maintenance activities, subject to the conditions in the HWMP and all applicable federal, state, and County of San Diego requirements for the routine transport, use, and disposal of any hazardous materials (Navy 2016). These regulations include RCRA, U.S. Department of Transportation (DOT) Hazardous Materials Regulations (CFR Title 49), California Health and Safety Code, and San Diego County Code, Title 6, Division 8, in combination with operational BMPs. Any accidental releases of these materials due to spills or leaks would be cleaned up in the normal course of business, consistent with the above-mentioned regulations. Additionally, because equipment used for ship repair and maintenance would be electrically powered, the need for fuel and lubricating oil handling on board would be limited. By implementing the SWPPP and HWMP, and adhering to CWA Section 401 and 404 permits, there would be no increase in human health risk or environmental exposure to hazardous materials or hazardous wastes under Alternative 2. Therefore, there would be no impacts related to hazardous materials and wastes.

3.6.3.5 Alternative 3 Potential Impacts

Impacts from the implementation of Alternative 3 on hazardous materials and wastes would be similar to those described for Alternative 1 and Alternative 2. Sediment sampling procedures to determine potential hazards and sediment disposal options would occur in the same manner as described previously for Alternative 1 and Alternative 2. All required permits, prevention plans, and management plans would be acquired and adhered to prevent exposure to hazardous materials or impacts on human health (refer to Section 3.6.3.3 for a discussion of required permits and plans). Contractors would be subject to all federal, state, and San Diego County requirements for hazardous materials and hazardous waste management, and would be required to follow the HWMP. Additionally, all procedures would apply to construction contractors for the site-specific SWPPP to incorporate BMPs during construction and demolition activities. By implementing the SWPPP and HWMP, and adhering to CWA Section 401 and 404 permits, there would be no increase in human health risk or environmental exposure to hazardous materials or hazardous wastes under Alternative 3. Therefore, there would be no impacts related to hazardous materials and wastes.

3.7 Summary of Potential Impacts on Resources and Impact Avoidance and Minimization

A summary of the potential impacts associated with each of the three action alternatives and the No Action Alternative and impact avoidance and minimization measures is presented in Table 3-14.

Table 3-14 Summary of Potential Impacts on Resource Areas

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
Air Quality/Climate Change	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at Naval Base San Diego (NBSD). Therefore, there would be no impacts to air quality. However, it is likely that major surface ship maintenance would be increasingly addressed at offsite shipyards, resulting in additional mobile emissions for vessels that could otherwise be maintained at NBSD. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of best management practices (BMPs) and avoidance and minimization measures would not be necessary.	Under Alternative 1, air quality impacts from dredging, transportation, and sediment disposal activities as well as demolition and construction activities would occur as a result of combustion emissions associated with fossil-fuel-powered equipment. Because of the nature of Alternative 1, landside grading would not be required; dredging activities would not generate fugitive dust since the marine sediments that would be dredged are wet, which prevents the sediments from becoming airborne. Estimated construction-related criteria pollutant emissions would be below the <i>de minimis</i> threshold levels for Clean Air Act conformity. Emissions associated with the floating dry dock would be evaluated by the San Diego Air Pollution Control District (SDAPCD) as a part of the issuance of a “Permit to Operate,” for which the Navy would apply and obtain prior to vessel maintenance.	Under Alternative 2, air quality impacts would be similar to those described for Alternative 1. However, the criteria pollutant emissions due to the greater dredge volume (i.e., 165,000 cy under Alternative 2 compared with 86,121 cy under Alternative 1) and dredging duration (i.e., 27 weeks under Alternative 2 compared with 14 weeks under Alternative 1). However, similar to Alternative 1, estimated construction-related criteria pollutant emissions would be below the <i>de minimis</i> threshold levels for Clean Air Act conformity. As described for Alternative 1, emissions associated with the floating dry dock would be evaluated by the SDAPCD as a part of the issuance of a “Permit to Operate,” for which the Navy would apply and obtain prior to vessel maintenance. Therefore, implementation of Alternative 2 would result in	Air quality impacts under Alternative 3 would be the additive emissions from the emplacement of the proposed floating dry dock at the south berth of the Mole Pier under Alternative 1 as well as the Commercial Outlease (COL) floating dry dock at the Marine Group Boatworks, LLC (MGBW) maintenance piers locations under Alternative 2. Estimated emissions would be below the <i>de minimis</i> threshold levels for Clean Air Act conformity. As described for Alternative 1 and Alternative 2, emissions associated with the floating dry dock would be evaluated by the SDAPCD as a part of the issuance of a “Permit to Operate,” for which the Navy would apply and obtain prior to vessel maintenance. Avoidance and Minimization Measures Under Alternative 3, the Navy would comply with all applicable BMPs presented in

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		Therefore, implementation of Alternative 1 would result in less than significant impacts to air quality. Avoidance and Minimization Measures Under Alternative 1, the Navy would comply with all applicable BMPs presented in Table 2-3. Additional avoidance and minimization measures would not be required.	less than significant impacts to air quality. Avoidance and Minimization Measures Under Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additional avoidance and minimization measures would not be required.	Table 2-3. Additional avoidance and minimization measures would not be required.
Water Resources	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to water resources would occur under the No Action Alternative. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of BMPs and avoidance and minimization	Under Alternative 1, dredging activities would result in minor changes to bathymetry at the south berth of the Mole Pier; however, these changes would not be sufficient to affect circulation patterns in the San Diego Bay. Potential surface water quality impacts associated with Alternative 1 include spills and releases of hazardous and nonhazardous materials, including materials involved with dredging as well as demolition and construction. Potential sources of impacts on marine water quality associated with dredging as	Under Alternative 2, impacts to water quality would be similar in type to those described for Alternative 1, including, bathymetry and circulation, upland surface water quality, and marine water quality. Under Alternative 2, approximately 165,000 cy of sediment would be dredged. As described for Alternative 1, impacts to marine water quality, such as increased turbidity, decreased light penetration, and decreased dissolved oxygen, would occur from the barge-mounted clamshell bucket that would likely be used during dredging	The implementation of Alternative 3 would result in the emplacement of two floating dry docks and associated impacts to water resources would be similar in type to those described for Alternative 1 and Alternative 2, but additive. For example, this alternative would introduce greater levels of turbidity over a larger area than described for Alternative 1 and Alternative 2 individually; however, as previously described for each of these alternatives, most sediments suspended by dredging would resettle within several hours, and only a small

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
	measures would not be necessary.	well as required demolition and construction activities include accidental release of vessel and equipment fuels or hydraulic fluids. The contractor would be required to develop, receive Navy approval of, and implement a site-specific construction Stormwater Pollution Prevention Plan (SWPPP) that specifies BMPs. The sediment to be dredged or disturbed by pile extraction/installation is estimated to be mostly sand and silts. Previous sampling conducted in the vicinity and at the south berth of the Mole Pier did not indicate elevated levels of contaminants. Therefore, it is unlikely that temporary turbidity associated with these activities would mobilize significant levels of dissolved-phase contaminants into the water column. Following emplacement, operation of the floating dry dock could result in potential water quality impacts. However, sediment	activities. However, most sediments resuspended by dredging settle out of the water column near the dredge within several hours, and only a small fraction take longer to resettle. As such, impacts to marine water quality due to increased turbidity, would be greater than those described for Alternative 1, but would remain less than significant. Construction activities – including the installation of piles with an impact pile driver – would also result in localized, short-term disturbances of bottom sediments. The scope of in-water construction under Alternative 2 would be much greater than Alternative 1, which is limited to minor modifications of the existing concrete wharf. Under Alternative 2, construction activities may also result in localized impacts to water quality from pouring of concrete associated with the access structures. Following emplacement, operation of the floating dry	fraction would take longer to resettle. Additionally, all applicable permits would be obtained and all appropriate management plans and BMPs would be implemented to prevent impacts to water quality at the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Therefore, as described for Alternative 1 and Alternative 2, impacts water resources would remain less than significant. Avoidance and Minimization Measures As described for Alternative 1 and Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to water quality (e.g., spill control and response measures, clean construction materials, barge

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		resuspension would be minimal; dry docking evolutions (i.e., lowering and raising the floating dry dock) are slow and do not substantially disturb the underlying sediments. Ballast water pumps would be powered from existing land-side electrical power sources and operated in compliance with applicable National Pollutant Discharge Elimination System (NPDES) permit requirements. This facility-specific permit would dictate the operational limitations, monitoring requirements, and water quality standards that need to be met. Avoidance and Minimization Measures Under Alternative 1, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to water	dock could result in potential water quality impacts. However, sediment resuspension would be minimal; dry docking evolutions (i.e., lowering and raising the floating dry dock) are slow and do not substantially disturb the underlying sediments. Ballast water pumps would be powered from existing land-side electrical power sources and operated in compliance with applicable NPDES permit requirements. This facility-specific permit would dictate the operational limitations, monitoring requirements, and water quality standards that need to be met. All relevant BMPs listed in Table 2-3, including debris and spillage measures would be implemented to prevent and reduce adverse effects to water quality. Additionally, the action would comply with all required permit conditions during construction activities. Therefore, implementation of Alternative 2 would not result	to collect demolition debris, etc.).

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		quality (e.g., spill control and response measures, clean construction materials, barge to collect demolition debris, etc.).	in significant impacts to water resources. Avoidance and Minimization Measures Under Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to water quality (e.g., spill control and response measures, clean construction materials, barge to collect demolition debris, etc.).	
Biological Resources	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to biological	Physical disturbance during dredging and sediment disposal (14 weeks) as well as required demolition (4 weeks) and construction activities (10 weeks) under Alternative 1 would result in the short-term loss of marine benthic organisms. Turbidity would persist throughout these activities; however, it would vary spatially based on currents and sediment grain size. Most sediments	Under Alternative 2, impacts to biological resources would be similar to those described for Alternative 1. However, the dredge volume (i.e., 165,000 cy under Alternative 2 compared with 86,121 cy under Alternative 1) and dredging duration (i.e., 27 weeks under Alternative 2 compared with 14 weeks under Alternative 1) would be longer.	The implementation of Alternative 3 would result in the emplacement of two floating dry docks and associated impacts to water resources would be similar in type to those described for Alternative 1 and Alternative 2, but additive. Implementation of this alternative would result in up to 480 Level B (Behavior) takes of California sea lions.

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
	resources would occur under the No Action Alternative. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of BMPs and avoidance and minimization measures would not be necessary.	suspended by dredging would resettle within several hours, and only a small fraction would take longer to resettle. Following emplacement, operation of the floating dry dock could result in potential water quality impacts. However, sediment resuspension would be minimal; dry docking evolutions (i.e., lowering and raising the floating dry dock) are slow and do not substantially disturb the underlying sediments. Dredging as well as required construction and demolition activities would result in the temporary displacement of marine birds and minimal alterations to foraging conditions and/or prey availability. These impacts would not be significant because of their limited scale and duration. Underwater noise generated during dredging, demolition, and pile driving activities would disturb fish and marine mammals within the vicinity. As a result, fish and marine	As described for Alternative 1, dredging and construction activities would result in the short-term loss of marine benthic organisms. Turbidity impacts would be similar in type to those described for Alternative 1 and would be temporary and not significant. Impacts on birds would also be similar to those described Alternative 1, but of greater duration. Additionally, bird density and diversity are greater near the existing MGWB maintenance piers location. While the impacts on birds would be greater than those described for Alternative 1, they would remain less than significant. As described for Alternative 1, underwater noise generated during dredging, demolition, and pile driving activities would disturb fish and marine mammals within the vicinity. The Navy has prepared and submitted an application for an IHA to NMFS. A public notice from NMFS was published on 16 April 2020. Following the 30-day public	Avoidance and Minimization Measures As with Alternative 1 and Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to biological resources including the establishment of an 82-foot (25-meter) buffered shutdown zone for underwater construction or demolition activities, intended to reduce the potential for construction-related impacts to biological resources. Prior to dredging and construction at the existing MGBW maintenance piers location, this area will also be surveyed for eelgrass. If detected, it will be mapped, and a post-construction survey will be conducted to determine the extent of any project-related impacts, which the Navy would mitigate consistent with the California

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		mammals may temporarily leave or avoid the project area. The Navy has prepared an Incidental Harassment Authorization (IHA) application for the proposed floating dry dock at the south berth of the Mole Pier. The Navy will submit the IHA application and obtain approval from National Marine Fisheries Services (NMFS) prior to the initiation of any in-water construction-related activities. With the imposition of an 82-foot (25-meter) buffered shutdown zone Level A (Injury) take would be avoided. The implementation of this alternative would result in up to 240 Level B (Behavior) takes of California sea lions. Potential impacts on green turtles from implementation of the Proposed Action would primarily be from impact pile driving. However, with the imposition of an 82-foot (25-meter) buffered shutdown zone for green turtles, the potential for acoustic injury would be avoided. The Navy prepared and submitted a	noticing period, NMFS will consider issuance of an IHA for Alternative 2. With the imposition of an 82-foot (25-meter) buffered shutdown zone Level A (Injury) take would be avoided. The implementation of this alternative would result in up to 240 Level B (Behavior) takes of California sea lions. The Navy will obtain all required approvals from NMFS prior to the initiation of any in-water construction-related activities. Potential impacts on green turtles from implementation of the Proposed Action would primarily be from impact pile driving. However, with the imposition of an 82-foot (25-meter) buffered shutdown zone for green turtles, the potential for acoustic injury would be avoided. The Navy prepared and submitted a consultation letter to NMFS on 11 February 2020. After reviewing the consultation letter, NMFS provided a response on 25 March 2020 concurring with the Navy that the Proposed Action may	Eelgrass Mitigation Policy (October 2014).

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		consultation letter to NMFS on 11 February 2020. After reviewing the consultation letter, NMFS provided a response on 25 March 2020 concurring with the Navy that the Proposed Action may affect, but is not likely to adversely affect federally listed species and/or federally designated critical habitats. The construction and emplacement of the floating dry dock would result in new dredging and would shade approximately 2.62 acres of marine habitat. Alternative 1 would result in a calculated 8.48-percent reduction in ecological value as a result of the proposed floating dry dock. This would translate into a loss of function equivalent to 0.53 acres of unvegetated soft bay bottom. Within the Approach Area and Turning Basin, deepening of the area would result in a functional loss of 0.78 percent over the 21.39 acres. This translates into a functional loss equivalency of 0.17 acre. These impacts	affect, but is not likely to adversely affect federally listed species and/or federally designated critical habitats. Under Alternative 2, dredging would convert approximately 5 acres of shallow subtidal habitat to moderately deep and deep subtidal habitat. Dredging would remove an eelgrass bed estimated to occupy 0.83 acres. The actual area of impact for eelgrass would be determined by pre- and post-dredging surveys. Subsequent to dredging, the floating dry dock and accessory structures would shade approximately 2.1 acres that have been converted to deep subtidal habitat. These impacts would be mitigated by providing offsetting ecological lift equivalent to the quantified loss through 1.084 acres of eelgrass habitat credits through the Navy Eelgrass Mitigation Bank. The Navy recognizes the potential adverse effect on EFH and has prepared an EFH Assessment for consultation with NMFS. On 14 April 2020,	

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		would be mitigated by providing offsetting ecological lift equivalent to the quantified loss through 0.084 acres of eelgrass habitat credits through the Navy Eelgrass Mitigation Bank. The Navy recognizes the shading of approximately 2.62 acres of deep subtidal habitat as a potential adverse effect on Essential Fish Habitat (EFH) for groundfish and has prepared an EFH Assessment for consultation with NMFS. On 14 April 2020, NMFS stated that there is no objection to the Navy's proposed compensatory mitigation and NMFS has no additional EFH Conservation Recommendations at this time. Avoidance and Minimization Measures Under Alternative 1, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures	NMFS stated that there is no objection to the Navy's proposed compensatory mitigation and NMFS has no additional EFH Conservation Recommendations at this time. Avoidance and Minimization Measures Under Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts to biological resources including the establishment of an 82-foot (25-meter) buffered shutdown zone for underwater construction or demolition activities, intended to reduce the potential for construction-related impacts to biological resources. Prior to dredging and construction at the existing MGBW maintenance piers location, this area will also be surveyed for eelgrass. If detected, it will be mapped,	

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		intended to reduce the potential for construction-related impacts to biological resources including the establishment of an 82-foot (25-meter) buffered shutdown zone for underwater construction or demolition activities, intended to reduce the potential for construction-related impacts to biological resources.	and a post-construction survey will be conducted to determine the extent of any project-related impacts, which the Navy would mitigate consistent with the California Eelgrass Mitigation Policy (October 2014).	
Airborne Noise ¹	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to noise would occur under the No Action Alternative. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of BMPs and avoidance and minimization measures would not be necessary.	Under the Alternative 1, airborne noise would be produced from heavy machinery and vehicles required for demolition, construction, dredging, and associated human activity. Dominant noise sources associated with dredging may include dredge engine and exhaust noise; crane engine and exhaust noise; rope noise and bucket water splash; and various noises associated with the boom and grab, the bucket hitting the bottom during dredge, and the bucket closing and opening during construction. No blasting would take place. Dredging operations would take place between 6:00 p.m. and 6:00	Airborne noise sources near the existing MGBW maintenance piers under Alternative 2 would be similar to those described for Alternative 1. However, the dredge volume (i.e., 165,000 cy under Alternative 2 compared with 86,121 cy under Alternative 1) and dredging duration (i.e., 27 weeks under Alternative 2 compared with 14 weeks under Alternative 1) would be longer. Nevertheless, dredging and sediment disposal as well as required construction activities, including overnight work, would not increase ambient outdoor noise levels at the nearest sensitive	Noise impacts under Alternative 3 would be the additive emissions from the emplacement of the proposed floating dry dock at the south berth of the Mole Pier under Alternative 1 as well as the COL floating dry dock at the existing MGBW maintenance piers location. As described for Alternative 1 and Alternative 2, Alternative 3 would not increase ambient outdoor noise levels at the nearest sensitive receptor to greater than 65 dB DNL and would not conflict with the City of San Diego construction noise ordinance. Therefore, noise-related impacts would be less than significant.

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		a.m., Monday through Friday, for a duration of approximately 14 weeks. Demolition and construction activities required under Alternative 1 would generally occur on weekdays during daylight hours and would involve the use of standard construction equipment ranging from trucks and cranes to pile drivers, all of which would create noise. The tugboat used to move and position the crane barge would also generate some noise, but the noise would be consistent with the ambient noise environment characteristic of NBSD. The sound level of the impact pile driver during construction would dominate and would almost exclusively determine the total sound level emanating from the south berth of the Mole Pier. Dredging and sediment disposal as well as required demolition and construction activities, including overnight work, would not increase ambient outdoor noise levels	receptor to greater than 65 dB DNL and would not conflict with the City of San Diego construction noise ordinance. Therefore, noise-related impacts would be less than significant. Avoidance and Minimization Measures Under Alternative 2, additional avoidance and minimization measures would not be required for airborne noise.	Avoidance and Minimization Measures Under Alternative 3, additional avoidance and minimization measures would not be required for airborne noise.

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		at the nearest sensitive receptor to greater than 65 decibels (dB) DNL and would not conflict with the City of San Diego construction noise ordinance. Therefore, noise-related impacts would be less than significant. Avoidance and Minimization Measures Under Alternative 1, additional avoidance and minimization measures would not be required for airborne noise.		
Transportation	Under the No Action Alternative, the proposed emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to transportation would occur under the No Action Alternative. Avoidance and Minimization Measures	Under Alternative 1, landside traffic impacts would include construction worker commutes and construction equipment/materials deliveries that do not arrive via barge on the water-side of the south berth of the Mole Pier. However, these trips would be temporary and would add a negligible amount of traffic to the existing transportation network. Traffic impacts associated with sediment disposal would include the following:	Under Alternative 2, landside traffic impacts would be similar to those described for Alternative 1. Traffic-related impacts associated with nearshore replenishment and ocean disposal would remain similar to those described for Alternative 1. However, under Alternative 2, approximately two barge trip per day would be necessary over the approximately 27-week duration. The primary source for traffic-related impacts under the upland disposal option would	The implementation of Alternative 3 would result in the emplacement of two floating dry docks and associated impacts to traffic would be similar in type to those described for Alternative 1 and Alternative 2, but additive. Traffic-related impacts associated with construction worker commutes and construction equipment/materials deliveries would remain temporary and would add a negligible amount of traffic to

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
	Under the No Action Alternative, the implementation of BMPs and avoidance and minimization measures would not be necessary.	<u>Nearshore Replenishment – Beneficial Reuse Option</u> The primary source of traffic-related impacts under the nearshore replenishment option would be vessel transportation within San Diego Bay and Pacific Ocean. Approximately two barge trips per day would be necessary over the approximately 14-week duration to transport dredged sediment from the dredge site to the disposal site. Project barge tug/barge traffic levels in San Diego Bay and the Pacific Ocean would be temporary and negligible in comparison to the approximately 40 cruise and cargo ship trips per month as well as regular military vessel, commercial fishing, and personal recreational vessel traffic. <u>Ocean Disposal Option –</u> The primary source of traffic-related impacts under the ocean disposal option would be vessel transportation within San Diego Bay and Pacific Ocean. The ocean disposal option would involve loading the 86,121 cy of	be truck trips between NBSD and the upland disposal site at the Otay Landfill. The upland disposal option would involve loading the 165,000 cy of dredged sediment into 12-cy-capacity trucks and transporting the material to a designated site such as the Otay Landfill. Transporting sediment from the upland CDF to the Otay Landfill would require approximately 13,750 truck trips over the duration of Alternative 2, as governed by the rate of drying of sediment to a point where it is suitable for transport and disposal. However, as described for alternative 1, these truck trips would account for a negligible proportion of the existing average daily trips (ADT) along the haul route, including I-5 and I-805. Avoidance and Minimization Measures Under Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-	the existing transportation network. If sediment characterization and chemistry analyses determine that the dredged material must be disposed of at the certified upland disposal site at Otay Landfill, then approximately 7,177 truck trips would be required for the dredged sediment from the south berth of the Mole Pier and approximately 13,750 truck trips would be required for dredged sediment from the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Therefore, under Alternative 3, approximately 20,927 truck trips would be required to transport the dredged materials for the upland disposal option. The truck trips that may be required for the upland disposal option under Alternative 3 would be consistent with the industrial character of the Navy installation and would also be temporary in nature.

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		dredged sediment into a barge and transporting it to LA-5 ODMDS. As with the beneficial reuse option, approximately one barge trip per day would be necessary over the approximately 14-week duration to transport the dredged sediment with one tug and barge loading at the dredge site while the other is in transit to and from LA-5 ODMDS. Project barge tug/barge traffic levels in San Diego Bay and the Pacific Ocean would be temporary and negligible. <u>Upland Disposal Option –</u> The primary source for traffic-related impacts under the upland disposal option would be truck trips between NBSD and the upland disposal site at the Otay Landfill. The upland disposal option would involve loading the 86,121 cy of dredged sediment into 12-cy-capacity trucks and transporting the material to a designated site such as the Otay Landfill. Transporting sediment from the upland CDF to the Otay Landfill would	related avoidance and minimization measures intended to reduce the potential for construction-related impacts. Specifically, haul truck trips associated with upland disposal would be scheduled such that they avoid the weekday and weekend peak hour traffic periods along local and regional roads and highways.	Avoidance and Minimization Measures As with Alternative 1 and Alternative 2, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts. Specifically, haul truck trips associated with upland disposal would be scheduled such that they avoid the weekday and weekend peak hour traffic periods along local and regional roads and highways.

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		require approximately 7,177 truck trips over the duration of Alternative 1, as governed by the rate of drying of sediment to a point where it is suitable for transport and disposal. These truck trips would account for less than 1 percent of the existing average daily trips (ADT) along the haul route, including Interstate 5 (I-5) and I-805. Avoidance and Minimization Measures Under Alternative 1, the Navy would comply with all applicable BMPs presented in Table 2-3. Additionally, the Navy would implement additional construction-related avoidance and minimization measures intended to reduce the potential for construction-related impacts. Specifically, haul truck trips associated with upland disposal would be scheduled such that they avoid the weekday and weekend peak hour traffic periods along local and regional roads and highways.		
Hazardous Materials and Wastes	Under the No Action Alternative, the proposed	Sediment samples from the dredging footprint at the	Potential impacts related to hazardous materials and	Potential impacts related to hazardous materials and

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
	emplacement and operation of the floating dry dock(s) – including all required dredging and sediment disposal as well as all required demolition and construction activities – would not be implemented at NBSD. Existing conditions would remain unchanged. Therefore, no impacts to hazardous materials would occur under the No Action Alternative. Avoidance and Minimization Measures Under the No Action Alternative, the implementation of BMPs and avoidance and minimization measures would not be necessary.	south berth of the Mole Pier are currently being collected and tested in accordance with regulations in 40 Code of Federal Regulations (CFR) Parts 220–228. The forthcoming sediment characterization report will be provided to U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE) for review and comment on potential sediment disposal options. The sediment characterization and chemistry tests will include analyses to assess whether the sediment meets the allowable parameters for unconfined ocean disposal. If sediment testing results show that hazardous substances are present in the dredged sediment, an Accident Prevention Plan would be required. Additionally, all dredged sediment disposal operations performed for Alternative 1 would comply with Clean Water Act (CWA) Section 404 and would be in accordance with a dredging permit issued by USACE, and a	wastes under Alternative 2 would be similar to those described for Alternative 1. All procedures for the sediment collection and analysis described for Alternative 1 would also be used to collect and analyze sediment from the proposed dredging footprint under Alternative 2. Additionally, the same procedures would apply to construction contractors for the site-specific SWPPP to incorporate BMPs during construction activities. Avoidance and Minimization Measures The BMPs as well as avoidance and minimization measures that would be implemented to address hazards and hazardous materials would be identical those described for water resources.	wastes under Alternative 3 would be similar to those described for Alternative 1 and Alternative 2. Avoidance and Minimization Measures The BMPs as well as avoidance and minimization measures that would be implemented to address hazards and hazardous materials would be identical those described for water resources.

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		CWA Section 401 Water Quality Certification from the San Diego Regional Water Quality Control Board (RWQCB). Contractors would be subject to all federal, state, and San Diego County requirements for hazardous materials and hazardous waste management and would be required to follow the Hazardous Waste Management Plan (HWMP). In addition, a site-specific construction SWPPP would be developed and implemented by the demolition and construction contractor that would incorporate BMPs designed to minimize the potential for hazardous material releases during demolition and construction activities. Any hazardous materials and wastes generated during construction and operational activities would also be subject to installation-wide Emergency Planning and Community Right-to-Know Act (EPCRA) 312 and 313 reporting requirements.		

Table 3-14 Summary of Potential Impacts on Resource Areas (Continued)

<i>Resource Area</i>	<i>No Action Alternative</i>	<i>Alternative 1 (Floating Dry Dock at the South Berth of the Mole Pier)</i>	<i>Alternative 2 (Preferred Alternative) (COL Floating Dry Dock Near the MGWB Maintenance Piers)</i>	<i>Alternative 3 Floating Dry Docks at Both Locations</i>
		Avoidance and Minimization Measures The BMPs as well as avoidance and minimization measures that would be implemented to address hazards and hazardous materials would be identical those described for water resources.		

Notes:

¹ This discussion of airborne noise includes the types or sources of airborne noise and the associated sensitive receptors in the human environment. Airborne and underwater noise in relation to biological resources and wildlife species is discussed in the Section 3.3, *Biological Resources*.

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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

The approach taken in the analysis of cumulative impacts follows the objectives of NEPA, CEQ regulations, and CEQ guidance. Cumulative impacts are defined in 40 CFR Section 1508.7 as “the impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

To determine the scope of environmental impact analyses, agencies are to consider cumulative actions, which, when viewed with other proposed actions, have cumulatively significant impacts and should therefore be discussed in the same impact analysis document.

In addition, 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 USEPA Review of NEPA Documents* (USEPA 1999). CEQ guidance titled *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. To identify cumulative impacts, the analysis is to address the following three fundamental questions:

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

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 project area delimits the

geographic extent of the cumulative impacts analysis. For the purpose of describing potential cumulative impacts associated with dredging, dredging projects across the bay (e.g., Naval Base Point Loma) were considered. For the purpose of describing potential cumulative impacts associated with demolition and construction, projects within NBSD were considered. The time frame for cumulative impacts centers on the timing of the proposed action. Past cumulative actions that were implemented within the last 10 years have been described in Section 4.3.1, *Past Actions*.

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 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 the projects to include in the cumulative impacts analysis, a preliminary determination was made regarding the past, present, or reasonably foreseeable action. Specifically, using the first fundamental question included in Section 4.1, *Definition of Cumulative Impacts*, it was determined whether a relationship exists such that the affected resource areas of the Proposed Action (included in this EA) might interact with the affected resource area of a past, present, or reasonably foreseeable action. If no such potential relationship exists, the project was not carried forward into the cumulative impacts analysis. In accordance with CEQ guidance (CEQ 2005), these actions considered but excluded from further cumulative effects analysis are not cataloged here because the intent is to focus the analysis on the meaningful actions relevant to informed decision-making. Projects included in this cumulative impacts analysis are listed in Table 4-1 and briefly described in the following subsections.

4.3.1 Past Actions

Table 4-1 Past Cumulative Action Evaluation

<i>Past Action</i>	<i>Level of NEPA Analysis Completed</i>	<i>Timing</i>
NBSD Littoral Combat Ship Homeporting Project	EA	2012
NBSD Bachelors Quarters Project (P-405)	CATEX	2013
Naval Base Point Loma Fuel Pier Replacement and Dredging (P-151)	EA	2013
Naval Base Point Loma Pier 5000 North Side Outer Berth Dredging	EA	2013
Naval Base Point Loma Piers 5000, 5002 and Pier 5002 Approach	EA	2014
NBSD Pier 12 Replacement and Dredging (P-327)	EA	2016
NBSD Pier 8 Replacement and Dredging	EA	2016
NBSD Maintenance Dredging Various Piers (Piers 2, 6, 7, 13 and 14) and in Chollas Creek	CATEX	2017
Naval Base Point Loma U.S. Coast Guard Mooring Ballast Point Maintenance Dredging	EA	2019

Abbreviations:

CATEX = Categorical Exclusion

EA = Environmental Assessment

NEPA = National Environmental Policy Act

4.3.1.1 Naval Base Point Loma Fuel Pier Replacement and Dredging

This project involved demolition and replacement of the existing fuel pier (Pier 180) in San Diego Bay at Naval Base Point Loma. More specifically, this project replaced the aging, seismically deficient, and increasingly dysfunctional and obsolete fuel Pier 180 with a new fuel pier that would meet current state and Navy seismic construction standards, meet projected ship fueling requirements, and enable the Navy and U.S. Department of Homeland Security to meet their and national defense mission and security missions. As with the Proposed Action, this project involved sediment dredging with beneficial reuse of the dredged sediments at the Naval Base Coronado Silver Strand Training Complex. An EA was completed for this project in August 2013, and dredging began the same year.

4.3.1.2 Littoral Combat Ship Homeporting Project

The Navy proposed to homeport its first 12 Littoral Combat Ships (LCSs) at NBSD. The Navy considered the west coast and Hawaii surface combatant homeports for homeporting the LCS. Alternative homeporting locations considered include Naval Base Kitsap Bremerton/Bangor, Washington; Naval Station Everett, Washington; NBSD, California; and Joint Base Pearl Harbor-Hickam, Hawaii. Based on the analysis of these potential locations, only NBSD met the mission, logistic, and operational criteria critical to the success of the LCS program. Further, maintaining a single homeport for the initial 12 ships 1) supports the spiral development concept for the LCS Fleet; 2) provides logistic and operational synergies; and 3) facilitates standardization of support procedures and enhances training effectiveness. An EA addressing homeporting the ships and supporting mission modules, permanent assignment of crew, and related facility improvements required to support the homeporting was prepared and a Finding of No Significant Impact was signed in 2012. As of March 2014, four LCSs were homeported at NBSD (NBSD 2014).

4.3.1.3 NBSD Bachelors Quarters Project

The project included construction of a 279,785-sf (25,993-square-meter) parking structure and a 183,298-sf (17,029-square-meter) multi-story building to house 644 enlisted personnel (E-1 through E-4). This project was completed in December 2013.

4.3.1.4 Pier 5000 North Side Outer Berth Dredging

This project dredged approximately 6,000 cy of sediment from the Naval Base Point Loma Pier 5000 North Side Outer Berth to maximize installation waterfront usability and allow for deeper dredge submarine berthing. The dredged sediment was beneficially reused nearshore of Naval Air Station North Island. An EA was completed for the project in 2013, and dredging was completed the same year.

4.3.1.5 Piers 5000 and 5002 and Pier 5002 Approach Channel Dredging

This project involved dredging of sediment at Naval Base Point Loma Pier 5000 and Pier 5002 sites and the approach area, offsite aquatic sediment disposal, and fender relocation to increase depth to accommodate Ohio- and Seawolf-class submarines. Total dredge volumes included approximately 61,433 cy of sediment (across a dredge footprint of approximately 438,805 sf), including 21,704 cy at Pier 5000, 8,078 cy at Pier 5002, and 32,281 cy at the Pier 5002 approach area. An EA was completed for this project in 2014.

4.3.1.6 NBSD Pier 12 Replacement and Dredging

This project included construction of a general-purpose berthing pier feet to include electrical, telephone, and cable television services, fiber optic communications, a Supervisory Control and Data Acquisition system for energy monitoring and control, and a fire alarm. The project supported the upgrade of shore-to-ship power of 480 volts, 4,160 volts, and 12 kilovolts to meet power-intensive fleet requirements. Fender systems included concrete and plastic piles with foam-filled fenders at the berths and plastic log camels. The project also included demolition of existing Pier 12. This project also included dredging to meet the -37-foot MLLW depth requirement for deep-draft vessels. The project was completed in July 2016.

4.3.1.7 NBSD Pier 8 Replacement and Dredging

The Navy prepared an EA for construction of a general-purpose berthing pier to replace existing Pier 8. Utilities include potable water, sanitary sewer, compressed air, steam, oily waste, and compensating water systems. Additional ship-to-shore utilities include electrical, telephone, cable television, fiber optic communications, a Supervisory Control and Data Acquisition system for energy monitoring and control, and a fire alarm. This project also supported the upgrade of shore-to-ship power of 480 volts, 4,160 volts, and 13.8 kilovolts to meet power-intensive fleet requirements. Fender systems included concrete and plastic piles with foam-filled fenders at the berths and plastic log camels. The project also included demolition of existing Pier 8 and Facility #358.

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

These maintenance dredging activities began at NBSD following the completion of the Pier 12 Replacement and Dredging and the Replacement and Maintenance Dredging at Pier 8 (Navy 2016).

4.3.1.9 U.S. Coast Guard Mooring Ballast Point Maintenance Dredging

This project included scheduled maintenance dredging at Naval Base Point Loma to meet existing, and future, navigational requirements at U.S. Coast Guard Ballast Point, including dredging of 28,000 cy of clean sand. The clean dredged sand was used for beneficial reuse as part of the neighboring Smugglers Cove Fish, Eelgrass, Intertidal, Subtidal Habitat Reef and Enhancement.

4.3.2 Present and Reasonably Foreseeable Actions

A variety of in-water projects within the San Diego Bay are anticipated to occur within the next 2 years and include maintenance dredging, pier repairs, construction of new static and floating docks, and habitat enhancement projects (see Table 4-2).

4.3.2.1 NBSD Graving Dock Approach Maintenance Dredging

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

Table 4-2 Present and Reasonably Foreseeably Cumulative Actions

<i>Action</i>	<i>Estimated Timing</i>
NBSD Graving Dock Approach Maintenance Dredge	2019–2020
Naval Base Point Loma Smuggler's Cove Fish – Eelgrass, Intertidal, Subtidal Habitat Reef and Enhancement Project	2019–2020
Naval Base Point Loma Floating Dry Dock (ARCO) Dredging	2019–2020
Fleet Logistics Center Fuel Pier Dredging	2019–2020
Naval Amphibious Base Coronado Pier 4 Floating Docks	2019–2020
Naval Amphibious Base Coronado Pier 6 Maintenance	2019–2020
Naval Amphibious Base Coronado Pier 14 New Docks New Piles	2019–2020
Naval Amphibious Base Coronado Pier 17 Minor Repairs	2019–2020
Naval Amphibious Base Coronado Mammal Pier-Replacement in Kind	2019–2020
BAE Systems Waterfront Improvement Project	2020–2024
Energy Security and Resilience Project	2018
Pier 5000 North Side Outer Berth and Pier Approach Dredging	2019

4.3.2.2 Smuggler's Cove Fish, Eelgrass, Intertidal, Subtidal Habitat Reef and Enhancement

The goal of this proposed project is to restore intertidal and subtidal beach and habitat at Smugglers Cove at Naval Base Point Loma. An artificial reef would be created using broken concrete and piles salvaged from the P-1306 Fuel Pier Replacement 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 Ballast Point Maintenance Dredge would provide sand material for this project.

4.3.2.3 Floating Dry Dock (ARCO) Dredging

Dredging in the vicinity of the ARCO floating dry dock at Naval Base Point Loma would ensure appropriate operational depths for the dry dock and client vessels in the project vicinity. This work would support the continued use of the site by ensuring appropriate depths for transit and maneuvering of vessels.

4.3.2.4 Fleet Logistics Center Fuel Pier Dredging

The proposed dredging project is necessary to support fueling operations at the Fuel Pier at Naval Base Point Loma. Fuel farm operations at the fuel pier have been impeded by shallow mooring depths and remnant pilings of the old Pier 180 that was recently removed. Remnant pilings were cut at the mudline, but continue to obstruct the passage and berthing of large vessels and maneuvering of tugboats. The project would consist of dredging the sea floor inboard (or west) of the fuel pier southern section to a depth of -22 feet MLLW. In addition to dredging, the project would include cutting and removing caissons, pilings, and any other obstruction on the sea floor in the vicinity of the old Pier 180 footprint.

4.3.2.5 Naval Amphibious Base Coronado Upgrades, Maintenance, and Repair Projects

A number of proposed in-water projects at Naval Amphibious Base Coronado are planned to occur through FY 19/20, including installation of floating docks at Pier 4, maintenance activities at Pier 6, installation of new docks and piles at Pier 14, minor repairs to Pier 17, and replacement of the existing Mammal Pier with a similar structure.

4.3.2.6 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. These improvements would allow for newer and different classes of vessels to be moored and repaired onsite. The proposed improvements are not expected to increase the number of vessels serviced because no new berthing space would be provided. The proposed project includes 15 distinct project elements designed to improve efficiency and functionality of the existing BAE Systems San Diego Ship Repair Yard. Construction of various project elements is anticipated to begin in 2020, with construction lasting through 2024. POSD is preparing an Environmental Impact Report for the proposed project pursuant to the California Environmental Quality Act (CEQA); the Notice of Preparation was released in March 2019.

4.3.2.7 Energy Security and Resilience Project

This project would include construction and operation of an energy security and resilience system that may include a natural gas peaker plant and installation of grid-integrated battery storage or other energy assets at NBSD in San Diego and National City, California. The Navy would enter into an agreement with a private partner to construct, operate, and maintain energy asset(s) at NBSD with a contract duration of up to 37 years, with 35 years of system(s) service and approximately one year for construction and one year for decommissioning. The agreement would ensure fair compensation for the use of Navy lands where the proposed activities related to energy security/resilience and/or renewability would take place. The Navy is the lead agency for the Proposed Action. The Draft EA for this proposed project was released in September 2017.

4.3.2.8 Pier 5000 North Side Outer Berth and Pier Approach Dredging

This proposed project would dredge approximately 110,619 cy of San Diego Bay bottom material at Naval Base Point Loma to meet new submarine water depth requirements pursuant to NAVSEA Memorandum 3120 Ser 39T236/088 for the navigation and berthing of large submarines to support continued Navy submarine fleet operations. The Draft EA for this proposed project was released in April 2019.

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 are 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 on the various resources analyzed in this document, was also used to determine cumulative impacts.

4.4.1 Air Quality/Climate Change**4.4.1.1 Description of Geographic Study Area**

The ROI for assessing cumulative air quality impacts of criteria pollutants and GHGs is primarily the SDAB, and more specifically, areas in proximity to NBSD. This region is in attainment of all criteria pollutants regulated under the NAAQS except O₃. The impacts on air quality from the Proposed Action that could contribute to cumulative impacts would be from emissions associated with dredging as well as construction and demolition activities.

4.4.1.2 Relevant Past, Present, and Future Actions

The past, present, or reasonably foreseeable actions that have the potential to interact with the Proposed Action and cumulatively affect air quality primarily include projects that would establish new or increase existing emissions in the ROI. Past, present, or reasonably foreseeable dredging and construction projects would add to cumulative air emissions because they are short-term projects and their impacts would be limited to periods of active dredging.

4.4.1.3 Cumulative Impact Analysis

No Action Alternative

Under the No Action Alternative, existing conditions would remain unchanged. The emplacement of a floating dry dock(s) and all associated modifications necessary to accommodate the proposed floating dry dock(s) would not occur. Therefore, the No Action Alternative would not result in any significant direct or cumulative impacts on air quality/climate change.

Alternative 1

Cumulative impacts resulting from Alternative 1 would occur during dredging and sediment disposal as well as demolition and construction activities associated with the emplacement of a floating dry dock at the south berth of the Mole Pier at NBSD. Any concurrent emissions-generating activities that occur near the Mole Pier would potentially contribute to the overall air emissions at NBSD. Nevertheless, because emplacement of the proposed floating dry dock at the south berth of the Mole Pier would produce a minor amount of emissions that would remain well below applicable *de minimis* thresholds, the combination of emissions associated with Alternative 1 and emissions associated with future cumulative projects would not contribute to an exceedance of an ambient air quality standard. Cumulatively impacts on considerable air quality/climate change would remain less than significant.

Alternative 2 (Preferred Alternative)

Cumulative impacts resulting from Alternative 2 would occur during dredging and sediment disposal as well as demolition and construction activities associated with emplacement of a COL floating dry dock at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Emissions resulting from Alternative 2, in conjunction with impacts from other projects listed above, would be similar in type to, although slightly greater than, those impacts described for Alternative 1. The increase in the duration of construction-related emissions would add to the potential for cumulative impacts on air emissions. Nevertheless, because emplacement of the proposed COL floating dry dock at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers would produce a moderate amount of emissions that would remain below applicable *de minimis* thresholds, the combination of emissions associated with Alternative 2 and emissions associated with future cumulative projects would not contribute to an exceedance of an ambient air quality standard. Cumulative impacts on considerable air quality/climate change would remain less than significant.

Alternative 3

Cumulative impacts resulting from Alternative 3 would occur during dredging and sediment disposal as well as demolition and construction activities associated with emplacement of a floating dry docks at the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Emissions from the installation of a floating dry dock at the south berth of the Mole Pier and the southern edge of the NBSD property boundary near the existing MGBW maintenance

piers could result in greater cumulative impacts than for Alternative 1 and/or Alternative 2. Nevertheless, because emplacement of the proposed floating dry docks would produce a moderate amount of emissions that would remain below applicable *de minimis* thresholds, the combination of emissions associated with Alternative 3 and emissions associated with future cumulative projects would not contribute to an exceedance of an ambient air quality standard. Cumulative impacts on considerable air quality/climate change would remain less than significant.

4.4.2 Water Resources

4.4.2.1 Description of Geographic Study Area

The ROI for assessing cumulative impacts for water resources is the Central Bay in the vicinity of NBSD.

4.4.2.2 Relevant Past, Present, and Future Actions

Past projects within the ROI, including Pier 12 Replacement and Dredging, had temporary impacts on water resources that occurred for the duration of the respective projects, but would not overlap with impacts associated with the Proposed Action. Present and future in-water projects, including the Pier 8 Replacement and maintenance dredging activities within San Diego Harbor and at other San Diego naval facilities, could occur in close temporal and geographic proximity to the Proposed Action, but dredging sites have not been selected and dredge dates are unknown.

4.4.2.3 Cumulative Impact Analysis

No Action Alternative

Under the No Action Alternative, existing conditions would remain unchanged. The emplacement of a floating dry dock(s) and all associated modifications necessary to accommodate the proposed floating dry dock(s) would not occur. Therefore, the No Action Alternative would not result in any significant direct or cumulative impacts on water resources.

Alternative 1

Implementation of Alternative 1 would have temporary, localized, and less than significant impacts on water resources during dredging and in-water construction activities. In total, the dredging, demolition, and construction activities associated with emplacement of the floating dry dock would occur over a period of 6 months. For that reason, any potential overlap between the projects would be minimal. Even if in-water activities for some, or all, of the cumulative projects occur concurrently with Alternative 1, the cumulative impacts would be minimal with the implementation of all appropriate permit conditions, plans, and BMPs. Therefore, Alternative 1, in conjunction with other cumulative in-water projects in the Central Bay, would not result in significant cumulative impacts on water resources.

Alternative 2 (Preferred Alternative)

Implementation of Alternative 2 would have temporary, localized, and less than significant impacts on water resources during dredging and in-water construction activities, although there would be an increase of in-water activities under this alternative compared with those described for Alternative 1. In total, the dredging and construction activities associated with emplacement of the floating dry dock occur over a period of 8 months. However, even if in-water activities for some, or all, of the cumulative projects occur concurrently with Alternative 2, the cumulative impacts would be minimal with the implementation of all appropriate permit conditions, plans, and BMPs. Therefore, Alternative 2, in conjunction with other

cumulative in-water projects in the Central Bay, would not result in significant cumulative impacts on water resources.

Alternative 3

Implementation of Alternative 3 would have temporary, localized, and less than significant impacts on water resources during dredging and in-water construction activities. In-water activities under this alternative would consist of concurrent installation of a floating dry dock at the south berth of the Mole Pier and one at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. In total, the dredging and construction activities associated with emplacement of the floating dry docks occur over a period of approximately 8 months. However, even if in-water activities for some, or all, of the cumulative projects occur concurrently with Alternative 3, the cumulative impacts would be minimal with the implementation of all appropriate permit conditions, plans, and BMPs. Therefore, Alternative 3, in conjunction with other cumulative in-water projects in the Central Bay, would not result in significant cumulative impacts on water resources.

4.4.3 Biological Resources

4.4.3.1 Description of Geographic Study Area

The ROI for cumulative biological resource impacts consists of the areas surrounding the demolition, dredging, and construction site, as well as NBSD.

4.4.3.2 Relevant Past, Present, and Future Actions

The past, present, and reasonably foreseeable projects that have the greatest potential to interact with the Proposed Action and cumulatively affect biological resources include actions that involve ongoing or future in-water operations. Impacts associated with past, short-term dredging projects in the vicinity of the Proposed Action site are unlikely to interact with Proposed Action-associated impacts, given their temporal separation.

4.4.3.3 Cumulative Impact Analysis

No Action Alternative

Under the No Action Alternative, existing conditions would remain unchanged. The emplacement of a floating dry dock and all associated modifications necessary to accommodate the proposed dry dock would not occur at the Mole Pier. Therefore, the No Action Alternative would not result in any significant direct or cumulative impacts on biological resources.

Alternative 1

Impacts of Alternative 1, when compared with those of currently ongoing and reasonably foreseeable future actions, would be temporary and less than significant. Demolition, pile driving, dredging, and construction activities would result in a temporary increase in turbidity and underwater noise as well as the temporary removal of prey resources or foraging areas until such time that the benthos naturally recovers following completion of dredging. Similarly, there would be no adverse effect on EFH, listed Fishery Management Plan species, or special aquatic sites, including eelgrass. Short-term impacts on EFH from dredging activities would result in minor disturbances to the bottom of San Diego Bay as well as to the water column and fish from increased suspended sediment loads, turbidity, and underwater noise. In addition, there would be only short-term, localized, and less than significant impacts on fish, invertebrates, green turtles, birds, and marine mammals that occur in the vicinity of NBSD.

The Navy has prepared an IHA application for the proposed floating dry dock at the south berth of the Mole Pier. The Navy will submit the IHA application and obtain approval from NMFS prior to the initiation of any in-water construction-related activities. With the imposition of an 82-foot (25-meter) buffered shutdown zone Level A (Injury) take would be avoided. The implementation of this alternative would result in up to 240 Level B (Behavior) takes.

Only two listed threatened or endangered species have the potential to occur in the project vicinity: the green turtle and California least tern. With implementation of BMPs, Alternative 1 would result in no effect on individuals of either of these species. Additionally, measures discussed in Section 3.3.3.1, *Avoidance or Minimization Measures*, would be implemented to further avoid potential impacts on special status species.

The construction and emplacement of the floating dry dock would result in new dredging and would shade approximately 2.62 acres of marine habitat. As a result, Alternative 1 would result in a calculated 8.48-percent reduction in ecological value as a result of the proposed floating dry dock. This would translate into a loss of function equivalent to 0.53 acres of unvegetated soft bay bottom. Within the Approach Area and Turning Basin, deepening of the area would result in a functional loss of 0.78 percent over the 21.39 acres. This translates into a functional loss equivalency of 0.17 acre. These impacts would be mitigated by providing offsetting ecological lift equivalent to the quantified loss with 0.084 acres of eelgrass habitat credits through the Navy Eelgrass Mitigation Bank (Merkel & Associates Inc. 2020a, 2020b).

In-water construction work associated with cumulative project may potentially occur simultaneously during the implementation of Alternative 1. However, even if in-water work for all projects is completed concurrently, the cumulative impacts would be minimal. The duration of construction associated Proposed Action dredging is not anticipated to be longer than 28 weeks and would be limited to the geographic scope of the 4.79-acre dredging area. For these reasons, any potential overlap between the projects would not result in a significant cumulative impact on biological resources. Therefore, Alternative 1, in conjunction with any reasonably foreseeable future projects, would not result in significant cumulative impacts on biological resources.

Alternative 2 (Preferred Alternative)

Impacts of Alternative 2, when compared with those of currently ongoing and reasonably foreseeable future actions, would be less than significant. Similar to Alternative 1, dredging, pile driving, and construction activities would result in a temporary increase in turbidity and underwater noise as well as the temporary removal of prey resources or foraging areas until such time that the benthos naturally recovers following completion of dredging. Short-term impacts on EFH from dredging activities would result in minor disturbances to the bottom of San Diego Bay as well as to the water column and fish from increased suspended sediment loads, turbidity, and underwater noise. Short-term impacts on EFH from dredging activities would result in minor disturbances to the bottom of San Diego Bay as well as to the water column and fish from increased suspended sediment loads, turbidity, and underwater noise. In addition, there would be only short-term, localized, and less than significant impacts on fish, invertebrates, green turtles, birds, and marine mammals that occur in the vicinity of NBSD.

As described for Alternative 1, underwater noise generated during dredging, demolition, and pile driving activities would disturb fish and marine mammals within the vicinity. The Navy has prepared and submitted an application for an IHA to NMFS. A public notice from NMFS is anticipated to be published in March 2020. Following the public noticing period, NMFS would consider issuance of an IHA for Alternative

2. With the imposition of an 82-foot (25-meter) buffered shutdown zone Level A (Injury) take would be avoided. The implementation of this alternative would result in up to 368 Level B (Behavior) takes.

Potential impacts on green turtles from implementation of the Proposed Action would primarily be from impact pile driving. However, with the imposition of an 82-foot (25-meter) buffered shutdown zone for green turtles, the potential for acoustic injury would be avoided. The Navy prepared and submitted a consultation letter to NMFS on 11 February 2020. The consultation letter provided a description of the Project, including background information and proposed avoidance and minimization measures, as well as potential impacts to species listed under the ESA.

After reviewing the consultation letter provided by the Navy, NMFS provided a response on 25 March 2020 concurring with the Navy that the Proposed Action may affect, but is not likely to adversely affect federally listed species and/or federally designated critical habitats (see Appendix D).

As with Alternative 1, only two listed threatened or endangered species have the potential to occur in the project vicinity: the green turtle and California least tern. With implementation of BMPs, the Alternative 2 would result in no effects on individuals of any species. Additionally, measures discussed in Section 3.3.3.1, *Avoidance or Minimization Measures*, would be implemented to further avoid potential impacts on special status species.

Under Alternative 2, dredging would convert approximately 5 acres of shallow subtidal habitat to moderately deep and deep subtidal habitat. Dredging would remove an eelgrass bed estimated to occupy 0.83 acres. The actual area of impact for eelgrass would be determined by pre- and post-dredging surveys. Subsequent to dredging, the floating dry dock and accessory structures would shade approximately 2.1 acres that have been converted to deep subtidal habitat. These impacts would be mitigated by providing offsetting ecological lift equivalent to the quantified loss through 1.084 acres of eelgrass habitat credits through the Navy Eelgrass Mitigation Bank (Merkel & Associates, Inc. 2020a, 2020b).

In-water construction work associated with cumulative project may potentially occur simultaneously during the implementation of Alternative 2. However, even if in-water work for all projects is completed concurrently, the cumulative impacts would be minimal. The duration of construction associated Proposed Action dredging is not anticipated to be longer than 28 weeks and would be limited to the geographic scope of the 4.79-acre dredging area. For these reasons, any potential overlap between the projects would not result in a significant cumulative impact on biological resources. Therefore, Alternative 2, in conjunction with any reasonably foreseeable future projects, would not result in significant cumulative impacts on biological resources.

Alternative 3

Impacts of Alternative 3 would have the combined impacts of Alternative 1 and Alternative 2. When compared with those of currently ongoing and reasonably foreseeable future actions, impacts would be temporary and less than significant, as described for Alternative 1 and Alternative 2.

4.4.4 Airborne Noise

4.4.4.1 Description of Geographic Study Area

The ROI for noise cumulative impacts includes areas in proximity to the project site at the Mole Pier at NBSD.

4.4.4.2 Relevant Past, Present, and Future Actions

The past, present, and reasonably foreseeable projects that have the greatest potential to interact with the Proposed Action and cumulatively generate noise impacts include actions that involve ongoing or future in-water operations. Impacts associated with past, short-term, dredging projects in the vicinity of the Proposed Action site are unlikely to interact with Proposed Action-associated impacts, given their temporal separation.

4.4.4.3 Cumulative Impact Analysis**No Action Alternative**

Under the No Action Alternative, existing conditions would remain unchanged. The emplacement of a floating dry dock(s) and all associated modifications necessary to accommodate the proposed floating dry dock(s) would not occur. Therefore, the No Action Alternative would not result in any significant direct or cumulative impacts on airborne noise.

Alternative 1

Alternative 1 would result in temporary, less than significant airborne noise impacts because noise-generating activities would not occur in the immediate vicinity of any sensitive receptors and airborne noise would be reduced by intervening structures, including industrial uses. Overall, impacts would be short-term and intermittent and airborne noise levels would be well below established thresholds. Implementation of Alternative 1, combined with past, present, and reasonably foreseeable future projects, would not substantially contribute to significant cumulative airborne noise impacts within the ROI.

Alternative 2 (Preferred Alternative)

Construction noise under Alternative 2 would contribute to cumulative airborne noise impacts for a longer duration of time relative to Alternative 1. Nevertheless, as described for Alternative 1, Alternative 2 would result in temporary, less than significant noise impacts because noise-generating activities would not occur in the immediate vicinity of any sensitive receptors and airborne noise would be reduced by intervening structures, including industrial uses. Overall, impacts would be short-term and intermittent and airborne noise levels would be well below established thresholds. Implementation of Alternative 2, combined with past, present, and reasonably foreseeable future projects, would not substantially contribute to significant cumulative airborne noise impacts within the ROI.

Alternative 3

Construction noise under Alternative 3 would contribute to cumulative airborne noise impacts for a longer duration of time relative to Alternative 1 and Alternative 2 individually. Construction activities under this alternative would consist of concurrent installation of a floating dry dock at the south berth of the Mole Pier and one at the southern edge of the NBSD property boundary near the existing MGBW maintenance piers. Nevertheless, as described for Alternative 1 and Alternative 2, these impacts would be temporary and less than significant because noise-generating activities would not occur in the immediate vicinity of any sensitive receptors and airborne noise would be reduced by intervening structures, including industrial uses. Overall, impacts would be short-term and intermittent and noise levels would be well below established thresholds. Implementation of Alternative 3, combined with past, present, and reasonably foreseeable future projects, would not result substantially contribute to significant cumulative airborne noise impacts within the ROI.

4.4.5 Transportation

4.4.5.1 Description of Geographic Study Area

The ROI for cumulative impacts for transportation and traffic would be less than significant for all disposal options discussed as part of the Proposed Action. All in-water disposal options (nearshore replenishment or ocean disposal) would not include any ground transportation; therefore, there would be no expected increase in traffic to circulation roadway segments and intersections in the vicinity of NBSD. Upland disposal of sediment would expand the ROI to include the regional road network connecting the CDF and the Otay Landfill.

4.4.5.2 Relevant Past, Present, and Future Actions

All cumulative projects at NBSD (refer to Tables 4-1 and 4-2) have the potential to add construction trips within the geographic extent of cumulative effects for traffic and circulation. Past projects would not contribute construction trips, while present and future projects could contribute to construction traffic, depending on the timing of these projects as they are constructed relative to the Proposed Action. Relevant past, present, and future actions would involve or involved minor facilities improvement projects, which would have negligible associated construction traffic trips within the cumulative ROI in conjunction with the Proposed Action. For example, the floating dry dock emplacement would result in temporary vehicle trip generation during demolition and construction. These vehicle trips would be composed of worker commute and truck trips and the number of trips would be lower than the volumes that would trigger a significant traffic impact, according to City of San Diego minimum performance standards for streets. The construction contractor would be required to prepare and receive Navy approval of a separate Traffic Control Plan to address the estimated minimal temporary increases in traffic during the construction period (Navy 2016). In the event that any of the current or future projects are constructed at the same time, the contribution of construction-related trips associated with the Proposed Action would not result in cumulatively considerable traffic impact.

4.4.5.3 Cumulative Impact Analysis

No Action Alternative

Under the No Action Alternative, existing conditions would remain unchanged. The emplacement of a floating dry dock(s) and all associated modifications necessary to accommodate the proposed floating dry dock(s) would not occur. Therefore, the No Action Alternative would not result in any significant direct or cumulative impacts on transportation.

Alternative 1

Alternative 1 is not anticipated to generate a significant number of daily trips during construction activities related to construction worker commutes and/or construction equipment/materials deliveries. The relatively small, short-term increase in daily trips would be a fraction of the daily trips on the surrounding roadways. Further, transportation impacts associated with demolition and construction under Alternative 1 would not substantially overlap with the potential implementation of cumulative projects. However, even if cumulative projects were to occur concurrently, they would generate only small numbers of trips that would not appreciably alter the impacts associated with Alternative 1, as discussed above in Section 3.5, *Transportation*. The disposal of dredge material at either of the in-water disposal sites would be temporary in nature and would not cause cumulative impacts with regard to other projects in San Diego Bay. Therefore, in conjunction with other past, present, or reasonably foreseeable projects,

there would be no significant cumulative impacts on traffic and circulation from implementation of Alternative 1.

Alternative 2 (Preferred Alternative)

Alternative 2 is not anticipated to generate a significant number of daily trips during construction activities related to construction worker commutes and/or construction equipment/materials deliveries. This relatively small, short-term increase in daily trips would be greater than that described for Alternative 1, but still a fraction of the daily trips on the surrounding roadways. Even if cumulative projects were to occur concurrently with Alternative 2, they would generate only moderate numbers of truck and personal vehicle trips and would not appreciably alter the impacts associated with Alternative 2, as discussed above in Section 3.5, *Transportation*. The disposal of dredge material at either of the in-water disposal sites would occur for a longer duration of time under this alternative, but would remain temporary in nature and would not cause cumulative impacts with regard to other cumulative projects in San Diego Bay. Therefore, in conjunction with other past, present, or reasonably foreseeable projects, there would be no significant cumulative impacts on traffic and circulation from implementation of Alternative 2.

Alternative 3

The number of daily trips during construction activities for Alternative 3 would be the sum of the related construction worker commutes and/or construction equipment/materials deliveries described for Alternative 1 and Alternative 2. Even if cumulative projects were to occur concurrently with Alternative 3, they would generate only moderate numbers of truck and personal vehicle trips and would not appreciably alter the impacts described for with Alternative 3, as discussed above in Section 3.5, *Transportation*. The disposal of dredge material at either of the in-water disposal sites would occur for a longer duration of time under this alternative, but would remain temporary in nature and would not cause cumulative impacts with regard to other cumulative projects in San Diego Bay. Therefore, in conjunction with other past, present, or reasonably foreseeable projects, there would be no significant cumulative impacts on traffic and circulation from implementation of Alternative 3.

4.4.6 Hazardous Materials and Wastes

4.4.6.1 Description of Geographic Study Area

The ROI for cumulative impacts related to hazardous materials and waste consists of NBSD.

4.4.6.2 Relevant Past, Present, and Future Actions

The past, present, and reasonably foreseeable future actions that have a potential to use hazardous materials or generate hazardous waste at NBSD include the Pier 8 Replacement project that may require use and/or disposal of hazardous materials, including fuels.

4.4.6.3 Cumulative Impact Analysis

No Action Alternative

Under the No Action Alternative, existing conditions would remain unchanged. The emplacement of a floating dry dock(s) and all associated modifications would not occur at the Mole Pier or the southern edge of the NBSD property boundary near the existing MGBW maintenance piers, and the current sediment surface depth would not be altered to meet the floating dry dock operational depth requirements. Therefore, the No Action Alternative would not result in any significant direct or cumulative impacts related to hazardous materials and wastes.

Alternative 1

Implementation of Alternative 1 would not result in any significant impacts related to hazardous materials and wastes. Sediment sampling is currently to determine potential hazards and sediment disposal options and all required permits, prevention plans, and management plans would be acquired and adhered to prevent exposure to hazardous materials or impacts on human health. Contractors would be subject to all federal, state, and San Diego County requirements for hazardous materials and hazardous waste management, and would be required to follow the HWMP. Additionally, all procedures would apply to construction contractors for the site-specific SWPPP to incorporate BMPs during construction and demolition activities. Similar procedures would be required with the potential implementation of cumulative projects involving in-water work or other disturbance and/or generation of hazardous materials and wastes. Therefore, there would be no cumulative impacts related to hazardous materials and wastes.

Alternative 2 (Preferred Alternative)

As described for Alternative 1, implementation of Alternative 2 would not result in a significant impacts related to hazardous materials and wastes. Sediment sampling would be conducted to determine potential hazards and sediment disposal options and all required permits, prevention plans, and management plans would be acquired and adhered to prevent exposure to hazardous materials or impacts on human health. A sampling analysis plan has been prepared by Mission Environmental LLC on behalf of MGBW and was reviewed and approved by USACE and USEPA. Contractors would be subject to all federal, state, and San Diego County requirements for hazardous materials and hazardous waste management, and would be required to follow the HWMP. Additionally, all procedures would apply to construction contractors for the site-specific SWPPP to incorporate BMPs during construction and demolition activities. Similar procedures would be required with the potential implementation of cumulative projects involving in-water work or other disturbance and/or generation of hazardous materials and wastes. Therefore, there would be no cumulative impacts related to hazardous materials and wastes.

Alternative 3

Implementation of Alternative 3 would not result in a significant impact from hazardous materials and wastes. Alternative 3 would generate the largest volume of dredged materials; however, sediment sampling would be conducted to determine potential hazards and sediment disposal options and all required permits, prevention plans, and management plans would be acquired and adhered to prevent exposure to hazardous materials or impacts on human health. Contractors would be subject to all federal, state, and San Diego County requirements for hazardous materials and hazardous waste management, and would be required to follow the HWMP. Additionally, all procedures would apply to construction contractors for the site-specific SWPPP to incorporate BMPs during construction and demolition activities. Similar procedures would be required with the potential implementation of cumulative projects involving in-water work or other disturbance and/or generation of hazardous materials and wastes. Therefore, there would be no cumulative impacts related to hazardous materials and wastes.

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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 is to 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 Federal and State Laws Applicable to the Proposed Action

<i>Plans, Policies, and Controls</i>	<i>Responsible Agency</i>	<i>Status of Compliance</i>
National Environmental Policy Act (42 U.S.C. Section 4321 <i>et seq.</i>); Council on Environmental Quality NEPA implementing regulations; Navy procedures for Implementing NEPA (32 Code of Federal Regulations Part 775)	Navy	This Draft Final Environmental Assessment has been prepared in accordance with Council on Environmental Quality Regulations implementing NEPA and Navy NEPA procedures.
Coastal Zone Management Act (16 Code of Federal Regulations Section 1451 <i>et seq.</i>)	Navy	A federal action is subject to CZMA federal consistency requirements if the action would have any reasonably foreseeable direct or indirect effect on any coastal use or resource. The Navy conducted an effects test for purposes of federal consistency review. Because of past similar activities in the area and similar effects to coastal uses and resource from dredging, the Navy determined that no adverse effects to coastal use or resources would occur in the coastal zone. The Navy has prepared and submitted a Coastal Consistency Negative Determination for the Proposed Action as required by the CZMA. The California Coastal Commission concurred with the Coastal Consistency Negative Determination in a letter dated 31 December 2019.
Clean Water Act (U.S.C. Section 1251 <i>et seq.</i>)	USEPA, USACE	The Proposed Action would not involve the release of chemicals requiring a National Pollutant Discharge Elimination System permit. The Proposed Action would involve dredging for which a CWA Section 404/Rivers and Harbors Act Section 10 permit from USACE would be obtained, along with related CWA Section 401 Water Quality Certification from the San Diego RWQCB. A CWA Section 103 permit in compliance with the Marine Protection, Research, and Sanctuaries Act would be obtained should ocean disposal be selected.

**Table 5-2 Principal Federal and State Laws Applicable to the Proposed Action
(Continued)**

<i>Plans, Policies, and Controls</i>	<i>Responsible Agency</i>	<i>Status of Compliance</i>
Clean Air Act (42 U.S.C. Section 7401 <i>et seq.</i>)	USEPA	Per the Federal CAA regulations, the Proposed Action would not compromise air quality attainment status or conflict with attainment status and maintenance goals established by the South Coast Air Quality Management District State Implementation Plan. A formal CAA conformity determination is not required. The Proposed Action would be in compliance with the CAA and would comply with all applicable San Diego Air Pollution Control District Rules and Regulations.
EO 11990, Protection of Wetlands (42 Federal Register 26961)	Navy	The Proposed Action would not affect wetlands (none are present in the project area) and would be in compliance with EO 11990.
Endangered Species Act (16 U.S.C. Section 1531)	NMFS	The Navy prepared and submitted a consultation letter to NMFS on 11 February 2020. After reviewing the consultation letter, NMFS provided a response on 25 March 2020 concurring with the Navy that the Proposed Action may affect, but is not likely to adversely affect federally listed species and/or federally designated critical habitats.
Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. Section 1801 <i>et seq.</i>) as amended by the Sustainable Fisheries Act (Public Law 104-267)	NMFS	The Proposed Action would have minimal adverse effects on essential fish habitat for federally managed fish species within the Coastal Pelagic Species and Pacific Coast Groundfish Fishery Management Plan areas. These effects would be temporary and limited in scope. The Proposed Action includes adequate measures to avoid and minimize any remaining potential adverse effects on essential fish habitat. The Navy prepared an EFH Assessment for consultation with NMFS. On 14 April 2020, NMFS stated that there is no objection to the Navy's proposed compensatory mitigation and NMFS has no additional EFH Conservation Recommendations at this time.
Marine Mammal Protection Act of 1972 (16 U.S.C. Sections 1361-1407)	NMFS	The Navy will obtain all required approvals from NMFS prior to the initiation of any in-water construction-related activities.
Migratory Bird Treaty Act (16 U.S.C. Sections 703-712)	Navy	The Proposed Action would be restricted to short-term, in-water work within a limited geographic area relative to the entire San Diego Bay.
National Historic Preservation Act (16 U.S.C. Section 470 <i>et seq.</i>)	Advisory Council on Historic Preservation, California State Historic Preservation Office	Project components will occur in-water without landside impacts on historic or cultural resources.

**Table 5-2 Principal Federal and State Laws Applicable to the Proposed Action
(Continued)**

<i>Plans, Policies, and Controls</i>	<i>Responsible Agency</i>	<i>Status of Compliance</i>
Comprehensive Environmental Response and Liability Act (42 U.S.C. Section 9601 <i>et seq.</i>)	Navy	The Proposed Action would not involve the use or discharge of any hazardous materials.
Emergency Planning and Community Right-to-Know Act (42 U.S.C. Sections 11001–11050)	Navy	The Proposed Action would not involve the use or discharge of any hazardous materials.
Resource Conservation and Recovery Act (42 U.S.C. Section 6901 <i>et seq.</i>)	Navy	The Proposed Action would not involve the use or discharge of any hazardous materials.
Sikes Act Improvement Act (16 U.S.C. Section 670a <i>et seq.</i>)	Navy	The Proposed Action would be in compliance with the Integrated Natural Resources Management Plan for San Diego Bay and Naval Base San Diego, and therefore would be in compliance with the Sikes Act Improvement Act.
EO 12088, Federal Compliance with Pollution Control Standards	Navy	The Proposed Action would not be a significant source of pollutants and would comply with all pollution control measures and would therefore be in compliance with EO 12088.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations (59 Federal Register 7629)	Navy	The Proposed Action would not directly affect any residential populations, including minority populations and low-income populations, and would be in compliance with EO 12898.
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks (62 Federal Register 19885)	Navy	The Proposed Action would not directly, or indirectly, affect any residential populations (including children) or locations where congregations of children would occur (e.g., schools, daycare centers, etc.) and would be in compliance with EO 13045.
EO 13089, Coral Reef Protection (63 Federal Register 32701)	Navy	The Proposed Action would not affect any coral reef habitat and would be in compliance with EO 13089.
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (66 Federal Register 3853)	Navy	The Proposed Action would not likely to have a measurable negative effect on migratory bird populations and would be in compliance with EO 13186.
EO 13175, Consultation and Coordination with Indian Tribal Governments (65 Federal Register 218)	Navy	The Proposed Action would not directly or indirectly affect any protected cultural, archeological, or historic resources and would be in compliance with EO 13175.
EO 13693, Planning for Federal Sustainability in the Next Decade (80 Federal Register 119)	Navy	The Proposed Action does not include structures with energy or water demands with potential improvements to conservation, and would be in compliance with EO 13693.

Abbreviations:

CAA = Clean Air Act

CWA = Clean Water Act

CZMA = Coastal Zone Management Act

EO = Executive Order

NMFS = National Marine Fisheries Service

USACE = U.S. Army Corps of Engineers

USEPA = U.S. Environmental Protection Agency

USFWS = U.S. Fish and Wildlife Service

5.2 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, including the use of nonrenewable 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 human labor and the consumption of fuel, oil, and lubricants for dredging vehicles. Human labor would be a reversible commitment limited to the period of dredging and construction as laborers would be available for other projects following completion of the project. Consumption of fuel, oil, and lubricants for dredging vehicles and pile drivers would include an irretrievable commitment of these resources; however, material consumption would be limited to implementing the Proposed Action and would not create a continuous demand for these resources by creating new permanent demand for these resources. Implementing the Proposed Action would not result in significant irreversible or irretrievable commitment of natural or depletable resources at NBSD.

5.3 Unavoidable Adverse Impacts

This EA has determined that the Proposed Action would not result in any significant impacts; therefore, there would be no probable adverse environmental effects that could not be avoided or that would not be amendable to mitigation.

5.4 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 impact 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.

The Proposed Action would, reversibly, dedicate equipment and other resources to a particular use during a limited period of time. These resources would not be available for other productive uses throughout the duration of the Proposed Action. However, these impacts are considered less than significant, because the facilities and geographic areas associated with the Proposed Action area are designated for, and have historically accommodated, the types of uses proposed, and the duration would be minimal. Therefore, the Proposed Action would not result in any impacts that would reduce environmental productivity or permanently narrow the range of beneficial uses of the environment. In fact, if the dredged sediments are found to be suitable for nearshore replenishment at the Nearshore Replenishment Site(s), the Proposed Action would result in a benefit to long-term productivity at the site, or sites, selected to receive dredged sediments. Further, maintenance dredging at the Mole Pier likely would eventually be required, thereby potentially providing an additional, long-term source of material for beneficial reuse.

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Appendix A

Air Quality Analysis and Record of Non-Applicability

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Appendix B

Ecological Functional Loss Analysis

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Appendix C

Informal Section 7 Consultation

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Appendix D

Essential Fish Habitat Assessment

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Appendix E

Coastal Consistency Negative Determination

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Appendix F

Public and Agency Participation

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