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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XF541

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Pier Replacement Project in San Diego, CA

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS has received a request from the U.S. Navy (Navy) for authorization to take marine mammals incidental to construction and demolition activities as part of a pier replacement project. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to the Navy to incidentally take marine mammals, by Level B Harassment only, during the specified activity. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [*insert date 30 days after date of publication in the FEDERAL REGISTER*].

ADDRESSES: Comments on the application should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries

Service. Physical comments should be sent to 1315 East-West Highway, Silver Spring, MD 20910 and electronic comments should be sent to *ITP.McCue@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments received electronically, including all attachments, must not exceed a 25-megabyte file size. Attachments to electronic comments will be accepted in Microsoft Word or Excel or Adobe PDF file formats only. All comments received are a part of the public record and will generally be posted to the Internet at *www.nmfs.noaa.gov/pr/permits/incidental/construction.htm* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Laura McCue, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *www.nmfs.noaa.gov/pr/permits/incidental/construction.htm*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are

made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

NMFS has defined "negligible impact" in 50 CFR 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

The MMPA states that the term "take" means to harass, hunt, capture, kill or attempt to harass, hunt, capture, or kill any marine mammal.

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

National Environmental Policy Act (NEPA)

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed

action (*i.e.*, the issuance of an incidental harassment authorization) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in CE B4 of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On June 19, 2017, we received a request from the Navy for an IHA to take marine mammals incidental to pile installation and demolition associated with a pier replacement project in San Diego Bay at Naval Base Point Loma in San Diego, CA (NBPL), including a separate monitoring plan. The Navy also submitted a draft monitoring report on June 13, 2017, pursuant to requirements of the previous IHA. These final application and monitoring plan were deemed adequate and complete on July 20, 2017. The pier replacement project is planned to occur over multiple years; this proposed IHA would cover only the fifth year of work and would be valid for a period of one year from the date of issuance. Hereafter, use of the generic term "pile driving" may refer to both pile installation and removal unless otherwise noted. The Navy's request is for take of nine species of marine mammals by Level B harassment. Neither the Navy nor NMFS expect mortality to result from this activity and, therefore, an IHA is appropriate.

Monitoring reports are available online at *www.nmfs.noaa.gov/pr/permits/incidental/construction.htm* and provide environmental information related to proposed issuance of this IHA for public review and comment.

This proposed IHA would cover one year of a larger project for which the Navy obtained prior IHAs and this request for take authorization is for the fifth year of the project, following the IHAs issued effective from October 8, 2016, through October 7, 2017 (81 FR 66628), September 1, 2013, through August 31, 2014 (78 FR 44539), from October 8, 2014, through October 7, 2015 (79 FR 65378), and from October 8, 2015, through October 7, 2016 (80 FR 62032). The Navy complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHA. Monitoring reports are available online at *www.nmfs.noaa.gov/pr/permits/incidental/construction.htm* and provide environmental information related to proposed issuance of this IHA for public review and comment.

Description of the Specified Activity

Overview

NBPL provides berthing and support services for Navy submarines and other fleet assets. The existing fuel pier serves as a fuel depot for loading and unloading tankers and Navy underway replenishment vessels that refuel ships at sea ("oilers"), as well as transferring fuel to local replenishment vessels and other small craft operating in San Diego Bay, and is the only active Navy fueling facility in southern California. Portions of the pier are over one hundred years old, while the newer segment was constructed in 1942. The pier as a whole is significantly past its design service life and does not meet current construction standards.

The Navy plans to demolish and remove the existing pier and associated pipelines and appurtenances while simultaneously replacing it with a generally similar structure that meets relevant standards for seismic strength and is designed to better accommodate modern Navy ships. Demolition and construction are planned to occur in two phases to maintain the fueling capabilities of the existing pier while the new pier is being constructed. During the fifth year of construction (the specified activity considered under this proposed IHA), the Navy anticipates construction at two locations: the fuel pier area and at the Naval Mine and Anti-Submarine Warfare Command (NMAWC), where the Navy's Marine Mammal Program (MMP) was temporarily moved during fuel pier construction (see Figure 1-1 in the Navy's application). At the fuel pier, the Navy anticipates finishing all the demolition, including removal of 180 square precast (PC) concrete and poly-concrete piles of varying sizes up to 24-in using a hydraulic pile cutter; cutting 30 66-in and 5 84-in concrete-filled steel caissons with a diamond wire saw; and removing 12 30-in steel piles by cutting with a plasma torch. Only the hydraulic pile cutting and diamond saw cutting of caissons reach Level B acoustic thresholds.

At the NMAWC, twenty-three 16-in diameter PC concrete guide piles would be driven (by vibratory and/or impact hammer) to restore gangway access to the recreational marina. Sixty-four 16-in diameter round PC concrete guide piles will be removed at NMAWC by jetting followed by dry-pulling; dry pulling does not reach the Level B acoustic thresholds. Table 1 summarizes the construction activities during the fifth year of the Navy's project.

Table 1. Construction Proposed to be Complete During Fifth Year of NBPL Project

Location and Pile Type or Structure	***Number***
Removal/Demolition	
Pier 180 (Fuel Pier)	

Poly-concrete and PC concrete piles up to 24-in square	180
66” concrete filled steel caissons	30
84” concrete filled steel caissons	5
30” steel at temporary south dolphin	12
Total – Pier 180 (Fuel Pier)	**227**
NMAWC	
Extract 16” PC round concrete	64
Total - NMAWC	**64**
Total Piles Removed	**291**
Installation	
NMAWC	
16” PC concrete guide piles	**23**
Total Piles Removed	**23**

Notes: PC = precast

The proposed actions with the potential to incidentally harass marine mammals within the waters adjacent to NBPL are vibratory and impact pile installation and certain demolition (*i.e.*, pile removal) techniques. Concurrent use of multiple pile driving rigs is not planned.

Dates and Duration

The proposed activities that would be authorized by this IHA, during the fifth year of work associated with the fuel pier project, would occur for one year from the date of issuance of this proposed IHA. Under the terms of a memorandum of understanding (MOU) between the Navy and the U.S. Fish and Wildlife Service (FWS), all noise- and turbidity-producing in-water activities in designated least tern foraging habitat are to be avoided during the period when least terns are present and engaged in nesting and foraging (a window from approximately May 1 through September 15). However, it is possible that in-water work not expected to result in production of significant noise or turbidity (*e.g.*, demolition activities) could occur at any time during the period of validity of this proposed IHA. The conduct of any such work would be

subject to approval from FWS under the terms of the MOU. We expect that in-water construction work would primarily occur from October through April. Pile driving would occur during normal working hours (approximately 7 a.m. to 6 p.m.), and would not occur earlier than 45 minutes after sunrise or later than 45 minutes before sunset.

Specific Geographic Region

NBPL is located on the peninsula of Point Loma near the mouth and along the northern edge of San Diego Bay (see Figures 1-1 and 1-2 in the Navy's application). San Diego Bay is a narrow, crescent-shaped natural embayment oriented northwest-southeast with an approximate length of 24 kilometers (km) and a total area of roughly 4,500 hectares (ha). The width of the bay ranges from 0.3 to 5.8 km, and depths range from 23 meters (m) mean lower low water (MLLW) near the tip of Ballast Point to less than 2 m at the southern end (see Figure 2-1 of the Navy's application). San Diego Bay is a heavily urbanized area with a mix of industrial, military, and recreational uses. The northern and central portions of the bay have been shaped by historic dredging to support large ship navigation. Dredging occurs as necessary to maintain constant depth within the navigation channel. Outside the navigation channel, the bay floor consists of platforms at depths that vary slightly. Sediments in northern San Diego Bay are relatively sandy as tidal currents tend to keep the finer silt and clay fractions in suspension, except in harbors and elsewhere in the lee of structures where water movement is diminished. Much of the shoreline consists of riprap and manmade structures. San Diego Bay is heavily used by commercial, recreational, and military vessels, with an average of over 80,000 vessel movements (in or out of the bay) per year (not including recreational boating within the Bay) (see Table 2-2 of the Navy's

application). For more information about the specific geographic region, please see section 2.3 of the Navy's application.

Detailed Description of Activities

In order to provide context, we described the entire project in our *Federal Register* notice of proposed authorization associated with the first-year IHA (78 FR 30873; May 23, 2013). Please see that document for an overview of the entire fuel pier replacement project, or see the Navy's Environmental Assessment (2013) for more detail. Here, we provide an overview of relevant construction methods before describing only the specific project portions scheduled for completion during the fifth work window. Please see Section 1 of the Navy's application for full detail of construction scheduling for this period. For the fifth year of work, approximately 23 concrete piles would be installed at NMAWC. The Navy does not anticipate needing future IHAs related to completion of construction at NBPL, but would apply for a sixth IHA if construction is not completed under this IHA.

Methods, Pile Installation – Vibratory hammers, which can be used to either install or extract a pile, contain a system of counter-rotating eccentric weights powered by hydraulic motors and are designed in such a way that horizontal vibrations cancel out, while vertical vibrations are transmitted into the pile. The pile driving machine is lifted and positioned over the pile by means of an excavator or crane, and is fastened to the pile by a clamp and/or bolts. The vibrations produced cause liquefaction of the substrate surrounding the pile, enabling the pile to be extracted or driven into the ground using the weight of the pile plus the hammer. Impact hammers use a rising and falling piston to repeatedly strike a pile and drive it into the ground.

Non-steel piles are typically impact-driven for their entire embedment depth, in part because non-steel piles are often displacement piles (as opposed to pipe piles) and require some impact to allow substrate penetration. However, jetting may be used to advance displacement piles to a certain embedment depth. Pile jetting utilizes a directed flow of pressurized water to assist in pile placement. The jetting technique liquefies the soils at the pile tip during pile placement, reducing the friction between adjacent sub-grade soil particles around the water jet. This greatly decreases the bearing capacity of the soils below the pile tip, causing the pile to descend toward its final tip elevation with much less soil resistance, largely under its own weight.

Methods, Pile Removal – There are multiple methods for pile removal. During previous demolition, piles were generally removed by cutting at the mudline, which can be accomplished in various ways. Piles are expected to be removed during this fifth-year IHA primarily using a pile cutter, which is a bladed hydraulic device that shears the pile off. The preferred method of removing the caisson elements is to cut them at the mudline and then into two sections using a diamond wire cutting saw. Existing caisson elements would be removed with a clamshell, which is a dredging bucket consisting of two similar halves that open/close at the bottom and are hinged at the top. The clamshell would be used to grasp and lift large components.

Piles may also be removed by simply dry pulling, or pulling after the pile has been loosened using a vibratory hammer or a pneumatic chipper. Jetting may be another option to loosen piles that could not be removed through the previous procedures. Pile removal is not generally expected to require the use of vibratory extraction or pneumatic chipping, and these

methods are considered as contingency in the event other methods of extraction are not successful.

Construction – Construction work during the proposed fifth year of activity would include driving of concrete piles to restore dock access at NMAWC following Navy Marine Mammal Program (MMP) removal from NMAWC. This work is expected to require a total of 25 days.

Demolition – Demolition of the old pier will be completed now that the new pier is operational. Much of the demolition work will be above-water, involving removal of the pier, pilings, plastic camels and fenders, but in-water structure removal will also occur, as described above under *Methods, Pile Removal*. The in-water portion of demolition work planned during the period of this proposed IHA is expected to require 156 days in total.

NMAWC – As described above, the Navy also plans to return the MMP to its permanent location near the fuel pier, requiring extraction and installation of concrete piles to return the NMAWC site to its original condition. This work is expected to require 15days.

Description of Work Accomplished

During the first in-water work season (2013-14), two primary activities were conducted: relocation of the MMP and the Indicator Pile Program (IPP). During the second in-water work season (2014-15), the IPP was concluded and simultaneous construction of the new pier and demolition of the old pier begun. Production pile driving continued during the third in-water work season (2015-16). During the fourth in-water work season (2016-17) pile driving of fender piles and structural piles for the mooring dolphins for the new fuel pier was conducted, including two IPP piles, demolition of the old fuel pier, and pile driving and extraction at NMAWC.

The Navy MMP, administered by Space and Naval Warfare Systems (SPAWAR) Command Systems Center (SSC), was moved approximately three kilometers to the NMAWC (see Figures 1-1 and 1-2 of the Navy's Year 1 monitoring report). Although not subject to the MMPA, SSC's working animals were temporarily relocated so that they will not be affected by the project. Over the course of 25 in-water construction days from January 28 to March 13, 2014, the Navy removed thirty and installed 81 concrete piles (12- and 16-in). See Table 3-2 of the Navy's Year 1 monitoring report for details. Installation was accomplished via a D19-42 American Pile Driving Equipment, Inc. (APE) diesel hammer with energy capacity of 23,566-42,800 ft-lbs and fitted with a hydraulic tripping cylinder with four adjustable power settings that could be reset while driving. Pile removal was accomplished by jetting and dead pull.

The IPP was designed to validate the length of pile required and the method of installation (vibratory and impact) as well as to validate acoustic sound pressure levels of the various sizes and locations (*i.e.*, shallow versus deeper water) of installed piles. Nine steel pipe test piles were vibratory- and impact-driven over ten work days from April 28 to May 15, 2014, including two 30-in and seven 36-in piles. All piles were initially installed using an APE Variable Moment 250 VM Vibratory Hammer Extractor powered by a model 765 hydraulic power source creating a maximum driving force of 2,389 kilonewtons (269 tons). Impact pile driving equipment consisted of a single acting diesel impact hammer model D62-22 DELMAG with energy capacity of 76,899-153,799 ft-lbs and fitted with a hydraulic tripping cylinder with four adjustable power settings that could be reset while driving. One additional 36-in pile was installed in Spring 2015, under the Year 2 IHA, to conclude the IPP.

Production pile driving associated with construction of the new pier was begun in Fall 2014 and continued into Spring 2015. Both vibratory and impact driving was used, as described above, to install 238 steel pipe piles (four 18-in, 31 30-in, and 203 36-in diameter). Hammers used were the same as those described above. Demolition activity began in Spring 2015, and included the removal of four caissons, eighteen concrete fender piles, and a portion of concrete decking from the existing fuel pier. In total, this work consisted of 100 days of activity from October 16, 2014, through April 29, 2015. Of these 100 days of in-water work, 18 days involved only impact driving, 15 days included only vibratory driving, and 65 days where both types of driving occurred. The remaining two days involved only demolition activities. Please see the Year 2 monitoring report for more information.

Production pile driving continued in early 2016 during three distinct construction periods from January 11 through April 30, 2016, with 161 piles installed over the course of 50 days. Because most structural steel pipe piles were installed under the Year 2 IHA, this work primarily involved placement of non-structural concrete fender piles. Both vibratory and impact driving was used, as described above, to install 132 16-in polycarbonate coated concrete fender piles and 23 24 x 30-in concrete fender piles. In addition, six 30-in steel pipe piles were installed as structural elements to support a mooring dolphin. Hammers used for the steel piles were the same as those described above. The 16-in concrete piles were driven using an APE single action diesel impact hammer model D25-32, with energy capacity of 29,484-58,245 ft-lbs and fitted with a manual power level modulator and shut off trip. The 24 x 30-in concrete piles were driven using an APE single action diesel impact hammer model D80-42, with energy capacity of 127,008-198,450 ft-lbs and fitted with a manual power level modulator and shut off trip. No

demolition occurred during this period. Of the 50 days of in-water work, 45 days involved only impact driving, two days included only vibratory driving, and three days where both types of driving occurred. Please see the Year 3 monitoring report for more information.

Production pile driving during Year 4 construction, from October 8, 2016 to April 30, 2017, included 68 piles of three types of piles driven with two different methods over 34 days: 30-in steel piles were driven with both vibratory and impact hammers, and the 24 x 30-in concrete and 16-in poly-concrete piles were installed with impact hammers. High pressure water jetting were used to "pre-drill" holes for the 24x30 in piles. In addition, Structural piles were installed for two dolphins to the south of the new fuel pier, fender piles were installed on the east and west sides of the new fuel pier as well as on one of the dolphins, and a single 16-inch poly-concrete pile (concrete pile lined with a polycarbonate outer sheath) was driven on the west side of the pier.

Demolition during Year 4 included removal of the caissons from the north side of the old fuel pier, as well as removal of structural and fender piles sizes under, and adjacent to, the south and north sections of the old pier. Eighteen 84-in caissons were cut using a wire saw. A total of 278 piles were clipped, including 14-in, 18-in, and 24-in fender piles and 13-in polycarbonate and poly-concrete piles. Of the 69 days of in-water work, 42 days involved pile clipping and 27 days involved pile cutting. Please see the Year 4 monitoring report for more information.

Additional work may be conducted under the existing IHA between September 15 and October 7, 2017, in which case the submitted monitoring report would be amended as necessary.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see *Proposed Mitigation* and *Proposed Monitoring and Reporting*).

Description of Marine Mammals in the Area of the Specified Activity

Species with the expected potential to be present during all or a portion of the in-water work window include the California sea lion (*Zalophus californianus*), harbor seal (*Phoca vitulina richardii*), northern elephant seal (*Mirounga angustirostris*), gray whale (*Eschrichtius robustus*), bottlenose dolphin (*Tursiops truncatus truncatus*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Risso's dolphin (*Grampus griseus*), and either short-beaked or long-beaked common dolphins (*Delphinus* spp.). California sea lions are present year-round and are very common in the project area, while bottlenose dolphins and harbor seals are common and likely to be present year-round but with more variable occurrence in San Diego Bay. Gray whales may be observed in San Diego Bay sporadically during migration periods. The remaining species are known to occur in nearshore waters outside San Diego Bay, but are generally only rarely observed near or in the bay. However, recent observations indicate that these species may occur in the project area and therefore could potentially be subject to incidental harassment from the aforementioned activities.

There are four marine mammal species which are either resident or have known seasonal occurrence in the vicinity of San Diego Bay, including the California sea lion, harbor seal, bottlenose dolphin, and gray whale (see Figures 3-1 through 3-4 and 4-1 in the Navy's application). In addition, common dolphins (see Figure 3-4 in the Navy's application), the Pacific white-sided dolphin, Risso's dolphin, and northern elephant seals are known to occur in deeper waters in the vicinity of San Diego Bay and/or have been observed within the bay during the course of this project's monitoring. Although the latter three species of cetacean would not generally be expected to occur within the project area, the potential for changes in occurrence

patterns in conjunction with recent observations leads us to believe that authorization of incidental take is warranted. Common dolphins have been documented regularly at the Navy's nearby Silver Strand Training Complex, and were observed in the project area during previous years of project activity. The Pacific white-sided dolphin has been sighted along a previously used transect on the opposite side of the Point Loma peninsula (Merkel and Associates, 2008) and there were several observations of Pacific white-sided dolphins during Year 2 monitoring. Risso's dolphin is fairly common in southern California coastal waters (*e.g*., Campbell *et al*., 2010), and could occur in the bay. Northern elephant seals are included based on their continuing increase in numbers along the Pacific coast (Carretta *et al*., 2016) and the likelihood that animals that reproduce on the islands offshore of Baja California and mainland Mexico – where the population is also increasing – could move through the project area during migration, as well as the observation of a juvenile seal near the fuel pier in April 2015.

Note that common dolphins could be either short-beaked (*Delphinus delphis delphis*) or long-beaked (*D. delphis bairdii*) subspecies. While it is likely that common dolphins observed in the project area would be long-beaked, as it is the most frequently stranded species in the area from San Diego Bay to the U.S.-Mexico border (Danil and St. Leger 2011), the species distributions overlap and it is unlikely that observers would be able to differentiate them in the field. Therefore, we consider that any common dolphins observed – and any incidental take of common dolphins – could be either long- or short-beaked common dolphins.

In addition, other species that occur in the Southern California Bight may have the potential for isolated occurrence within San Diego Bay or just offshore. In particular, a short-finned pilot whale (*Globicephala macrorhynchus*) was observed off Ballast Point, and a Steller

sea lion (*Eumetopias jubatus monteriensis*) was seen in the project area during Year 2. These species are not typically observed near the project area and, unlike the previously mentioned species, we do not believe it likely that they will occur in the future. Given the unlikelihood of their exposure to sound generated from the project, these species are not considered further.

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SAR*; www.nmfs.noaa.gov/pr/sars/*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*www.nmfs.noaa.gov/pr/species/mammals/*).

Table 2 lists all marine mammal species with expected potential for occurrence in the vicinity of NBPL during the project timeframe and summarizes key information, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. See also Figures 3-1 through 3-5 of the Navy's application for observed occurrence of marine mammals in the project area. For taxonomy, we follow Committee on Taxonomy (2016). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. 2016 stock assessment report (SARs) (*e.g.*, NMFS 2016). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2016 SAR (available online at *www.nmfs.noaa.gov/pr/sars).*

Table 2. Marine Mammals Potentially Present in the Vicinity of NBPL

Species	Stock	ESA/MMPA status; Strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR[3]	Annual M/SI[4]	Relative occurrence in San Diego Bay; season of occurrence
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Gray whale	Eastern North Pacific	-; N	20,990 (0.05; 20,125; 2011)	624	132	Occasional migratory visitor; winter
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Bottlenose dolphin	California coastal	-; N	453 (0.06; 346; 2011)	2.7	≥2.0	Common; year-round
Short-beaked common dolphin	California/Oregon/ Washington	-; N	969,861 (0.17; 839,325; 2014)	8,393	≥40	Occasional; year-round (but more common in warm season)
Long-beaked common dolphin	California	-; N	101,305 (0.49; 68,432; 2014)	657	≥35.4	Occasional; year-round (but more common in warm season)
Pacific white-sided dolphin	California/Oregon/ Washington	-; N	26,814 (0.28; 21,195; 2014)	191	7.5	Uncommon; year-round
Risso's dolphin	California/Oregon/ Washington	-; N	6,336 (0.32; 4,817; 2014)	46	≥3.7	Rare; year-round (but more common in cool season)
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
California sea lion	U.S.	-; N	296,750 (n/a; 153,337; 2011)	9,200	389	Abundant; year-round
Family Phocidae (earless seals)						
Harbor seal	California	-; N	30,968 (n/a; 27,348; 2012)	1,641	43	Common; year-round

Northern elephant seal	California breeding	-; N	179,000 (n/a; 81,368; 2010)	4,882	8.8	Rare; year-round

[1]Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR (see footnote 3) or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2]CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For certain stocks of pinnipeds, abundance estimates are based upon observations of animals (often pups) ashore multiplied by some correction factor derived from knowledge of the species (or similar species) life history to arrive at a best abundance estimate; therefore, there is no associated CV. In these cases, the minimum abundance may represent actual counts of all animals ashore.

[3]Potential biological removal, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population size (OSP).

[4]These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, subsistence hunting, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value.

All species that could potentially occur in the proposed survey areas are included in Table 2. As described below, all eight species (with nine managed stocks) temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it.

Gray Whale

Two populations of gray whales are recognized, Eastern and Western North Pacific (ENP and WNP). The two populations have historically been considered geographically isolated from each other; however, recent data from satellite-tracked whales indicates that there is some overlap between the stocks. Two WNP whales were tracked from Russian foraging areas along the Pacific rim to Baja California (Mate *et al*., 2011), and, in one case where the satellite tag remained attached to the whale for a longer period, a WNP whale was tracked from Russia to Mexico and back again (IWC, 2012). Between 22-24 WNP whales are known to have occurred in the eastern Pacific through comparisons of ENP and WNP photo-identification catalogs (IWC 2012; Weller *et al*., 2011; Burdin *et al*., 2011), and WNP animals comprised 8.1 percent of gray

whales identified during a recent field season off of Vancouver Island (Weller *et al*., 2012). In addition, two genetic matches of WNP whales have been recorded off of Santa Barbara, CA (Lang *et al*., 2011). More recently, Urban *et al*. (2013) compared catalogs of photo-identified individuals from Mexico with photographs of whales off Russia and reported a total of 21 matches. Therefore, a portion of the WNP population is assumed to migrate, at least in some years, to the eastern Pacific during the winter breeding season.

However, only ENP whales are expected to occur in the project area. The likelihood of any gray whale being exposed to project sound to the degree considered in this document is already low, as it would require a migrating whale to linger for an extended period of time, or for multiple migrating whales to linger for shorter periods of time. While such an occurrence is not unknown, it is uncommon. Further, of the approximately 20,000 gray whales migrating through the Southern California Bight, it is extremely unlikely that one found in San Diego Bay would be one of the approximately twenty WNP whales that have been documented in the eastern Pacific (less than one percent probability). The likelihood that a WNP whale would be exposed to elevated levels of sound from the specified activities is insignificant and discountable and WNP whales are not considered further in this document.

Gray whale transitory occurrence inside San Diego Bay is sporadic and unpredictable. A mean group size of 2.9 gray whales was reported for both coastal (16 groups) and non-coastal (15 groups) areas around Southern California Bight. The largest group reported was nine animals. The largest group reported by U.S. Navy (in 1998) was 27 animals (Carretta *et al*., 2000). Gray whales are not expected in the project area except during the northward migration, when they are closest to the coast (Rice *et al*., 1981).

Bottlenose Dolphin

The California coastal stock of bottlenose dolphin is distinct from the offshore population and is resident in the immediate (within 1 km of shore) coastal waters, occurring primarily between Point Conception, California, and San Quintin, Mexico. Occasionally, during warm-water incursions such as during the 1982–1983 El Niño events, their range extends as far north as San Francisco Bay (Carretta *et al.*, 2017). They are commonly found in groups of 2 to 15 individuals and in larger groups offshore.

Coastal bottlenose dolphins have occurred sporadically and in highly variable numbers and locations in San Diego Bay. Navy surveys showed that bottlenose dolphins were most commonly sighted in April, and there were more dolphins observed during El Niño years.

Pacific White-Sided Dolphin

Pacific white-sided dolphins are endemic to temperate waters of the North Pacific Ocean, and are common both on the high seas and along the continental margins (Carretta *et al*., 2014). Off the U.S. west coast, Pacific white-sided dolphins occur primarily in shelf and slope waters. Sighting patterns from aerial and shipboard surveys conducted in California, Oregon and Washington suggest seasonal north-south movements, with animals found primarily off California during the colder water months and shifting northward into Oregon and Washington as water temperatures increase in late spring and summer (Carretta *et al*., 2014).

Pacific white-sided dolphins are uncommon in San Diego Bay, but observations of this species increased during El Niño years. Monitoring during the Year 2 IHA documented 7 sightings of Pacific white-sided dolphins, comprising 27 individuals, with a mean group size of 3.85 individuals per sighting and an average of 0.28 individuals sighted per day of monitoring.

Common Dolphin

Short-beaked common dolphins are the most abundant cetacean off California and are widely distributed between the coast and at least 300 nmi offshore. In contrast, long-beaked common dolphins generally occur within 50 nmi of shore. Both species of common dolphin appear to shift their distributions seasonally and annually in response to oceanographic conditions and prey availability (Carretta *et al.,* 2016). The long-beaked species apparently prefers shallower, warmer water than the short-beaked common dolphin (Perrin 2009). Both tend to be more abundant in coastal waters during warm-water months (Bearzi 2005).

The occurrence of common dolphins inside San Diego Bay is uncommon (NAVFAC SW and POSD 2013). Small groups were observed briefly on several occasions in the northern part of the bay by Navy monitors during the IPP (May 2014). The animals were moving swiftly and could not be distinguished as to species, but the weight of evidence based on distributions of the two species and previous sightings of the long-beaked species near San Diego is that they were probably long-beaked common dolphins.

California Sea Lion

The entire population of California sea lions cannot be counted because all age and sex classes are never ashore at the same time. In lieu of counting all sea lions, pups are counted when all are ashore, in July during the breeding season, and the number of births is estimated from pup counts (Carretta *et al*., 2016). The size of the population is then estimated from the number of births and the proportion of pups in the population. Based on these censuses, the U.S. stock has generally increased from the early 1900s, to a current estimate of 296,750 (Carretta *et al*., 2016). There are indications that the California sea lion may have reached or is approaching carrying

capacity, although more data are needed to confirm that leveling in growth persists (Carretta *et al*., 2016).

The California sea lion is by far the most commonly-sighted pinniped species at sea or on land in the vicinity of NBPL and northern San Diego Bay. The Navy has conducted numerous marine mammal surveys overlapping the north San Diego Bay project area and the potential ZOI for impact and vibratory pile driving operations. California sea lions regularly occur on rocks, buoys and other structures, and especially on bait barges, although numbers vary greatly.

Harbor Seal

Harbor seals are considered abundant throughout most of their range from Baja California to the eastern Aleutian Islands. Peak numbers of harbor seals haul-out on land during late May to early June, which coincides with the peak of their molt. Harbor seals do not make extensive pelagic migrations, but do travel hundred of km on occasion to find food or suitable breeding areas (Carretta *et al.,* 2016). Based on likely foraging strategies, Grigg *et al*. (2009) reported seasonal shifts in harbor seal movements based on prey availability. In relationship to the entire California stock, harbor seals do not have a significant mainland California distribution south of Point Mugu.

Harbor seals are relatively uncommon within San Diego Bay. Sightings in the Navy transect surveys of northern San Diego Bay through March 2012, and were limited to individuals outside of the ZOI, on the south side of Ballast Point (TDI 2012b; Jenkins 2012). However, Navy marine mammal monitoring for another project conducted intermittently at Pier 122 from 2010-2014 documented from zero to 4 harbor seals near Pier 122 (within the ZOI) at various times, with the greatest number of sightings during April and May (Jenkins 2012; Bowman

2014). An individual harbor seal was also frequently sighted near NMAWC during 2014 (McConchie 2014).

Northern Elephant Seal

A complete population count of elephant seals is not possible because all age classes are not ashore simultaneously. The population is estimated to have grown at 3.8% annually since 1988 (Lowry *et al*., 2014). Northern elephant seals breed and give birth in California (U.S.) and Baja California (Mexico), primarily on offshore islands. Populations of northern elephant seals in the U.S. and Mexico have recovered after being reduced to near extinction by hunting, undergoing a severe population bottleneck and loss of genetic diversity with the population reduced to only an estimated 10-30 individuals.

Northern elephant seals occur in the southern California bight, and have the potential to occur in San Diego Bay (NAVFAC SW and POSD 2013), but the only recent documentation of occurrence was of a single distressed juvenile observed on the beach south and inshore of the Fuel Pier during the second year IHA. Given the continuing, long-term increase in the population of northern elephant seals (Lowry *et al*., 2014), there is an increasing possibility of occurrence in the project area.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g*., Richardson *et al*., 1995; Wartzok and Ketten 1999; Au and Hastings

2008). To reflect this, Southall *et al*. (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e*., low-frequency cetaceans). Subsequently, NMFS (2016) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al*. (2007) retained. The functional groups and the associated frequencies are indicated below (note that these frequency ranges correspond to the range for the composite group, with the entire range not necessarily reflecting the capabilities of every species within that group):

- Low-frequency cetaceans (mysticetes): generalized hearing is estimated to occur between approximately 7 Hz and 35 kHz, with best hearing estimated to be from 100 Hz to 8 kHz;
- Mid-frequency cetaceans (larger toothed whales, beaked whales, and most delphinids): generalized hearing is estimated to occur between approximately 150 Hz and 160 kHz, with best hearing from 10 to less than 100 kHz;
- High-frequency cetaceans (porpoises, river dolphins, and members of the genera Kogia and Cephalorhynchus; including two members of the genus Lagenorhynchus, on the basis

of recent echolocation data and genetic data): generalized hearing is estimated to occur between approximately 275 Hz and 160 kHz.

- Pinnipeds in water; Phocidae (true seals): generalized hearing is estimated to occur between approximately 50 hertz (Hz) to 86 kilohertz (kHz), with best hearing between 1-50 kHz;
- Pinnipeds in water; Otariidae (eared seals): generalized hearing is estimated to occur between 60 Hz and 39 kHz, with best hearing between 2-48 kHz.

The pinniped functional hearing group was modified from Southall *et al*. (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al*., 2006; Kastelein *et al*., 2009; Reichmuth and Holt 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2016) for a review of available information. Nine marine mammal species (six cetacean and three pinniped (1 otariid and 2 phocid species) have the reasonable potential to co-occur with the proposed survey activities. Please refer to Table 2. Of the cetacean species that may be present, one is classified as low-frequency cetaceans (*i.e*., all mysticete species), and five are classified as mid-frequency cetaceans (*i.e*., all delphinid and ziphiid species and the sperm whale).

Potential Effects of the Specified Activity on Marine Mammals and Their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The *Estimated Take by Incidental Harassment* section later in this document includes a quantitative analysis of the

number of individuals that are expected to be taken by this activity. The *Negligible Impact Analysis and Determination* section considers the content of this section, the *Estimated Take by Incidental Harassment* section, and the *Proposed Mitigation* section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

We provided discussion of the potential effects of the specified activity on marine mammals and their habitat in our *Federal Register* notices of proposed authorization associated with the first- and second-year IHAs (78 FR 30873; May 23, 2013 and 79 FR 53026; September 5, 2014). The specified activity associated with this proposed IHA is substantially similar to those considered for the first- and second-year IHAs and the potential effects of the specified activity are the same as those identified in those documents. Therefore, we do not reprint the information here but refer the reader to those documents.

In the aforementioned *Federal Register* notices, we also provided general background information on sound and marine mammal hearing and a description of sound sources and ambient sound and refer the reader to those documents. However, because certain terms are used frequently in this document, we provide brief definitions of relevant acoustic terminology below:

- Sound pressure level (SPL): Sound pressure is the force per unit area, usually expressed in microPascals (μPa), where one Pascal equals one Newton exerted over an area of one square meter. The SPL is expressed in dB as twenty times the logarithm to the base ten of the ratio between the pressure exerted by the sound to a referenced sound pressure. SPL is the quantity that is directly measured by a sound level meter. For underwater sound, SPL in dB is

referenced to one microPascal (re 1 μPa), unless otherwise stated. For airborne sound, SPL in dB is referenced to 20 microPascals (re 20 μPa), unless otherwise stated.

- Frequency: Frequency is expressed in terms of oscillations, or cycles, per second. Cycles per second are commonly referred to as Hz. Typical human hearing ranges from 20 Hz to 20 kHz.
- Peak sound pressure: The instantaneous maximum of the absolute positive or negative pressure over the frequency range from 20 Hz to 20 kHz and presented in dB.
- Root mean square (rms) SPL: For impact pile driving, overall dB rms levels are characterized by integrating sound for each waveform across ninety percent of the acoustic energy in each wave and averaging all waves in the pile driving event. This value is referred to as the rms 90 percent. With this method, the time averaging per pulse varies.
- Sound Exposure Level (SEL): A measure of energy, specifically the dB level of the time integral of the squared-instantaneous sound pressure, normalized to a one second period. It is a useful metric for assessing cumulative exposure because it enables sounds of differing duration, to be compared in terms of total energy. The accumulated SEL (SEL_{cum}) is used to describe the SEL from multiple events (*e.g.*, many pile strikes). This can be calculated directly as a logarithmic sum of the individual single-strike SELs for the pile strikes that were used to install the pile.
- Level Z weighted (unweighted), equivalent (LZ_{eq}): LZ_{eq} is a value recorded by the SLM that represents SEL SPL over a specified time period or interval. The LZeq is most typically referred to in one-second intervals or over an entire event.

- Level Z weighted (unweighted), fast (LZF_{max}): LZF_{max} is a value recorded by the SLM that represents the maximum rms value recorded for any 125 millisecond time frame during each individual recording.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of whether the number of takes is "small" and the negligible impact determination. Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to acoustic sources. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.*, shutdown, soft start, *etc*. – discussed in detail below in *Proposed Mitigation* section), Level A harassment is neither anticipated nor proposed to be authorized.

As described previously, no mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

Described in the most basic way, we estimate take by considering: 1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be

behaviorally harassed or incur some degree of permanent hearing impairment; 2) the area or volume of water that will be ensonified above these levels in a day; 3) the density or occurrence of marine mammals within these ensonified areas; and, 4) and the number of days of activities. Below, we describe these components in more detail and present the proposed take estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 μPa (rms) for continuous (*e.g.* vibratory pile-driving, drilling) and above 160 dB re 1 μPa (rms) for non-explosive impulsive (*e.g.*, impact pile driving) or intermittent *(e.g.*, scientific sonar) sources.

The Navy's proposed activity includes the use of continuous (vibratory pile driving, demolition) and impulsive (impact pile driving) sources, and therefore the 120 and 160 dB re 1 µPa (rms) are applicable.

Level A harassment for non-explosive sources - NMFS's Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NOAA 2016) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). The Navy's construction project includes the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving) sources.

These thresholds were developed by compiling and synthesizing the best available science and soliciting input multiple times from both the public and peer reviewers to inform the final product, and are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2016 Technical Guidance, which may be accessed at: *http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm*.

Table 3. Thresholds Identifying the Onset of Permanent Threshold Shift

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-frequency cetaceans	*Cell 1* Lpk,flat: 219 dB LE,LF,24h: 183 dB	*Cell 2* LE,LF,24h: 199 dB
Mid-frequency cetaceans	*Cell 3* Lpk,flat: 230 dB LE,MF,24h: 185 dB	*Cell 4* LE,MF,24h: 198 dB
High-frequency cetaceans	*Cell 5* Lpk,flat: 202 dB LE,HF,24h: 155 dB	*Cell 6* LE,HF,24h: 173 dB
Phocid Pinnipeds (underwaters)	*Cell 7* Lpk,flat: 218 dB LE,PW,24h: 185 dB	*Cell 8* LE,PW,24h: 201 dB
Otariid Pinnipeds	*Cell 9*	*Cell 10*

(underwater)	Lpk,flat: 232 dB LE,OW,24h: 203 dB	LE,OW,24h: 219 dB

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Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds.

The intensity of pile driving or sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. For the installation of 30-in steel piles and pile cutting activities, acoustic monitoring during the first and second IHA periods (NAVFAC 2015) resulted in empirical data that are directly applicable to the fifth IHA period in terms of the activities and the location, depth, sizes and types of piles.

Table 4 identifies the sound source levels that are used in evaluating impact and vibratory pile driving and extraction in the current IHA application. Sound levels for the hydraulic pile cutter, diamond saw caisson cutting, and pile jetting were measured during the fourth IHA period (NAVFAC SW 2017). No acoustic data are available from the vibratory driving of 16-in concrete piles, so the data for vibratory installation of 30-in steel piles from the second IHA period are used as a conservative proxy (NAVFAC SW 2015). Finally, SPLs were measured for the impact driving of 16-in poly-concrete piles during the third IHA monitoring period (NAVFAC SW 2016a), and are used in this application for the same activities.

Table 4. Underwater Sound Pressure Levels from Similar *In situ* Monitored Construction Activities from Previous Years

Project and Location	***Pile Size and Type***	***Method***	***Water Depth***	***Measured Sound Pressure Levels (rms) at 10 m*** (dB re 1 µPa)

				mean[1]	*max*[2]
NBPL Fuel Pier, San Diego, CA	13 to 24-in concrete	Hydraulic pile cutting	9 m (30 ft)	145	165.3
NBPL Fuel Pier, San Diego, CA	66- and 84-in steel caisson	Diamond saw cutting	9 m (30 ft)	149	155.6
NBPL Fuel Pier, San Diego, CA	24-in concrete	Jetting	9 m (30 ft)	155	159.9
NBPL Fuel Pier, San Diego, CA	30-in Steel Pipe	Vibratory	9 m (30 ft)	162.5	162.5[3]
NBPL Fuel Pier, San Diego, CA	16-in Poly-Concrete	Impact	9 m (30 ft)	188.9	195[4]

[1]Mean source levels used from data from previous monitoring reports (NAVFAC SW 2015, 2016a, 2017). Mean source levels were used to calculate Level B ZOIs.
[2]Maximum source levels used from data from previous monitoring reports (NAVFAC SW 2015, 2016a, 2017). Max source levels were used to calculate Level A ZOIs. Maximum source levels used were proposed by the Navy.
[3]Mean source levels for 30-in steel pipe piles were used as a proxy to calculate ZOIs for vibratory driving of 16-in concrete guide piles (NAVFAC SW 2015).
[4]The maximum source level is included for reference only. The distance to the Level B ZOI is based on *in situ* data collected for 16-in poly-concrete piles and was documented in NAVFAC SW (2016a).

Scarce data exists on airborne and underwater noise levels associated with vibratory hammer extraction. However, it can reasonably be assumed that vibratory extraction emits SPLs that are no higher than SPLs caused by vibratory hammering of the same materials, and results in lower SPLs than caused by impact hammering comparable piles. For this application, the same value (162.5 dB re 1µPa) that was obtained for vibratory hammering of the 30-in steel piles at the Fuel Pier (NAVFAC SW 2015) is used for the vibratory hammering of 16-in round concrete piles at NMAWC. None of the peak SPLs for the various sound sources reach the injury thresholds identified in the new NMFS (2016) Technical Guidance; therefore, injury from peak sound levels is not considered further.

Table 6 provides the calculated areas of Level A and Level B ZOIs associated with the impulsive and continuous sounds that are anticipated during the fifth-year IHA period. Table 5 provides the data that were used to calculate the distances to the Level A and B ZOIs presented in Table 6. It should be noted that the ZOI for Level A harassment would be closely monitored

and subject to shutdowns if a marine mammal enters the area. The ZOI areas and maximum distances for the activities at the fuel pier and NMAWC are shown in Figures 6-1 and 6-2, respectively of the Navy's application. The figures reflect the conventional assumption that the natural or manmade shoreline acts as a barrier to underwater sound. It is generally accepted practice to model underwater sound propagation from pile driving as continuing in a straight line past a shoreline projection such as Ballast Point (Dahl 2012). Similarly, it is reasonable to assume that project sound would not propagate east of Zuniga Jetty (Dahl 2012).

All of the ZOIs for potential Level A acoustic harassment (Table 6) would be buffered and encompassed by a larger shutdown zone. For example, the ZOIs for potential Level A acoustic harassment to pinnipeds from impact pile driving (Table 6) would be contained within a 60 m (196 ft) shutdown zone. For impact pile driving at NMAWC, two methods identified in NMFS (2016) were evaluated to determine the most conservative distances to the Level A ZOIs using: 1) rms SPL source levels; and 2) single strike equivalent SEL. The calculations showed that the first method was the most conservative and this method was subsequently used to determine the distances to the Level A ZOIs (Table 5). In all Level A ZOI calculations, the default values for the weighting factor adjustment and practical spreading for propagation loss were used (see Appendix A of the Navy's application).

Table 5. Data used to Calculate Distances to Level B ZOIs

Activity	Impact Pile Driving	Vibratory Pile Driving	Pile Jetting	Caisson Cutting	Pile Clipping
References for Source Level and Duration	Year 3 report #1 (NAVFAC SW 2016a)	Year 2 report (NAVFAC SW 2015)	Year 4 report (NAVFAC SW 2017)	Year 3 report #1 (NAVFAC SW 2016a)	Year 4 report (NAVFAC SW 2017)
Size & Type of Piles used for Source Data	16-in poly-concrete piles	30-in steel piles	24x30-in concrete piles	84-in caissons	24-in concrete piles

Source Level (rms SPL)	188.9	162.5	159.9	155.6	165.3
Distance to Level B ZOI (m)	270	1,848	1,165	631	2,511

The Level B ZOIs and distances are based on the validated SPLs directly measured during the IHA monitoring (NAVFAC SW 2014-2017), as available. For example, the distance to the Level B ZOI for impact driving of 16-in poly-concrete piles was 270 m (886 ft) during Year 3 monitoring (NAVFAC SW 2016a). In cases where monitoring data are not available to empirically measure the extent of the Level B ZOI (activities at NMAWC), "practical spreading loss" from the source at 10 m has been assumed (15 log[distance/10]) and used to calculate the maximum extent of the ZOI based on the applicable threshold. Computed distances to the threshold for acoustic disturbance from non-impulsive sources are based on the distances at which the project sound source declines to ambient. Because the mean ambient sound levels in San Diego Bay range from approximately 128 to 130 dB rms (NAVFAC SW 2015), the 120 dB acoustic threshold for the Level B ZOIs are based on an approximate value between 128 and 129 dB. The distances for all activities producing sound at NMAWC will be verified via hydrophone during project activities.

Table 6. Calculated Maximum Areas of ZOIs and Distances to Relevant Thresholds

Activity	**Measured/Calculated Distances to Thresholds (m) and Areas of ZOIs (m^2 or km^2)**							
	Underwater						**Airborne**	
	Level A[1,2,3]				**Level B[4]**		**Level B**	
	LF	**MF**	**PW**	**OW**	**160 dB**	**120 dB[5]**	**100 dB[6]**	**90 dB[6]**
Old Fuel Pier and Temporary Mooring Dolphin Demolition								
66-inch and 84-inch caissons (Diamond saw cutting)	3.6 m 41 m^2	0.3 m < 1 m^2	2.2 m 15 m^2	0.2m <1 m^2	N/A	631 m 0.7157 km^2	N/A	

Concrete piles (Pile clipping)	1.2 m 4 m^2	0.1 m < 1 m^2	0.7 m < 1 m^2	0.0 m 0 m^2	N/A	2,511 m 4.4512 km^2		
NMAWC Construction and Demolition								
16-inch concrete piles (Vibratory extraction/driving)[8]	8.3 m 216 m^2	0.7 m < 1 m^2	5.1 m 82 m^2	0.4 m < 1 m^2	N/A	1,848 m 2.4473 km^2	42 m 5,503 m^2	149 m 69,646 m^2
16-inch concrete piles (Impact driving)[9]	63.4 m 0.0126 km^2	2.3 m 17 m^2	33.9 m 3,610 m^2	2.5 m 20 m^2	270 m 0.1408 km^2	N/A		
16-inch concrete piles (Jetting pile extraction)	3.9 m 47.8 m^2	0.3 m <1 m^2	2.4 m 18 m^2	0.2 m <1 m^2	N/A	1,165m 1.4268km^2	N/A	

[1] If measured value thresholds are less than 10 m (33 ft), a minimum monitoring distance of 10 m (33 ft) would be implemented.

[2] Based on measured mean source levels. The relevant data have been included in Appendix A of the Navy's application, which provides information from previous years' data collected as part of the Fuel Pier Project (NAVFAC SW 2015, 2016a, 2017).

[3] LF = Low-frequency cetaceans; MF = Mid-frequency cetaceans; PW = Phocid pinnipeds; OW = Otariid pinnipeds. The high-frequency cetacean hearing group (HF) is omitted, because no species in the hearing group occur in, or around, the Project area.

[4] Based on measured maximum source levels, unless otherwise stated. The relevant data have been included in Appendix A, which provides information from previous years' data collected as part of the Fuel Pier Project (NAVFAC SW 2015, 2016a, 2017).

[5] Average ambient sound levels in San Diego Bay are approximately 128 to 130 dB rms (NAVFAC SW 2015), and all 120 dB Level B ZOIs are based on an approximate value between 128 and 129, which represents ambient levels in the Bay.

[6] Airborne ZOIs based on conservative representative data (collected during 30-inch vibratory pile driving from IHA #4). Airborne noise levels did not exceed thresholds during IHA #4 monitoring of demolition activities.

[7] Plasma torch noise levels are not expected to exceed underwater or airborne regulatory thresholds.

[8] Based on conservative representative source levels of 162.5 dB rms (30-inch steel vibratory pile driving, NAVFAC SW 2015).

Airborne Sound

Although sea lions are known to haul-out regularly on man-made objects in the vicinity of the project site (see Figure 4-1 of the Navy's application), and harbor seals are occasionally observed hauled out on rocks along the shoreline in the vicinity of the project site, none of these are within the ZOIs for airborne sound, and we believe that incidents of take resulting solely from airborne sound are unlikely. The zones for sea lions are within the minimum shutdown zone defined for underwater sound and, although the zones for harbor seals are larger, they have not been observed to haul out as readily on man-made structure in the immediate vicinity of the project site. There is a possibility that an animal could surface in-water, but with head out, within one of the defined zones and thereby be exposed to levels of airborne sound that we associate

with harassment, but any such occurrence would likely be accounted for in our estimation of incidental take from underwater sound.

We generally recognize that pinnipeds occurring within an estimated airborne harassment zone, whether in the water or hauled out, could be exposed to airborne sound that may result in behavioral harassment. However, any animal exposed to airborne sound above the behavioral harassment threshold is likely to also be exposed to underwater sound above relevant thresholds (which are typically in all cases larger zones than those associated with airborne sound). Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Multiple incidents of exposure to sound above NMFS' thresholds for behavioral harassment are not believed to result in increased behavioral disturbance, in either nature or intensity of disturbance reaction. Therefore, we do not believe that authorization of incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further here. Distances associated with airborne sound and shown in Table 5 are for reference only.

When NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which will result in some degree of overestimate of Level A take.

However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as vibratory pile driving, NMFS User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would not incur PTS. Inputs used in the User Spreadsheet, and the resulting isopleths are reported below.

Table 7. Level A User Spreadsheet Input

	Impact Pile Driving	Vibratory Pile Driving	Caisson cutting	Pile Clipping	Pile Jetting
References for Source Level and Duration	Year 3 report #1 (NAVFAC SW 2016a)	Year 2 report (NAVFAC SW 2015)	Year 3 report #1 (NAVFAC SW 2016a)	Year 4 report (NAVFAC SW 2017)	Year 4 report (NAVFAC SW 2017)
Spreadsheet Tab Used	E.1) Impact pile driving	A.)Non-Impulse Stat-Cont	A.)Non-Impulse Stat-Cont	A.)Non-Impulse Stat-Cont	A.)Non-Impulse Stat-Cont
Source Level (Single Strike/shot SEL)	188.9	162.5	149	145	155
Weighting Factor Adjustment (kHz)	2	2.5	2.5	2.5	2.5
a) Activity Duration (h) within 24-h period	0.71	0.95	6	2.82	1.74
Propagation (xLogR)	15	15	15	15	15
Distance of source level measurement (m)	10	10	10	10	10
Pulse duration (sec)[1]	0.03	n/a	n/a	n/a	n/a
Number of strikes in 1 h	193	n/a	n/a	n/a	n/a

[1]Pulse duration was measured in previous construction years and the average pulse duration was 0.03 at 10 m (NAVFAC SW 2016a)

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

For all species, the best scientific information available was considered for use in the marine mammal take assessment calculations. Although various regional offshore surveys for

marine mammals have been conducted, it is unlikely that these data would be representative of the species or numbers that may be encountered in San Diego Bay. However, the Navy has conducted a large number of ongoing site-specific marine mammal surveys during appropriate seasons (*e.g*., Merkel and Associates 2008; Johnson 2010, 2011; Lerma 2012, 2014). Whereas analyses for the first-year IHA relied on surveys conducted from 2007-12, continuing surveys by the Navy have generally indicated increasing abundance of all species and the second-year IHA relied on 2012-14 survey data. In addition, the Navy has developed estimates of marine mammal densities in waters associated with training and testing areas (including Hawaii-Southern California) for the Navy Marine Species Density Database (NMSDD). A technical report (Hanser *et al*., 2015) describes methodologies and available information used to derive these densities, which are based upon the best available information, except where specific local abundance information is available and applicable to a specific action area. The document is publicly available online at: *nwtteis.com/DocumentsandReferences/NWTTDocuments/SupportingTechnicalDocuments.aspx* (accessed July 13, 2017).

Year 2 project monitoring showed even greater abundance of certain species, and we consider all of these data in order to provide the most up-to-date estimates for marine mammal abundances during the period of this proposed IHA. Although Years 3 and 4 project monitoring showed declines in marine mammal abundance in the vicinity of the project, we retain prior density estimates as a conservative measure for estimating exposure. Density information is shown in Table 9. These data are from dedicated line-transect surveys, required project marine

mammal monitoring, opportunistic observations for more rarely observed species (see Figures 3-1 through 3-5 of the Navy's application), or the NMSDD.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

The following assumptions are made when estimating potential incidences of take:

- All marine mammal individuals potentially available are assumed to be present within the relevant area, and thus incidentally taken;
- An individual can only be taken once during a 24-h period;
- The assumed ZOIs and days of activity are as shown in Table 5; and,
- Exposures to sound levels at or above the relevant thresholds equate to take, as defined by the MMPA.

In this case, the estimation of marine mammal takes uses the following calculation:

Exposure estimate = n * ZOI * days of total activity

where:

n = density estimate used for each species/season

ZOI = sound threshold ZOI area; the area encompassed by all locations where the SPLs equal or exceed the threshold being evaluated.

The ZOI impact area is estimated using the relevant distances in Table 5, assuming that sound radiates from a central point in the water column slightly offshore of the existing pier and taking into consideration the possible affected area due to topographical constraints of the action area (*i.e.*, radial distances to thresholds are not always reached).

Table 8. Areas of Acoustic Influence and Days of Activity

Activity	Number of days	ZOI (km^2)
66-inch and 84-inch caissons (Diamond saw cutting)	50	0.7157
Concrete piles (Pile clipping)	100	4.4512
16-inch concrete piles (Vibratory extraction/driving)[1]	25	2.4473
16-inch concrete piles (Jetting pile extraction)	15	1.4268

[1]We assume that impact driving of 16-in concrete piles would always occur on the same day as vibratory driving of the same piles. Therefore, the impact driving ZOI (0.1408 km^2) would always be subsumed by the vibratory driving ZOI.

There are a number of reasons why estimates of potential incidents of take may be conservative, assuming that available density and estimated ZOI areas are accurate. We assume, in the absence of information supporting a more refined conclusion, that the output of the calculation represents the number of individuals that may be taken by the specified activity. In fact, in the context of stationary activities such as pile driving and in areas where resident animals may be present, this number more realistically represents the number of incidents of take that may accrue to a smaller number of individuals. While pile driving can occur any day throughout the period of validity, and the analysis is conducted on a per day basis, only a fraction of that time (typically a matter of hours on any given day) is actually spent pile driving. The potential effectiveness of mitigation measures in reducing the number of takes is typically not quantified in the take estimation process. For these reasons, these take estimates may be conservative. See Table 9 for total estimated incidents of take.

California Sea Lion

During the second IHA period, an average of 90.35 California sea lions were seen per day within the maximum ZOI for pile driving, an area of 5.6752 km^2 extending 3,000 m from the Fuel Pier. This equates to a density of 15.9201/km^2. This density is used to estimate numbers of takes within the different ZOIs. NMFS estimates 8,971 Level B takes for this species. The maximum extents of the potential acoustic Level A ZOIs for cumulative exposure from all of the

activities are much less than 10 m from the source, and therefore the 60-m shutdown zone will reduce the chance for Level A take. As a result, no Level A take of California sea lions is anticipated nor proposed to be authorized.

Harbor Seal

Sightings of harbor seals averaged 2.83 individuals per day during the period of the second IHA (NAVFAC SW 2015), a density of 0.4987/km^2 within the maximum ZOI for pile driving. This density is used to estimate numbers of takes within the different ZOIs. NMFS estimates 281 Level B takes for this species. The maximum extent of the potential acoustic Level A ZOI for cumulative exposure from impact pile driving extends 34 m from the source; for all other activities, the Level A ZOIs are much less than 10 m from the source, therefore a 60-m shutdown zone will be in place to avoid Level A takes to harbor seals. Level A takes are not anticipated nor proposed for authorization.

Northern Elephant Seal

Only a single individual elephant seal was sighted during the second IHA period (NAVFAC SW 2015), but with increasing numbers (Carretta *et al*., 2016), they are considered a reasonable possibility to occur more frequently during the fifth IHA period. The regional density estimate of 0.0760/km^2 (Navy 2017) is assumed for the project area. This density is used to estimate numbers of takes within the different ZOIs. NMFS estimates 43 Level B takes for this species. Potential takes would likely involve single individuals that are on the shoreline or structures at the identified location, or swimming in the vicinity, most likely near the mouth of the bay. The maximum extent of the potential acoustic Level A ZOI for cumulative exposure from impact pile driving extends 34 m from the source; for all other activities, the Level A ZOIs

are much less than 10 m from the source, therefore a shutdown will be in place to avoid Level A takes to harbor seals. Level A takes are not anticipated nor proposed for authorization.

Bottlenose Dolphin

Coastal bottlenose dolphins can occur at any time of year in northern San Diego Bay. Numbers sighted have been highly variable but have increased in recent years (NAVFAC SW 2014, 2015). During the second IHA period, an average of 7.09 individuals was seen per day, a density of 1.2493/km^2. This density is used to estimate numbers of takes within the different ZOIs. NMFS estimates 704 Level B takes for this species. The maximum extents of the potential acoustic Level A ZOIs for cumulative exposure from all of the activities are much less than 10 m from the source, and therefore the minimum 10 m shutdown will reduce the chance for Level A take. As a result, no Level A take of bottlenose dolphins is anticipated nor proposed to be authorized.

Common Dolphin

An average of 8.67 common dolphins was seen per day, a density of 1.5277/km^2 within the maximum ZOI, during the second IHA period (NAVFAC SW 2015). This density is considerably higher than the regional density estimate for long-beaked common dolphins – the species most likely to occur (Navy 2017), but is reasonable for the project area given the group sizes observed for these species. Barlow (2010) reported average group sizes in southern California of 122 for short-beaked common dolphins and 195 for long-beaked common dolphins, and during the second IHA period, groups of approximately 170 and 300 individuals entered the project area on different occasions (NAVFAC SW 2015). Considering the possibility for one or more large groups of common dolphins to enter San Diego Bay during in-water activities and the

fact that the Level B ZOIs will extend completely across the bay during pile driving, the density estimate is considered appropriate. A density of 1.5277/km^2 is used to estimate numbers of takes within the different ZOIs. NMFS estimates 861 Level B takes for this species. The maximum extents of the potential acoustic Level A ZOIs for cumulative exposure from all of the activities are much less than 10 m from the source, and therefore the shutdown will reduce the chance for Level A take. As a result, no Level A take of bottlenose dolphins is anticipated nor proposed to be authorized.

Pacific White-sided Dolphin

Pacific white-sided dolphins are more commonly seen offshore, but were documented in the project area on several occasions during the second IHA period. An average of 0.28 individuals per day was seen during the second IHA period (NAVFAC SW 2015), a density of 0.0493/km^2 within the maximum ZOI. This density is used to estimate numbers of takes within the different ZOIs. NMFS estimates 28 Level B takes for this species. The maximum extents of the potential acoustic Level A ZOIs for cumulative exposure from all of the activities are much less than 10 m from the source, and therefore the shutdown will reduce the chance for Level A take. As a result, no Level A take of bottlenose dolphins is anticipated nor proposed to be authorized.

Risso's Dolphin

While there have been no sightings of Risso's dolphin within the project area, the species is considered a reasonable possibility for the fifth IHA period given recent El Niño conditions (Shane 1995) and its abundance in Southern California coastal waters (Jefferson *et al*. 2014). The upper limit of the regional density estimate, 0.2029/km^2 (Navy 2017), is used to estimate

numbers of takes within the different ZOIs. NMFS estimates 114 Level B takes for this species. The maximum extents of the potential acoustic Level A ZOIs for cumulative exposure from all of the activities are much less than 10 m from the source, and therefore the shutdown will reduce the chance for Level A take. As a result, no Level A take of bottlenose dolphins is anticipated nor proposed to be authorized.

Gray Whale

Gray whale occurrence within northern San Diego Bay is sporadic and would likely consist of one-few individuals that venture close to, or enter the bay for a brief period, and then continue on their migration. A density estimate based on the rare sightings of gray whales near the mouth of the bay during the second IHA period (NAVFAC SW 2015), would be less than $0.01/km^2$, which is slightly less than the regional density estimate of $0.0179/km^2$ in southern California waters during winter-spring (Navy 2017). The regional density estimate is applied here as a reasonable estimate given the possibility of animals moving closer to shore and entering the mouth of the bay during the fifth IHA period. This density is used to estimate numbers of takes within the different ZOIs. NMFS estimates 10 Level B takes for this species. The maximum extent of the potential acoustic Level A ZOI for cumulative exposure from impact pile driving extends 63 m from the source; for all other activities, the Level A ZOIs are much less than 10 m from the source. Gray whales are not expected to occur that close to the source; however, the Navy has proposed a minimum of 10 m (100 m for impact driving) shutdown will be in place to avoid Level A takes to gray whales. Level A takes are not anticipated nor proposed for authorization.

Table 9. Calculations for Incidental Take Estimation

Species	Density	Diamond saw cutting of 66-inch and 84-inch caissons	Pile clipping Concrete piles	Vibratory extraction/driving of 16-inch concrete piles	Jetting pile extraction of 16 in concrete piles	Total Level B Takes*	Total proposed authorized takes (% of total stock)
California sea lion	15.9201	570	7086	974	341	8,971	3.023
Harbor seal	0.4987	18	222	31	11	281	0.907
Northern elephant seal	0.076	3	34	5	2	43	0.024
Bottlenose dolphin	1.2493	45	556	76	27	704	155[2]
Common dolphin	1.5277	55	680	93	33	861	0.088[3]; 0.85[4]
Pacific white-sided dolphin	0.0493	2	22	3	1	28	0.104
Risso's dolphin	0.2027	7	90	12	4	114	1.799
Gray whale	0.0179	1	8	1	0	10	0.048

*Due to rounding of takes to the nearest whole number of animals, (which occurs at the very end, not per activity), totals may not always equal the sum of the takes from individual activities.

[1]We assume that impact driving of steel piles would occur on the same day as vibratory driving of the same piles and that the zone for vibratory driving would always subsume the zone for impact driving. Therefore, separate estimates are not provided for impact driving of steel piles.

[2]The proposed numbers of authorized take for bottlenose dolphins are higher relative to the total stock abundance estimate and would not represent small numbers if a significant portion of the take was for a new individual. However, these numbers represent the estimated incidents of take, not the number of individuals taken. That is, it is likely that a relatively small subset of California coastal bottlenose dolphins would be incidentally harassed by project activities.

[3]SB = short-beaked common dolphin

[4]LB = long-beaked common dolphin

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such

species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned) the likelihood of effective implementation (probability implemented as planned). and;

2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The mitigation strategies described below largely follow those required and successfully implemented under the first four IHAs associated with this project. For this proposed IHA, data from acoustic monitoring conducted during the first four years of work was used to estimate zones of influence (ZOIs; see *Estimated Take by Incidental Harassment*); these values were used

to develop mitigation measures for pile driving activities at NBPL. The ZOIs effectively represent the mitigation zone that would be established around each pile to minimize Level A harassment to marine mammals, while providing estimates of the areas within which Level B harassment might occur. In addition, the Navy has defined buffers to the estimated Level A harassment zones to further reduce the potential for Level A harassment. In addition to the measures described later in this section, the Navy would conduct briefings between construction supervisors and crews, marine mammal monitoring team, acoustic monitoring team, and Navy staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

Monitoring and Shutdown for Pile Driving

The following measures would apply to the Navy's mitigation through shutdown and disturbance zones:

Shutdown Zone – For all pile driving and removal activities, the Navy will establish a shutdown zone intended to contain the area in which SPLs equal or exceed the calculated Level A zones (refer to table). The purpose of a shutdown zone is to define an area within which shutdown of activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area), thus preventing injury of marine mammals (serious injury or death are unlikely outcomes even in the absence of mitigation measures). Estimated radial distances to the relevant thresholds are shown in Table 5. For certain activities, the shutdown zone would not exist because source levels indicate that the radial distance to the threshold would be less than 10 m. However, a minimum shutdown zone of 10 m will be established

during all pile driving and removal activities, regardless of the estimated zone. In addition the Navy proposes to effect a buffered shutdown zone that is intended to significantly reduce the potential for Level A harassment given that, in particular, California sea lions are quite abundant in the project area and bottlenose dolphins may surface unpredictably and move erratically in an area with a large amount of construction equipment. These buffers are approximately double the distance to the Level A ZOI. These zones are also shown in Table 10. These precautionary measures are intended to prevent the already unlikely possibility of physical interaction with construction equipment and to establish a precautionary minimum zone with regard to acoustic effects.

Table 10. Shutdown Zones for Level A ZOIs and Monitoring Zones for Level B Zones

Activity	Monitored Distances to Thresholds (meters [feet])					
	Underwater					
	Level A (shutdown)				Level B	
	LF[1]	MF[1]	PW[1]	OW[1]	160 dB	120 dB[2]
Old Fuel Pier and Temporary Mooring Dolphin Demolition						
66-inch and 84-inch caissons (Diamond saw cutting)	10				N/A	631
Concrete piles (Pile clipping)	10				N/A	2,511
NMAWC Construction and Demolition						
16-inch concrete piles (Vibratory extraction/driving)	20[4]		10		N/A	1,848
16-inch concrete piles (Impact driving)	100[5]		60[6]		857.7	N/A
16-inch concrete piles (Jetting pile extraction)	10				N/A	1,165

16-inch concrete piles (Pile dead-pull)	10	N/A

[1] LF = Low-frequency cetaceans; MF = Mid-frequency cetaceans; PW = Phocid pinnipeds; OW = Otariid pinnipeds. The high-frequency cetacean hearing group (HF) is omitted, because no species in the hearing group occur in, or around, Project area.
[2] Mean ambient sound levels in San Diego Bay are approximately 128 dB rms (NAVFAC SW 2015), and all 120 dB Level B ZOIs are based on the ambient value. The distances for all activities producing sound at NMAWC will be verified via hydrophone during project activities.
[3] Airborne noise levels did not exceed regulatory thresholds during previous IHAs. No airborne monitoring will take place for diamond saw cutting of caissons, plasma torch cutting of temporary mooring dolphin 30-inch steel piles, jetting or dead-pull extraction of concrete piles.
[4] Includes buffer of calculated Level A threshold out to 20 m (65.6 ft).
[5] Includes buffer of calculated Level A threshold out to 100 m (328 ft).
[6] Includes buffer of calculated Level A threshold out to 60 m (328 ft).

Disturbance Zone – Disturbance zones are the areas in which SPLs equal or exceed 160 and 120 dB rms (for impulse and continuous sound, respectively). Disturbance zones provide utility for monitoring conducted for mitigation purposes (*i.e.*, shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of disturbance zones enables observers to be aware of and communicate the presence of marine mammals in the project area but outside the shutdown zone and thus prepare for potential shutdowns of activity. However, the primary purpose of disturbance zone monitoring is for documenting incidents of Level B harassment; disturbance zone monitoring is discussed in greater detail later (see *Proposed Monitoring and Reporting*). Nominal radial distances for disturbance zones are shown in Table 10.

In order to document observed incidents of harassment, monitors record all marine mammal observations, regardless of location. The observer's location, as well as the location of the pile being driven, is known from a GPS. The location of the animal is estimated as a distance from the observer, which is then compared to the location from the pile. If acoustic monitoring is being conducted for that pile, a received SPL may be estimated, or the received level may be estimated on the basis of past or subsequent acoustic monitoring. It may then be determined whether the animal was exposed to sound levels constituting incidental harassment in post-

processing of observational and acoustic data, and a precise accounting of observed incidences of harassment created. Therefore, although the predicted distances to behavioral harassment thresholds are useful for estimating incidental harassment for purposes of authorizing levels of incidental take, actual take may be determined in part through the use of empirical data.

Acoustic measurements will continue during the fifth year of project activity and zones would be adjusted as indicated by empirical data. Please see the Navy's Acoustic and Marine Species Monitoring Plan (Monitoring Plan; available at *www.nmfs.noaa.gov/pr/permits/incidental/construction.htm*) for full details.

Monitoring Protocols – Monitoring would be conducted before, during, and after pile driving activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven. Observations made outside the shutdown zone will not result in shutdown; that pile segment would be completed without cessation, unless the animal approaches or enters the shutdown zone, at which point all pile driving activities would be halted. Monitoring will take place from fifteen minutes prior to initiation through thirty minutes post-completion of pile driving activities. Pile driving activities include the time to remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than thirty minutes. Please see the Monitoring Plan for full details of the monitoring protocols.

The following additional measures apply to visual monitoring:

(1) Monitoring will be conducted by qualified observers, who will be placed at the best vantage point(s) practicable (as defined in the Monitoring Plan) to monitor for marine

mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. Qualified observers are trained biologists, with the following minimum qualifications:

(a) Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;

(b) Ability to conduct field observations and collect data according to assigned protocols

(c) Experience or training in the field identification of marine mammals, including the identification of behaviors;

(d) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

(e) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

(f) Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

(2) Prior to the start of pile driving activity, the shutdown zone will be monitored for fifteen minutes to ensure that it is clear of marine mammals. Pile driving will only commence once observers have declared the shutdown zone clear of marine mammals; animals will be allowed to remain in the shutdown zone (*i.e.*, must leave of their own volition) and their behavior will be

monitored and documented. The shutdown zone may only be declared clear, and pile driving started, when the entire shutdown zone is visible (*i.e*., when not obscured by dark, rain, fog, *etc*.). In addition, if such conditions should arise during impact pile driving that is already underway, the activity would be halted.

(3) If a marine mammal approaches or enters the shutdown zone during the course of pile driving operations, activity will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or fifteen minutes have passed without re-detection of small cetaceans or pinnipeds and 30 minutes for gray whales. Monitoring will be conducted throughout the time required to drive a pile and for thirty minutes following the conclusion of pile driving.

Sound Attenuation Devices

The use of bubble curtains to reduce underwater sound from impact pile driving was considered prior to the start of the project but was determined to not be practicable. Use of a bubble curtain in a channel with substantial current may not be effective, as unconfined bubbles are likely to be swept away and confined curtain systems may be difficult to deploy effectively in high currents. Data gathered during monitoring of construction on the San Francisco-Oakland Bay Bridge indicated that no reduction in the overall linear sound level resulted from use of a bubble curtain in deep water with relatively strong current (Illingworth & Rodkin 2001). During project monitoring for pile driving associated with the Richmond-San Rafael Bridge, also in San Francisco Bay, it was observed that performance in moderate current was significantly reduced (Oestman *et al*., 2009). Lucke *et al*. (2011) also note that the effectiveness of most currently used curtain designs may be compromised in stronger currents and greater water depths. We believe

that conditions (relatively deep water and strong tidal currents of up to 3 knots (kn)) at the project site would disperse the bubbles and compromise the effectiveness of sound attenuation.

Timing Restrictions

In-order to avoid impacts to least tern populations when they are most likely to be foraging and nesting, in-water work will be concentrated from October 1-April 1 or, depending on circumstances, to April 30. However, this limitation is in accordance with agreements between the Navy and FWS, and is not a requirement of this proposed IHA. All in-water construction activities would occur only from 45 minutes after sunrise to 45 minutes before sunset.

Soft Start

The use of a soft start procedure is believed to provide additional protection to marine mammals by warning or providing a chance to leave the area prior to the hammer operating at full capacity, and typically involves a requirement to initiate sound from the hammer at reduced energy followed by a waiting period. This procedure is repeated two additional times. It is difficult to specify the reduction in energy for any given hammer because of variation across drivers and, for impact hammers, the actual number of strikes at reduced energy will vary because operating the hammer at less than full power results in "bouncing" of the hammer as it strikes the pile, resulting in multiple "strikes." The project will utilize soft start techniques for impact pile driving. We require an initial set of three strikes from the impact hammer at reduced energy, followed by a thirty-second waiting period, then two subsequent three strike sets. Soft start will be required at the beginning of each day's impact pile driving work and at any time following a cessation of impact pile driving of thirty minutes or longer; the requirement to

implement soft start for impact driving is independent of whether vibratory driving has occurred within the prior thirty minutes.

Based on our evaluation of the Navy's proposed measures, as well as any other potential measures that may be relevant to the specified activity, we have preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking." The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for incidental take authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of:

(1) Action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) Affected species (*e.g.*, life history, dive patterns); (3) Co-occurrence of marine mammal species with the action; or (4) Biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).

- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or impacts from multiple stressors.
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of an individual; or (2) Population, species, or stock.
- Effects on marine mammal habitat (*e.g.* marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).
- Mitigation and monitoring effectiveness.

Please see the Monitoring Plan (available at *www.nmfs.noaa.gov/pr/permits/incidental/construction.htm*) for full details of the requirements for monitoring and reporting. Notional monitoring locations (for biological and acoustic monitoring) are shown in Figures 3-1 and 3-2 of the Plan. The purpose of this Plan is to provide protocols for acoustic and marine mammal monitoring implemented during pile driving and removal activities. We have preliminarily determined this monitoring plan, which is summarized here and which largely follows the monitoring strategies required and successfully implemented under the previous IHAs, to be sufficient to meet the MMPA's monitoring and reporting requirements. The previous monitoring plan was modified to integrate adaptive changes to the monitoring methodologies as well as updates to the scheduled construction activities. Monitoring objectives are as follows:

- Monitor in-water construction activities, including the implementation of in-situ acoustic monitoring efforts to continue to measure SPLs from in-water construction and demolition activities not previously monitored or validated during the previous IHAs. This would include collection of acoustic data for activities and pile types for which sufficient data has not previously been collected, including for diamond saw cutting of caissons and pile clipping of the concrete piles during fuel pier demolition. The Navy also plans to collect acoustic data for vibratory extraction and/or driving, impact driving, jetting pile extraction and pile dead-pull of the concrete piles at NMAWC.
- Monitor marine mammal occurrence and behavior during in-water construction activities to minimize marine mammal impacts and effectively document marine mammals occurring within ZOI boundaries.

Collection of ambient underwater sound measurements in the absence of project activities has been concluded, as a rigorous baseline dataset for the project area has been developed.

Acoustic Measurements

The primary purpose of acoustic monitoring is to empirically verify modeled injury and behavioral disturbance zones (defined at radial distances to NMFS-specified thresholds; see *Estimated Take by Incidental Harassment*). For non-pulsed sound, distances will continue to be evaluated for attenuation to the point at which sound becomes indistinguishable from background levels. Empirical acoustic monitoring data will be used to document transmission loss values determined from past measurements and to examine site-specific differences in SPL and affected ZOIs on an as needed basis.

Should monitoring results indicate it is appropriate to do so, marine mammal mitigation zones may be revised as necessary to encompass actual ZOIs. Acoustic monitoring will be conducted as specified in the approved Monitoring Plan. Please see Table 2-2 of the Plan for a list of equipment to be used during acoustic monitoring. Monitoring locations will be determined based on results of previous acoustic monitoring effort and the best professional judgment of acoustic technicians.

For activities such as demolition of the old fuel pier and temporary mooring dolphin, the Navy will continue to collect in situ acoustic data to validate source levels and ZOIs. Environmental data would be collected including but not limited to: wind speed and direction, air temperature, humidity, surface water temperature, water depth, wave height, weather conditions and other factors that could contribute to influencing the airborne and underwater sound levels (*e.g.*, aircraft, boats). Full details of acoustic monitoring requirements may be found in section 4.2 of the Navy's Monitoring Plan.

Visual Marine Mammal Observations

The Navy will collect sighting data and behavioral responses to construction for marine mammal species observed in the region of activity during the period of activity. All observers will be trained in marine mammal identification and behaviors and are required to have no other construction-related tasks while conducting monitoring. The Navy will monitor the shutdown zone and disturbance zone before, during, and after pile driving as described under *Proposed Mitigation* and in the Monitoring Plan, with observers located at the best practicable vantage points. Notional monitoring locations are shown in Figures 3-3 and 3-4 of the Navy's Plan. Please see that plan, available at *www.nmfs.noaa.gov/pr/permits/incidental/construction.htm*, for

full details of the required marine mammal monitoring. Section 3.2 of the Plan and Section 13 of the Navy's application offer more detail regarding monitoring protocols. Based on our requirements, the Navy would implement the following procedures for pile driving:

- MMOs would be located at the best vantage point(s) in order to properly see the entire shutdown zone and as much of the disturbance zone as possible.
- During all observation periods, observers will use binoculars and the naked eye to search continuously for marine mammals.
- If the shutdown zones are obscured by fog or poor lighting conditions, pile driving at that location will not be initiated until that zone is visible. Should such conditions arise while impact driving is underway, the activity would be halted.
- The shutdown and disturbance zones around the pile will be monitored for the presence of marine mammals before, during, and after any pile driving or removal activity.

One MMO will be placed in the most effective position near the active construction/demolition platform in order to observe the respective shutdown zones for vibratory and impact pile driving or for applicable demolition activities. Monitoring would be primarily dedicated to observing the shutdown zone; however, MMOs would record all marine mammal sightings beyond these distances provided it did not interfere with their effectiveness at carrying out the shutdown procedures. Additional land, pier, or vessel-based MMOs will be positioned to monitor the shutdown zones and the buffer zones, as notionally indicated in Figures 3-3 and 3-4 of the Navy's application.

For all pile driving and applicable demolition activities, a minimum of one observer shall monitor the shutdown zones. However, any action requiring the impact or vibratory hammer will

necessitate two MMOs. For impact and vibratory pile driving of 16-in concrete piles, two observers shall be positioned for optimal monitoring of the surrounding waters.

The MMOs will record all visible marine mammal sightings. Confirmed takes will be registered once the sightings data has been overlaid with the isopleths identified in Table 5 and visualized in Figures 6-2, 6-3, and 6-4 of the Navy's application, or based on refined acoustic data, if amendments to the ZOIs are needed. Acousticians on duty may be noting SPLs in real-time, but, to avoid biasing the observations, will not communicate that information directly to the MMOs. These platforms may move closer to, or farther from, the source depending on whether received SPLs are less than or greater than the regulatory threshold values. All MMOs will be in radio communication with each other so that the MMOs will know when to anticipate incoming marine mammal species and when they are tracking the same animals observed elsewhere.

If any species for which take is not authorized is observed by a MMO during applicable construction or demolition activities, all construction will be stopped immediately. Pile driving will commence if the animal has not been seen inside the Level B ZOI for at least one hour of observation. If the animal is resighted again, pile driving will be stopped and a boat-based MMO (if available) will follow the animal until it has left the Level B ZOI. If the animal is resighted again, pile driving will be stopped and a boat-based MMO (if available) will follow the animal until it has left the Level B ZOI.

Individuals implementing the monitoring protocol will assess its effectiveness using an adaptive approach. Monitoring biologists will use their best professional judgment throughout implementation and seek improvements to these methods when deemed appropriate. Any modifications to protocol will be coordinated between NMFS and the Navy.

Data Collection

We require that observers use approved data forms. Among other pieces of information, the Navy will record detailed information about any implementation of shutdowns, including the distance of animals to the pile and description of specific actions that ensued and resulting behavior of the animal, if any. In addition, the Navy will attempt to distinguish between the number of individual animals taken and the number of incidents of take. We require that, at a minimum, the following information be collected on the sighting forms:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (*e.g.*, percent cover, visibility);
- Water conditions (*e.g.*, sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity, and if possible, the correlation to measured SPLs;
- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Description of implementation of mitigation measures (*e.g.*, shutdown or delay);
- Locations of all marine mammal observations; and
- Other human activity in the area.

In addition, photographs would be taken of any gray whales observed. These photographs would be submitted to NMFS' West Coast Regional Office for comparison with photo-identification catalogs to determine whether the whale is a member of the WNP population.

Reporting

A draft report would be submitted to NMFS within 45 calendar days of the completion of marine mammal monitoring, or 60 days prior to the issuance of any subsequent IHA for this project, whichever comes first. The report will include marine mammal observations pre-activity, during-activity, and post-activity during pile driving days, and will also provide descriptions of any behavioral responses to construction activities by marine mammals and a complete description of all mitigation shutdowns and the results of those actions. A final report would be prepared and submitted within thirty days following resolution of comments on the draft report. Required contents of the monitoring reports are described in more detail in the Navy's Acoustic and Marine Species Monitoring Plan.

Monitoring Results from Previously Authorized Activities

The Navy complied with the mitigation and monitoring required under the previous authorizations for this project. Acoustic and marine mammal monitoring was implemented as required, with marine mammal monitoring occurring before, during, and after each pile driving event. During the course of Year 4 activities, the Navy did not exceed the take levels authorized under the IHA (please see the Navy's monitoring report for more details and below for further discussion).

The general objectives of the monitoring plan were similar to those described above for the Year 5 monitoring plan. For acoustic monitoring, the primary goal was to continue to collect

in situ data towards validation of the acoustic ZOIs defined based on previous data collection efforts and using the transmission loss modeling effort conducted prior to the start of the project, and to continue collection of data on background noise conditions in San Diego Bay.

Acoustic Monitoring Results – For a full description of acoustic monitoring methodology, please see section 2.3 of the Navy's monitoring report, including Figure 2-3 for representative monitoring locations. Results from Years 1-4 are displayed in Table 11. Please see our notices of proposed IHAs for the Years 2, 3, and 4 IHAs (79 FR 53026, September 5, 2014; 80 FR 53115, September 2, 2015; and 81 FR 66628, September 28, 2016) or the Navy's Year 1 and 2 monitoring reports for more detailed description of monitoring accomplished during the first two years of the project.

For acoustic monitoring associated with impact pile driving, continuous hydroacoustic monitoring systems were positioned at source (10 m from the pile) and opportunistically at predicted 160-dB Level B ZOIs. The far-field data collections were conducted at multiple locations during impact driving of 16-in concrete-filled poly piles and 24 x 30-in concrete fender piles, *i.e.*, approximately 20 to 550 m from source. Hydrophones were deployed from the dock, barge, or moored vessel at half the water depth. The SPLs for driving of 30-in steel pipe piles were measured intermittently and archived (but not reported) because associated SPLs for the size, type, and location of the piles were previously validated. Source SPLs were recorded and analyzed for a minimum of five piles for each of the concrete pile types. Additional measurements were archived.

SPLs of pile driving and demolition activities conducted during Year 2 fell within expected levels but varied spatially relative to the existing fuel pier structure and maximum

source levels for individual piles (Table 11). For both vibratory and impact pile driving methods, results from the IPP (Year 1) and 2014/2015 production pile driving (Year 2) showed that transmission loss for piles driven in shallow water inside of the existing fuel pier was greater than piles driven in deep water outside of the existing pier. Differences in depth, sediment type, and existing in-water pier/wharf structures likely accounted for variations in transmission loss and measured differences in SPLs recorded at the shutdown and far-field locations for shallow versus deep piles of the same type and size. SPLs documented during vibratory and impact pile driving of shallow and deep steel pipe piles of the same size displayed notable differences in SPLs at shutdown range and to a lesser extent at source.

Measurements of impact driving of concrete piles conducted during Year 3 produced greater than expected SPLs at source. Differences in the subsurface conditions may account for the discrepancy, as a hardened layer is found at approximately 20-40 m below the mudline. SPLs documented during driving of 16-in piles generally displayed relatively low sound source levels during initial driving then appreciable increases observed once the piles interacted with this layer. Measurements from driving of the square concrete piles showed greatest sound source levels during initial impact pile driving, which then decreased once the piles transitioned through the hardened layer. While source SPLs were observed to be greater than expected for both pile types, attenuation was also greater. Despite greater than expected source levels, the measured isopleth distances were similar to modeled predictions. Far-field impact pile driving results varied substantially between piles and locations for the various pile sizes, types, and locations. Both pile types were driven adjacent to the new fuel pier and source SPLs were subject to a wide

variety of boundary conditions from recently driven piles and associated pier infrastructure. Further detail and discussion is provided in the Navy's report.

During Year 4, measurements were conducted for pile clipping, caisson cutting, pile jetting, and airborne vibratory and impact driving. The average SPLs for pile clipping at source ranged from 138.0 to 144.6 dB rms, with maximum SPLs at source ranging from 156.1 to 165.3 dB rms (see Table 6-3 of the Navy's monitoring report). Measurements were conducted on eight piles and took one to three minutes to cut.

Caisson demolition was conducted on 18 84-in concrete-filled caissons, with an average duration of approximately 6 hours per caisson. Underwater acoustic data was collected for seven caissons using the vibratory setting. For some of the recordings, there were two caissons being cut simultaneously and the acousticians captured the SPLs for comparison between a single cutter versus two cutters. If two cutters were running, the distance measured was from the closest caisson to the location. Average SPLs at source for a single cutter were 136.1 and 141.4 dB rms. Maximum SPLs at source for a single cutter were 140.9 and 146.5 dB rms. Average SPLs at source for two cutters running simultaneously were 146.5 and 149.0 dB rms. Maximum SPLs at source for two cutters running simultaneously were 149.0 and 155.6 dB rms. On average, there was a 10 dB difference between a single cutter and two at source. Far-field recordings for a single cutter were collected at far-field locations ranging from 20 to 430 m (66 to 1,411 ft), with documented maximum SPL values from 136.6 to 145.5 dB rms. Far-field recordings for two cutters were also collected at far-field locations ranging from 85 to 810 m (279 to 2,657 ft), with documented maximum SPL values from 133.2 to 146.8 dB rms.

SPLs of pile installation activities for the 24×30 concrete piles had not been previously documented. The only jetting data collected during the Project was at NMAWC during the removal of 12-inch and 16-inch concrete piles. A total of sixteen 24×30 concrete non-structural fender piles were driven using two techniques: 1) Method 1 (M1) utilized a custom-made spud jet with four nozzles welded to the tip that used a high-pressure water system (900 gallons per minute with a maximum pounds per square inch [psi] of 300), to make the initial break through the bay point formation sediment layer; and 2) Method 2 (M2) used the 24×30 pile, outfitted with two pipes inside the full length of the pile, which then used a high-pressure water system (maximum psi of 300) to remove sediment and place the pile. Pile jetting averaged 24.5 minutes per pile and acoustic recordings were collected for the entire duration. Collection of underwater acoustic data were completed on six piles using the vibratory setting. For M1, the average sound pressure levels (SPL) at source ranged from 152.6 dB rms to 155.1 dB rms, and maximum SPLs at source ranged from 156.5 dB rms to 159.9 dB rms. For M2, the average SPL at source ranged from 133.0 dB to 149.8 dB and maximum SPLs at source ranged from 137.1 dB to 153.2 dB rms. A vessel based drift method was used to obtain far-field recordings during M1 and M2 jetting techniques; the vessel was initially positioned at the closest feasible distance to source, and then the allowed to drift on the natural tidal current until near ambient sound pressure levels were obtained. The SPLs at far-field for the first drift during jetting M1 reached near ambient at 165 m (541 ft) from pile with an SPL of 128.0 dB. The SPLs at far-field for the first drift during pile jetting M2 reached near ambient at 80 m (262 ft) from pile with an SPL of 127.6 dB. Recordings during the vessel drifts showed that jetting reached near ambient levels for both methods between 80 m (262 ft) and 165 m (541 ft; M1 and M2, respectively).

Airborne sound levels were recorded during vibratory pile driving on fourteen 30-inch steel piles. The maximum recorded airborne dB rms values at source was 106.3 dB re 20 µPa, and average values ranged from 96.0 to 102.7 dB re 20 µPa. Airborne sound levels were recorded during impact pile driving on sixteen 30-inch steel piles. The maximum recorded airborne dB values at source was 118.5 dB re 20 µPa, and average values ranged from 105.8 to 112.5 dB re 20 µPa. Further detail and discussion is provided in the Navy's report.

Table 11. Acoustic Monitoring Results for Year 4

Location	Activity	Pile type	Number of piles measured	Average underwater SPL at 10 m (dB rms)	Average airborne SPL (LZF_{max})[1]
Fuel Pier (Year 4)	Pile Clipping	24-in square concrete pile	4	141	-
	Caisson Demolition (1 cutter)	84-in caisson	10	136	-
	Caisson Demolition (2 cutters)	84-in caisson	8	138	-
	Vibratory	30-in steel (at source)	7	-	100
	Vibratory	30-in steel (far field)	7	-	86
	Impact	30-in steel (at source)	9	-	110
	Impact	30-in steel (far field)	7	-	88
NMAWC (Year 4)	Pile Jetting	24x30	10	147	-

[1]Measured from Source (15.2 m) and Far-field Distances for 30-inch Steel Piles.

Marine Mammal Monitoring Results – Marine mammal monitoring was conducted as required under the IHA and as described in the Year 4 monitoring plan and in our *Federal Register* notice of proposed authorization associated with the Year 4 IHA. For a full description of monitoring methodology, please see section 2 of the Navy's monitoring report, including Figure 2-1, 2-2, and 2-7 for representative monitoring locations and Figures 2-2 through 2-5 for monitoring zones. Monitoring protocols were managed adaptively during the course of the fourth-year IHA. Multiple shutdowns were implemented due to marine mammals being observed

within buffered shutdown zones, but no animals were observed within actual predicted Level A harassment zones while pile driving was occurring (one harbor seal was seen within the Level A ZOI after a shutdown of construction had been implemented).

Monitoring results are presented in Table 12. The Navy recorded all observations of marine mammals, including pre- and post-construction monitoring efforts. Animals observed during these periods or that were determined to be outside relevant ZOIs were not considered to represent incidents of take. Please see Figures 3-11, 3-12, 3-22, 3-23, 3-30, and 3-31 of the Navy's Monitoring Report for locations of observations and incidents of take relative to the project sites. Take authorization for the second-year authorization was informed by an assumption that 115 days of in-water construction would occur, whereas only fifty total days actually occurred. However, the actual observed rates per day were in all cases lower than what was assumed. Therefore, we expect that the Navy would not have exceeded the take allowances even if the full 115 days had been reached.

There were considerably fewer individuals and sightings during the Year 3 IHA when compared to the same months during the Year 2 IHA, and only three species were observed. This may be due to environmental fluctuations as part of the on-going El Niño event. Water temperatures during Year 3 were warmer than during the same months during Year 2. Although the temperatures were still higher than the average water temperatures for the region prior to the current El Niño event, it shows that the event may have been dissipating. In addition, California sea lion strandings decreased. No evidently significant behavioral changes were reported.

Similar to Year 3, there were considerably fewer individuals and sightings during the Year 4 IHA when compared to the same months during the Year 2 IHA, and only four species

were observed. This may be due to environmental fluctuations as part of the on-going El Niño event. Water temperatures during Year 4 were slightly warmer than during the same months during Year 2. Although the temperatures were still higher than the average water temperatures for the region prior to the current El Niño event, it shows that the event may have been dissipating. In addition, California sea lion strandings decreased, but may be returning to numbers more commonly observed. No evidently significant behavioral changes were reported.

Table 12. Marine Mammal Monitoring Results for Year 4

Species	Total sightings	Total individuals	Observed incidents of Level B take	Extrapolated incidents of Level B take[1]	Total estimated Level B take
California sea lion	717	2,037	156	1,835	1,991
Harbor seal	87	102	21	57	78
Bottlenose dolphin	18	45	4	144	148
Gray whale	1	1	0	13	13

[1]Assumed density and unmonitored area of assumed Level B ZOI used with actual pile driving time to generate assumed take for unmonitored areas.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact in 50 CFR 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival. A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on

habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

Construction and demolition activities associated with the pier replacement project, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from underwater sounds generated from pile driving. Potential takes could occur if individuals of these species are present in the ensonified zone when pile driving or removal is happening.

No injury, serious injury, or mortality is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. The potential for these outcomes is minimized through the construction method and the implementation of the planned mitigation measures. Impact pile driving produces short, sharp pulses with higher peak levels and much sharper rise time to reach those peaks. When impact driving is necessary, required measures (implementation of buffered shutdown zones) significantly reduce any possibility of injury. Given sufficient "notice" through use of soft start (for impact driving), marine mammals are expected to move away from a sound source that is annoying prior to its becoming potentially injurious. The likelihood that marine mammal detection ability by trained

observers is high under the environmental conditions described for San Diego Bay (approaching 100 percent detection rate, as described by trained biologists conducting site-specific surveys) further enables the implementation of shutdowns to avoid injury, serious injury, or mortality.

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from past years of this project and other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff, 2006; HDR, 2012; Lerma, 2014). Most likely, individuals will simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily only in association with impact pile driving. In response to vibratory driving, pinnipeds (which may become somewhat habituated to human activity in industrial or urban waterways) have been observed to orient towards and sometimes move towards the sound. The pile driving activities analyzed here are similar to, or less impactful than, numerous other construction activities conducted in San Francisco Bay and in the Puget Sound region, which have taken place with no reported injuries or mortality to marine mammals, and no known long-term adverse consequences from behavioral harassment. Repeated exposures of individuals to levels of sound that may cause Level B harassment are unlikely to result in hearing impairment or to significantly disrupt foraging behavior. Thus, even repeated Level B harassment of some small subset of the overall stock is unlikely to result in any significant realized decrease in fitness for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. Level B harassment will be reduced to the level of least practicable impact through use of

mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the project area while the activity is occurring.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized;
- The anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior;
- The absence of any significant habitat within the project area, including rookeries, significant haul-outs, or known areas or features of special significance for foraging or reproduction; and
- The presumed efficacy of the proposed mitigation measures in reducing the effects of the specified activity to the level of least practicable impact.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Section 101(a)(5)(D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are

available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The number of incidents of take proposed for authorization for these stocks, with the exception of the coastal bottlenose dolphin (see below), would be considered small relative to the relevant stocks or populations (see Table 9) even if each estimated taking occurred to a new individual. This is an extremely unlikely scenario as, for pinnipeds occurring at the NBPL waterfront, there will almost certainly be some overlap in individuals present day-to-day and in general, there is likely to be some overlap in individuals present day-to-day for animals in estuarine/inland waters.

The proposed numbers of authorized take for bottlenose dolphins are higher relative to the total stock abundance estimate and would not represent small numbers if a significant portion of the take was for a new individual. However, these numbers represent the estimated incidents of take, not the number of individuals taken. That is, it is likely that a relatively small subset of California coastal bottlenose dolphins would be incidentally harassed by project activities. California coastal bottlenose dolphins range from San Francisco Bay to San Diego (and south into Mexico) and the specified activity would be stationary within an enclosed water body that is not recognized as an area of any special significance for coastal bottlenose dolphins (and is therefore not an area of dolphin aggregation, as evident in Navy observational records). We therefore believe that the estimated numbers of takes, were they to occur, likely represent repeated exposures of a much smaller number of bottlenose dolphins and that, based on the

limited region of exposure in comparison with the known distribution of the coastal bottlenose dolphin, these estimated incidents of take represent small numbers of bottlenose dolphins.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has preliminarily determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq*.) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with the ESA Interagency Cooperation Division, whenever we propose to authorize take for endangered or threatened species.

The Navy initiated informal consultation under section 7 of the ESA with NMFS Southwest Regional Office (now West Coast Regional Office) on March 5, 2013. NMFS concluded on May 16, 2013, that the proposed action may affect, but is not likely to adversely

affect, WNP gray whales. The Navy has not requested authorization of the incidental take of WNP gray whales and no such authorization is proposed, and there are no other ESA-listed marine mammals found in the action area. Therefore, no consultation under the ESA is required.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to the Navy for conducting the described pier replacement activities in San Diego Bay, for a period of one year from the date of issuance, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued).

1. This Incidental Harassment Authorization (IHA) is valid from October 8, 2017, through October 7, 2018.

2. This IHA is valid only for pile driving and removal activities associated with the Fuel Pier Replacement Project at the Naval Station Point Loma in San Diego Bay, California.

3. General Conditions

(a) A copy of this IHA must be in the possession of the Navy, its designees, and work crew personnel operating under the authority of this IHA.

(b) The species authorized for taking are the harbor seal (*Phoca vitulina richardii*), California sea lion (*Zalophus californianus*), bottlenose dolphin (*Tursiops truncatus truncatus*), common dolphin (*Delphinus delphis*), northern elephant seal (*Mirounga angustirostris*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Risso's dolphin (*Grampus griseus*), and gray whale (*Eschrichtius robustus*).

(c) The taking, by Level B harassment only, is limited to the species listed in condition 3(b). See Table 1 for numbers of take authorized.

Table 1. Authorized Take Numbers, by Species

Species	Authorized Take
California sea lion	8,971
Harbor seal	281
Northern elephant seal	43
California coastal bottlenose dolphin	704
Common dolphin	861
Pacific white-sided dolphin	28
Risso's dolphin	114
Gray whale	10

(d) The taking by injury (Level A harassment), serious injury, or death of any of the species listed in condition 3(b) of the Authorization or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.

(e) The Navy shall conduct briefings between construction supervisors and crews, marine mammal monitoring team, acoustic monitoring team, and Navy staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

4. Mitigation Measures

The holder of this Authorization is required to implement the following mitigation measures:

(a) For all pile driving, the Navy shall implement a minimum shutdown zone of 10 m radius around the pile. If a marine mammal comes within or approaches the shutdown zone, such operations shall cease. See Table 2 for minimum radial distances required for shutdown zones.

Table 2. Radial Distance to Shutdown and Disturbance Zones Associated with Relevant Thresholds, Including Buffers

Activity	Monitored Distances to Thresholds (meters)							
	Underwater						Airborne	
	Level A				Level B		Level B	
	LF[1]	MF[1]	PW[1]	OW[1]	160 dB	120 dB[2]	100 dB	90 dB
Old Fuel Pier and Temporary Mooring Dolphin Demolition								
66-inch and 84-inch caissons (Diamond saw cutting)	10				N/A	631	N/A[3]	
Concrete piles (Pile clipping)	10				N/A	2,511		
30-inch steel piles (Plasma torch cutting)	10				N/A			
NMAWC Construction and Demolition								
16-inch concrete piles (Vibratory extraction/driving)	20[4]		10		N/A	1,848	42	149
16-inch concrete piles (Impact driving)	100[5]		60[6]		270	N/A		
16-inch concrete piles (Jetting pile extraction)	10				N/A	1,165	N/A[3]	
16-inch concrete piles (Pile dead-pull)	10				N/A			

[1] LF = Low-frequency cetaceans; MF = Mid-frequency cetaceans; PW = Phocid pinnipeds; OW = Otariid pinnipeds. The high-frequency cetacean hearing group (HF) is omitted, because no species in the hearing group occur in, or around, Project area.
[2] Mean ambient sound levels in San Diego Bay are approximately 128 dB rms (NAVFAC SW 2015), and all 120 dB Level B ZOIs are based on the ambient value.
[3] Airborne noise levels did not exceed regulatory thresholds during previous IHAs. No airborne monitoring will take place for diamond saw cutting of caissons, plasma torch cutting of temporary mooring dolphin 30-inch steel piles, jetting or dead-pull extraction of concrete piles.
[4] Includes buffer of calculated Level A threshold out to 20 m (65.6 ft).
[5] Includes buffer of calculated Level A threshold out to 100 m (328 ft).
[6] Includes buffer of calculated Level A threshold out to 60 m (197 ft).

(b) The Navy shall shutdown activity as appropriate upon observation of any species for which take is not authorized. Activity shall not be resumed until those species have been observed to leave the relevant zone or until one hour has elapsed.

(c) The Navy shall deploy marine mammal observers as described below and as indicated in the Acoustic and Marine Species Monitoring Plan (Monitoring Plan; attached).

i. For all pile driving and applicable demolition activities, a minimum of one observer shall monitor the shutdown zones. However, any action requiring the impact or vibratory hammer will necessitate two MMOs.

ii. For impact and vibratory pile driving of 16-in concrete piles, two observers shall be positioned for optimal monitoring of the surrounding waters.

iii. These observers shall record all observations of marine mammals, regardless of distance from the pile being driven, as well as behavior and potential behavioral reactions of the animals.

iv. All observers shall be equipped for communication of marine mammal observations amongst themselves and to other relevant personnel (*e.g.*, those necessary to effect activity delay or shutdown).

(d) Monitoring shall take place from fifteen minutes prior to initiation of pile driving activity through thirty minutes post-completion of pile driving activity. Pre-activity monitoring shall be conducted for fifteen minutes to ensure that the shutdown zone is clear of marine mammals, and pile driving may commence when observers have declared the shutdown zone clear of marine mammals. In the event of a delay or shutdown of activity resulting from marine mammals in the shutdown zone, animals shall be allowed to remain in the shutdown zone (*i.e.*,

must leave of their own volition) and their behavior shall be monitored and documented. Monitoring shall occur throughout the time required to drive a pile. The shutdown zone must be determined to be clear during periods of good visibility (*i.e.,* the entire shutdown zone and surrounding waters must be visible to the naked eye).

(e) If a marine mammal approaches or enters the shutdown zone, all pile driving activities at that location shall be halted. If pile driving is halted or delayed due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or 30 minutes have passed without re-detection of gray whales or 15 minutes for all other animals.

(f) Monitoring shall be conducted by qualified observers, as described in the Monitoring Plan. Trained observers shall be placed from the best vantage point(s) practicable to monitor for marine mammals and implement shutdown or delay procedures when applicable through communication with the equipment operator.

(g) The Navy shall use soft start techniques recommended by NMFS for impact pile driving. Soft start for impact drivers requires contractors to provide an initial set of strikes at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy strike sets. Soft start shall be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.

(h) Pile driving shall only be conducted during daylight hours.

5. Monitoring

The holder of this Authorization is required to conduct marine mammal monitoring during pile driving activity. Marine mammal monitoring and reporting shall be conducted in accordance with the Monitoring Plan.

(a) The Navy shall collect sighting data and behavioral responses to pile driving for marine mammal species observed in the region of activity during the period of activity. All observers shall be trained in marine mammal identification and behaviors, and shall have no other construction-related tasks while conducting monitoring.

(b) For all marine mammal monitoring, the information shall be recorded as described in the Monitoring Plan.

(c) The Navy shall conduct acoustic monitoring for representative scenarios of pile driving activity, as described in the Monitoring Plan.

6. Reporting

The holder of this Authorization is required to:

(a) Submit a draft report on all monitoring conducted under the IHA within 45 calendar days of the completion of marine mammal and acoustic monitoring, or 60 days prior to the issuance of any subsequent IHA for this project, whichever comes first. A final report shall be prepared and submitted within thirty days following resolution of comments on the draft report from NMFS. This report must contain the informational elements described in the Monitoring Plan, at minimum (see attached), and shall also include:

i. Detailed information about any implementation of shutdowns, including the distance of animals to the pile and description of specific actions that ensued and resulting behavior of the animal, if any.

ii. Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals.

iii. Results of acoustic monitoring, including the information described in in the Monitoring Plan.

(b) Reporting injured or dead marine mammals:

i. In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as an injury (Level A harassment), serious injury, or mortality, Navy shall immediately cease the specified activities and report the incident to the Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator, NMFS. The report must include the following information:

A. Time and date of the incident;

B. Description of the incident;

C. Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, and visibility);

D. Description of all marine mammal observations in the 24 hours preceding the incident;

E. Species identification or description of the animal(s) involved;

F. Fate of the animal(s); and

G. Photographs or video footage of the animal(s).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with Navy to determine what measures are necessary to minimize the

likelihood of further prohibited take and ensure MMPA compliance. Navy may not resume their activities until notified by NMFS.

i. In the event that Navy discovers an injured or dead marine mammal, and the lead observer determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition), Navy shall immediately report the incident to the Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator, NMFS.

The report must include the same information identified in 6(b)(i) of this IHA. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Navy to determine whether additional mitigation measures or modifications to the activities are appropriate.

ii. In the event that Navy discovers an injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, scavenger damage), Navy shall report the incident to the Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator, NMFS, within 24 hours of the discovery. Navy shall provide photographs or video footage or other documentation of the stranded animal sighting to NMFS.

7. This Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein, or if the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.

Request for Public Comments

We request comment on our analysis, the draft authorization, and any other aspect of this Notice of Proposed IHA for Navy's pier replacement activities. Please include with your comments any supporting data or literature citations to help inform our final decision on Navy's request for an MMPA authorization.

Dated: August 1, 2017.

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Catherine Marzin,

Acting Deputy Director,

Office of Protected Resources,

National Marine Fisheries Service.

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