TABLE 1—TAKE ANALYSIS—Continued

Species	Authorized take	Scaled take [1]	Abundance [2]	Percent abundance
Short-finned pilot whale	640	189	1,981	9.5

[1] Scalar ratios were applied to ''Authorized Take'' values as described at 86 FR 5322, 5404 (January 19, 2021) to derive scaled take numbers shown here.
[2] Best abundance estimate. For most taxa, the best abundance estimate for purposes of comparison with take estimates is considered here to be the model-predicted abundance (Roberts *et al.,* 2016). For those taxa where a density surface model predicting abundance by month was produced, the maximum mean seasonal abundance was used. For those taxa where abundance is not predicted by month, only mean annual abundance is available. For Rice's whale and killer whale, the larger estimated SAR abundance estimate is used.
[3] The final rule refers to the GOM Bryde's whale (*Balaenoptera edeni*). These whales were subsequently described as a new species, Rice's whale (*Balaenoptera ricei*) (Rosel *et al.,* 2021).
[4] Includes 32 takes by Level A harassment and 564 takes by Level B harassment. Scalar ratio is applied to takes by Level B harassment only; small numbers determination made on basis of scaled Level B harassment take plus authorized Level A harassment take.

Based on the analysis contained herein of Shell's proposed survey activity described in its LOA application and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the affected species or stock sizes (*i.e.,* less than one-third of the best available abundance estimate) and therefore the taking is of no more than small numbers.

Authorization

NMFS has determined that the level of taking for this LOA request is consistent with the findings made for the total taking allowable under the incidental take regulations and that the amount of take authorized under the LOA is of no more than small numbers. Accordingly, we have issued an LOA to Shell authorizing the take of marine mammals incidental to its geophysical survey activity, as described above.

Dated: April 8, 2024.

Catherine Marzin,

Acting Director, Office of Protected Resources, National Marine Fisheries Service.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD681]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to U.S. Navy Maintenance and Pile Replacement Project in Puget Sound, Washington

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

ACTION: Notice; proposed incidental harassment authorizations; request for comments on proposed authorizations and possible renewal.

SUMMARY: NMFS has received a request from the United States Navy (Navy) for authorization to take marine mammals incidental to 2 years of construction activities associated with the Naval Facilities Engineering Command Northwest (NAVFAC NW) Maintenance and Pile Replacement (MPR) project in Puget Sound, Washington. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue two consecutive 1-year incidental harassment authorizations (IHAs) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, 1-year renewal that could be issued under certain circumstances and if all requirements are met, as described in Request for Public Comments at the end of this notice. 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 May 13, 2024.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, NMFS and should be submitted via email to *ITP.Fleming@noaa.gov.* 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: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.* In case of problems accessing these documents, please call the contact listed above.

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, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* 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: Kate Fleming, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the ''take'' of marine mammals, with certain exceptions. 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 proposed or, if the taking is limited to harassment, a notice of a proposed IHA is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other ''means of effecting the least practicable adverse impact'' on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as

''mitigation''); and requirements pertaining to the monitoring and reporting of the takings. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

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 two consecutive IHAs) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NAO 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 IHAs 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 request for two consecutive IHAs.

Summary of Request

On October 5, 2023, NMFS received a request from the Navy for two consecutive 1-year IHAs to take marine mammals incidental to construction associated with the Navy's NAVFAC NW MPR project in Puget Sound, Washington. Following NMFS' review of the application, the Navy submitted a revised version on December 14, 2023, additional information on January 10, 2024, and the marine mammal monitoring plan on January 23, 2024. Final revisions to both the application and the marine mammal monitoring plan were provided on March 2, 2024. The application was deemed adequate and complete on February 27, 2024. The Navy's request is for take of 10 species of marine mammals by Level B harassment and, for harbor seal, Level B and Level A harassment. Neither the Navy nor NMFS expect serious injury or mortality to result from this activity. Therefore, IHAs are appropriate.

NMFS previously issued a regulation and associated Letters of Authorization to the Navy for related work (84 FR 15963, April 17, 2019; *https://www.fisheries.noaa.gov/action/incidental-take-authorization-us-navy-marine-structure-maintenance-and-pile-replacement-wa*). The Navy complied with all the requirements (*e.g.,* mitigation, monitoring, and reporting) of the previous LOAs, and information regarding their monitoring results may be found in the Effects of Specified Activities on Marine Mammals and Their Habitat.

Description of Proposed Activity

Overview

Maintaining existing wharfs and piers is vital to sustaining the Navy's mission and ensuring readiness. To ensure continuance of necessary missions at the four installations, the Navy must conduct annual maintenance and repair activities at existing marine waterfront structures, including removal and replacement of piles of various types and sizes. The Navy refers to this program as the Marine Structure MPR program.

The activities that have the potential to take marine mammals by Level A harassment and Level B harassment include installation and/or removal of timber, concrete, and steel piles by vibratory and impact pile driving and down-the hole (DTH) drilling. Construction would span the course of 2 years, with the first year beginning on July 15, 2024, and lasting through July 14, 2025. The second year of construction activities would begin July 15, 2025, and continue through July 14, 2026.

The Navy has requested the issuance of two consecutive IHAs in association with the two project years. Given the similarities in activities between project years, NMFS is issuing this single **Federal Register** notice to solicit public comments on the issuance of the two similar, but separate, IHAs.

Dates and Duration

The Navy anticipates that the planned NAVFAC NW MPR activities will occur over 2 years. The year 1 IHA would be valid from July 1, 2024–June 30, 2025, and the year 2 would span July 1, 2025–June 30, 2026. The specified activities would occur at any time during each project year, subject to existing time of year restrictions, or in-water work windows, designed to protect fish species listed under the U.S. Endangered Species Act (ESA). For Naval Base Kitsap (NBK) Bangor (located in Hood Canal), in-water work would occur from July 16 through January 15 each project year. At the remaining three facilities (located in Puget Sound), in-water work would occur from July 16 through February 15.

Days of pile driving at each site were based on the estimated work days using a slow production rate (*e.g.,* four–six piles per day for fender pile replacement). These conservative rates are the basis for estimates of total days at each facility each year (table 1, table 2). These totals include both extraction and installation of piles and represent a conservative estimate of pile driving days at each facility. In a real construction situation, pile driving production rates would be maximized when possible and actual daily production rates may be higher, resulting in fewer actual pile driving days.

Specific Geographic Region

The four installations are located within the inland waters of Washington State. One facility is located within Hood Canal, while the remainder are located within Puget Sound. See figure 1–1 of the Navy's application for a regional map and section 2 for full details regarding the specified geographical region. Puget Sound is one of the largest estuaries in the United States and is a place of great physical and ecological complexity and productivity. With nearly six million people (doubled since the 1960s), Puget Sound is also heavily influenced by human activity.

NBK Bangor serves as the Pacific homeport for the Navy's TRIDENT submarine squadron and other ships home-ported or moored at the installation and to maintain and operate administrative and personnel support facilities including security, berthing, messing, and recreational services. It is located on Hood Canal, a long, narrow, fjord-like basin of western Puget Sound (see figure 1–2 of the Navy's application). Oriented northeast to southwest, the portion of the canal from Admiralty Inlet to a large bend, called the Great Bend, at Skokomish, Washington, is 84 kilometers (km) (52 miles (mi)) long. East of the Great Bend, the canal extends an additional 24 km (15 mi) to Belfair. Throughout its 108-km (67 mi) length, the width of the canal varies from 1.6 to 3.2 km (1 to 2 mi) and exhibits strong depth/elevation gradients. Hood Canal is characterized by relatively steep sides and irregular seafloor topography. In northern Hood Canal, water depths in the center of the waterway near Admiralty Inlet vary between 91 and 128 meters (m) (300 and 420 feet (ft)). As the canal extends southwestward toward the Olympic Mountain Range and Thorndyke Bay, water depth decreases to approximately 49 m (160 ft) over a moraine deposit. This deposit forms a sill across the canal

in the vicinity of Thorndyke Bay, which limits seawater exchange with the rest of Puget Sound. The NBK Bangor waterfront occupies approximately 8 km (5 mi) of the shoreline within northern Hood Canal (1.7 percent of the entire Hood Canal coastline) and lies just south of the sill feature.

NBK Bremerton serves as the homeport for a nuclear aircraft carrier and other Navy vessels. It is located on the north side of Sinclair Inlet in southern Puget Sound (see figure 1–3 of the Navy's application). Sinclair Inlet is located off the main basin of Puget Sound and is about 6.9 km long and 1.9 km wide. The inlet is connected to the main basin through Port Orchard Narrows and Rich Passage. Another relatively narrow waterway, Port Washington Narrows, connects Sinclair Inlet to Dyes Inlet. In-water structures, shoreline fill, and erosion protection at NBK Bremerton have resulted in a shoreline geometry and character that is quite different from undisturbed shorelines in Puget Sound. Bathymetry near existing piers and in turning basins immediately offshore has been altered by significant dredging to accommodate aircraft carriers and other Navy vessels. Water depths range from 12 to 14 m (40 to 45 ft), increasing to 14 to 15 m (45 to 50 ft) in dredged berthing areas. West of the project sites, further into Sinclair Inlet, depths gradually decrease to less than 9 m (30 ft).

NBK Manchester provides bulk fuel and lubricant support to area Navy afloat and shore activities. It is located on Orchard Point, approximately 6.4 km (4 mi) due east of Bremerton. Please see figure 1–4 of the Navy's application. The installation is bounded by Clam Bay to the northwest, Rich Passage to the northeast, and Puget Sound to the east. NBK Manchester piers are located on the north side of Orchard Point and in a small embayment open on the south side of Orchard Point. In Clam Bay, the bathymetry is gently sloping with depths in the outer portions of the bay of approximately 5.5 m (18 ft) below mean lower low water (MLLW). Depths off Orchard Point drop off dramatically to 18 m (60 ft) below MLLW approximately 150 m (500 ft) from shore and 90 m (300 ft) below MLLW 1.6 km (1 m) offshore. Rich Passage is a shallow sill, less than 21 m (70 ft) deep.

Naval Station (NS) Everett provides homeport ship berthing, industrial support, and a Navy administrative center. It is located in Port Gardner Bay in Puget Sound's Whidbey Basin (see figure 1–5 of the Navy's application). To the west of the installation is the channelized mouth of the Snohomish River bounded by Jetty Island, which is composed of sediment from maintenance dredging and acts as a breakwater for the northwest area along the installation's waterfront. Jetty Island separates Port Gardner Bay and Possession Sound from the Snohomish River channel. The mouth of the Snohomish River channel is a historically industrialized area of highly modified shorelines and dredged waterways that forms a protected harbor within Port Gardner Bay. East of Jetty Island lies the Snohomish River estuary, consisting of a series of interconnected sloughs that flow through the lowlands east and north of the river's main channel. Water depths in Possession Sound range from about 9 m (30 ft) near the industrialized shoreline in Port Gardner to 180 m (600 ft) in mid-channel.

Detailed Description of the Specified Activity

The Navy plans to conduct maintenance and repair activities at marine waterfront structures at the four aforementioned installations within Puget Sound (Washington inland waters) and Hood Canal. Repairs would include replacing up to 150 structurally unsound piles with 164 concrete or steel piles over a 1-year period (July 2024 through July 2025) at NBK Bremerton and NBK Manchester using impact and vibratory pile driving and removal and DTH drilling; and replacing 130 structurally unsound piles over a 1-year period (July 2025–July 2026) at NBK Bremerton, NBK Bangor and NS Everett using impact and vibratory pile driving and removal.

Tables 1 and 2 provide a summary of pile types, sizes, and maximum numbers of piles at each installation to be replaced over the two 1-year MPR Program periods from July 2024–July 2025 and July 2025–July 2026, respectively. This estimate assumes all piles would be removed and replaced with new piles. However, existing piles may be repaired in place with no new piles installed and if replaced piles are larger than existing piles, typically fewer piles are needed. Therefore, estimates of replaced piles for each installation are a conservative overestimate. These estimates also include temporary (or ''false work'') piles that may be required during construction. Actual numbers will depend on the number actually replaced and the size and type of new piles installed.

The MPR program includes pile repair, extraction, and installation, all of which may be accomplished through a variety of methods. However, only pile extraction and installation using vibratory and impact pile drivers and DTH drilling are expected to have the potential to result in incidental take of marine mammals. Pile repair methods include stubbing, wrapping, pile encapsulation, welding, or coating. These processes do not involve pile driving and are not expected to have the potential to result in incidental take of marine mammals. Pile removal may be accomplished via vibratory extraction or via mechanical methods such as cutting/chipping, clamshell removal, or direct pull. Four primary methods of pile installation would be used: water jetting, vibratory pile driving, impact pile driving, or DTH drilling. Noise levels produced through mechanical extraction activities and water jetting are not expected to exceed baseline levels produced by other routine activities and operations at the four facilities, and any elevated noise levels produced through these activities are expected to be intermittent, of short duration, and with low peak values. Therefore, only impact and vibratory pile driving, vibratory removal, and DTH drilling are carried forward for further analysis.

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. DTH drilling is a common method used to drill holes through hard rock substrates. DTH drilling uses rotary cutting percussion action using a button bit. In DTH drilling, the drill pipe transmits the necessary feed force and rotation to the hammer and bit, along with the compressed air used to actuate the hammer and flush the cuttings.

TABLE 1—PILE TYPES AND MAXIMUM ANTICIPATED NUMBER TO BE REPLACED AT EACH INSTALLATION BETWEEN JULY 2024 AND JULY 2025

Pile size/type	Method	Number of piles	Estimated piles per day	Days of installation or removal
NBK Bremerton (Pier C and Pier 5)				
13-inch Timber	Removal, Vibratory or Pull	78	6 (up to 10)	30
24-in Concrete Octagonal	Installation, Impact	25	4.	
18-in x 18-inch square concrete	Installation, Impact	65	5.	
NBK Manchester (Fuel Pier)				
26-in Steel	Removal, Pull or Cut	72	N/A	37
24-in Concrete	Installation, DTH or impact	74	1–2.	

TABLE 2—PILE TYPES AND MAXIMUM ANTICIPATED NUMBER TO BE REPLACED AT EACH INSTALLATION BETWEEN JULY 2025 AND JULY 2026

Pile size/type	Method	Number of piles	Estimated piles per day	Days of installation or removal
NBK Bangor Marginal Wharf				
36-inch Steel	Removal, Vibratory or Pull	78	4	36
	Installation, Vibratory or Impact	78	4	
NBK Bremerton (Pier F)				
24-in Steel	Removal, Vibratory	48	1–6	24
	Installation, Vibratory	48		
NS Everett (Pier A)				
12-in Steel	Removal, Vibratory or Cut	4	1–2	8
	Installation, Vibratory or Impact	4	1–2	

Between July 2024 and July 2025, the following activities are planned: (1) At NBK Bremerton, 25 13-inch (in) timber fender piles would be removed at Pier C using vibratory pile driving or pulling and replaced with 25 24-in concrete fender piles using impact pile driving. At the same installation, 53 13-in timber piles would be vibratory removed at Pier 5 and replaced with up to 65 18-in concrete piles using impact pile driving. Impact pile driving at Pier 5 may occur at the same time as vibratory pile driving at Pier C, though Pier 5 is shielded from Pier C pile driving sound by Dry Dock 6, which is a solid structure extending into Sinclair Inlet; and (2) At NBK Manchester a total of 72 26-in steel piles would be removed and replaced with 74 24-in concrete piles at the Fuel Pier. Concrete piles would be installed using DTH drilling in areas with bedrock while impact pile driving would be used if there is no bedrock.

Between July 2025 and July 2026, the following activities are planned: (1) Up to 78 steel fender piles (36-in) at NBK Bangor are anticipated to be removed by vibratory pile driving or cutting, and 78 steel fender piles (36-in) could be installed using vibratory pile driving with impact proofing at this same location; (2) A total of 48 24-in steel fender piles would be removed and replaced with 48 new 24-in steel fender piles using vibratory pile driving at NBK Bremerton, Pier F; and (3) At NS Everett a total of 4 12-in steel piles will be removed by vibratory pile driving or cutting and replaced with 4 12-in steel piles by vibratory or impact pile driving if necessary at Pier A.

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 Specified Activities

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. NMFS fully considered all of this information, and we refer the reader to these descriptions, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.,* physical and behavioral descriptions) may be found on NMFS' website (*https://www.fisheries.noaa.gov/find-species*).

Table 3 lists all species or stocks for which take is expected and proposed to be authorized for both proposed IHAs, and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. 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' SARs). While no serious injury or mortality is anticipated or proposed to be authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the

status of the species or stocks 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' 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' U.S. Alaska and Pacific SARs. All values presented in table 3 are the most recent available at the time of publication (including from the draft 2023 SARs) and are available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.*

TABLE 3—MARINE MAMMAL SPECIES[4] LIKELY TO BE AFFECTED BY THE SPECIFIED ACTIVITIES

Common name	Scientific name	Stock	ESA/ MMPA status; strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Order Artiodactyla—Cetacea—Mysticeti (baleen whales)						
Family Eschrichtiidae:						
Gray Whale	*Eschrichtius robustus*	Eastern N Pacific	-, -, N	26,960 (0.05, 25,849, 2016).	801	131
Family Balaenopteridae (rorquals):						
Humpback Whale	*Megaptera novaeangliae*	Central America/Southern Mexico—CA/OR/WA.	E, D, Y	1,494 (0.171, 1,284, 2021).	3.5	14.9
		Mainland Mexico—CA/OR/WA	T, D, Y	3,477 (0.101, 3,185, 2018).	43	22
		Hawai'i	-, -, N	11,278 (0.56, 7,265, 2020).	127	27.09
Minke Whale	*Balaenoptera acutorostrata*	CA/OR/WA	-, -, N	915 (0.792, 509, 2018)	4.1	0.19
Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae:						
Killer Whale	*Orcinus orca*	Eastern North Pacific Southern Resident.	E, D, Y	73 (N/A, 73, 2022)	0.13	0
		West Coast Transient	-, -, N	349[5] (N/A, 349, 2018)	3.5	0.4
Family Phocoenidae (porpoises):						
Dall's Porpoise	*Phocoenoides dalli*	CA/OR/WA	-, -, N	16,498 (0.61, 10,286, 2018).	99	≥0.66
Harbor Porpoise	*Phocoena phocoena*	Washington Inland Waters	-, -, N	11,233 (0.37, 8,308, 2015).	66	≥7.2
Order Carnivora—Pinnipedia						
Family Otariidae (eared seals and sea lions):						
CA Sea Lion	*Zalophus californianus*	U.S	-, -, N	257,606 (N/A, 233,515, 2014).	14,011	>321
Steller Sea Lion	*Eumetopias jubatus*	Eastern	-, -, N	36,308[6] (N/A, 36,308, 2022).	2,178	93.2
Family Phocidae (earless seals):						
Harbor Seal	*Phoca vitulina*	Washington Inland Hood Canal	-, -, N	3,363 (0.16, 2,940, 2019)	88	2
		Washington Northern Inland Waters.	-, -, N	16,451 (0.07, 15,462, 2019).	928	40
Northern Elephant Seal	*Mirounga angustirostris*	CA Breeding	-, -, N	187,386 (N/A, 85,369, 2013).	5,122	13.7

[1] 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 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] NMFS marine mammal SARs online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance.

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

[4] Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy (*https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/*).

[5] Nest is based upon count of individuals identified from photo-ID catalogs in analysis of a subset of data from 1958–2018.

[6] Nest is best estimate of counts, which have not been corrected for animals at sea during abundance surveys. Estimates provided are for the U.S. only.

As indicated above, all 10 species (with 14 managed stocks) in table 3 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. All species that could potentially occur in the proposed project areas are included in table 3–1 of the application for two consecutive IHAs. While Pacific white-sided dolphin, bottlenose dolphin, long-beaked common dolphin, and Risso's dolphin have been documented in the Puget Sound, the temporal and/or spatial occurrence of these species is such that take is not expected to occur, and they are not discussed further beyond the explanation provided here. Additionally, the range of the southern Puget Sound stock of harbor seal does not overlap with the project area and the stock is not discussed further. These species are very rare in Puget Sound and are not expected to occur near any of the MPR installations.

In addition, the northern sea otter may be found in the Puget Sound area. However, northern sea otters are managed by the U.S. Fish and Wildlife Service and are not considered further in this document.

Gray Whale

Gray whales are observed in Washington inland waters in all months of the year, with peak numbers occurring from March through June (Calambokidis *et al.,* 2010). Most whales sighted are part of a small regularly occurring group of 6 to 10 whales that use the northern Puget Sound as a springtime feeding area (Calambokidis *et al.,* 2010; Calambokidis, 2017). Observed feeding areas are located in Saratoga Passage between Whidbey and Camano Islands including Crescent Harbor, and in Port Susan Bay located between Camano Island and the mainland north of Everett (Calambokidis *et al.,* 2010). Gray whales that are not identified with the regularly occurring feeding group are occasionally sighted in Puget Sound. These whales are not associated with feeding areas and are often emaciated (WDFW, 2012).

In the waterways near NBK Bremerton (Rich Passage/Sinclair Inlet/Dyes Inlet/Agate Passage), 11 opportunistic sightings of gray whales were reported to the Orca Network (a public marine mammal sightings database) between 2003 and 2012. In October 2020, PSOs observed a gray whale near NBK Bangor during construction associated with a Pier Extension Project (DoN, 2021). PSOs were on site observing marine mammals for 99 days between July 2020 and January 2021 (DoN, 2021) and for 32 days between October 2021 and January 2022 (DoN, 2022). However, gray whales were not observed during monitoring efforts associated with other projects occurring at relevant Navy installations in Puget Sound. This includes two projects occurring at NBK Bangor: the Explosives Handling Wharf Pile Replacement Project (monitoring occurred on 14 days between August 2021 and October 2021) (Hamer Environmental, 2021), and the Service Pier B710 Pile Replacement Project (monitoring occurred on 4 days between December 2021 and January 2022) (Sandoval *et al.,* 2022), and one project occurring at NBK Manchester in which PSOs monitored for 11 days between September and December 2021 for the Pier B213 Fender Replacement Project (Sandoval and Johnson, 2021).

There is a Biologically Important Area (BIA) for migrating gray whales in the inland waters of Puget Sound from January through July and October through December and for feeding gray whales between March and May (Calambokidis *et al.,* 2015).

Between 2019 and 2023, there was an Unusual Mortality Event (UME) for gray whales occurring along the West Coast from Mexico through Alaska. While most of the strandings associated with this UME have been documented along Washington's Pacific coast, 14 gray whale strandings have been reported in inland waters between February and July, 2 of which were reported near NS Everett (May 2019 and April 2020); one at the mouth of Hood Canal (May 2019), and one near NBK Bremerton (March 2021). Additionally, a gray whale spent several weeks in Dyes Inlet near NBK Bremerton in April and May 2023 and subsequently stranded near Olympia, Washington in June of that year. Gray whales are rarely sighted in Hood Canal south of the Hood Canal Bridge, including a stranded whale at Belfair State Park (Orca Network, 2022).

Gray whales are expected to occur in the waters surrounding all four installations. However, gray whales are expected to occur primarily from March through June when in-water construction will not occur. Therefore, although some exposure to individual gray whales could occur at the four facilities, project timing will help to minimize potential exposures.

Humpback Whale

On September 8, 2016, NMFS divided the once single species into 14 distinct population segments (DPS) under the ESA, removed the species-level listing as endangered, and, in its place, listed four DPSs as endangered and one DPS as threatened (81 FR 62259, September 8, 2016). The remaining nine DPSs were not listed. There are four DPSs in the North Pacific, including Western North Pacific and Central America, which are listed as endangered, Mexico, which is listed as threatened, and Hawaii, which is not listed.

The 2022 Pacific SARs described a revised stock structure for humpback whales which modifies the previous stocks designated under the MMPA to align more closely with the ESA-designated DPSs (Caretta *et al.,* 2023; Young *et al.,* 2023). Specifically, the three previous North Pacific humpback whale stocks (Central and Western North Pacific stocks and a CA/OR/WA stock) were replaced by five stocks, largely corresponding with the ESA-designated DPSs. These include Western North Pacific and Hawaii stocks and a Central America/Southern Mexico-CA/OR/WA stock (which corresponds with the Central America DPS). The remaining two stocks, corresponding with the Mexico DPS, are the Mainland Mexico-CA/OR/WA and Mexico-North Pacific stocks (Caretta *et al.,* 2023; Young *et al.,* 2023). The former stock is expected to occur along the west coast from California to southern British Columbia, while the latter stock may occur across the Pacific, from northern British Columbia through the Gulf of Alaska and Aleutian Islands/Bering Sea region to Russia.

The Hawai'i stock consists of one demographically independent population (DIP)—Hawai'i—Southeast Alaska/Northern British Columbia DIP and one unit—Hawai'i—North Pacific unit, which may or may not be composed of multiple DIPs (Wade *et al.,* 2021). The DIP and unit are managed as a single stock at this time, due to the lack of data available to separately assess them and lack of compelling conservation benefit to managing them separately (NMFS, 2023; NMFS, 2019; NMFS, 2022b). The DIP is delineated based on two strong lines of evidence: genetics and movement data (Wade *et al.,* 2021). Whales in the Hawai'i—Southeast Alaska/Northern British Columbia DIP winter off Hawai'i and largely summer in Southeast Alaska and Northern British Columbia (Wade *et al.,* 2021). The group of whales that migrate from Russia, western Alaska (Bering Sea and Aleutian Islands), and central Alaska (Gulf of Alaska excluding Southeast Alaska) to Hawai'i have been delineated as the Hawai'i-North Pacific unit (Wade *et al.,* 2021). There are a small number of whales that migrate between Hawai'i and southern British Columbia/Washington, but current data and analyses do not provide a clear understanding of which unit these whales belong to (Wade *et al.,* 2021) (Caretta *et al.,* 2023; Young *et al.,* 2023).

The Mexico—North Pacific unit is likely composed of multiple DIPs, based on movement data (Martien *et al.,* 2021; Wade, 2021, Wade *et al.,* 2021). However, because currently available data and analyses are not sufficient to delineate or assess DIPs within the unit, it was designated as a single stock (NMFS, 2023a; NMFS, 2019; NMFS, 2022c). Whales in this stock winter off Mexico and the Revillagigedo Archipelago and summer primarily in Alaska waters (Martien *et al.,* 2021; Carretta *et al.,* 2023; Young *et al.,* 2023).

Within U.S. west coast waters, three current DPSs may occur: The Hawaii DPS (not listed), Mexico DPS (threatened), and Central America DPS (endangered). According to Wade *et al.* (2021), the probability that whales encountered in Washington waters are from a given DPS are as follows: Hawaii, 69 percent; Mexico (CA-OR-WA), 25 percent; Central America, 6 percent.

Humpback whales have been reported in the Puget Sound during every month in 2022 (Orca Network, 2023). Most humpback whale sightings reported since 2003 were in the main basin of Puget Sound with numerous sightings in the waters between Point No Point and Whidbey Island, Possession Sound, and southern Puget Sound in the vicinity of Point Defiance. Some of the reported sightings were in the vicinity of NS Everett and NBK Manchester. A few sightings of possible humpback whales were reported by Orca Network in the waters near NBK Bremerton and between January 2003 and December 2015. Humpback whales were sighted in the vicinity of Manette Bridge in Bremerton in March and May 2016, and May 2017 (Orca Network, 2017), and a carcass was found under a dock at NBK Bremerton in June 2016 (Cascadia Research, 2016).

In Hood Canal, single humpback whales were observed for several weeks in 2012 and in 2015 (Orca Network, 2022). Multiple sightings in Hood Canal were reported in June 2019, February through May 2020, and August 2021 (Orca Network, 2022). Prior to the 2012 sightings, there were no confirmed reports of humpback whales entering Hood Canal (Orca Network, 2022).

Humpback whales were not observed by protected species observers (PSOs) during monitoring completed for Navy construction projects at NBK Bangor (DoN, 2021; DoN, 2022; Hamer Environmental, 2021; Sandoval *et al.,* 2022) and NBK Manchester (Sandoval and Johnson, 2021; Sandoval *et al.,* 2022; Hamer Environmental, 2021). The number of humpback whales potentially present near any of the four naval installations over the project time period is expected to be low in any month.

Minke Whale

Sightings of minke whales in Puget Sound are infrequent, with approximately 14 opportunistic sightings recorded south of the Admiralty Inlet between 2005 and 2012, from March through October. In recent years (2022 and 2023), possible sightings of a single minke whale have been reported near NBK Bangor in September and October (the Orca Network 2022 and 2023), and in 2021 and 2022, a few minke whale sightings were reported south of Whidbey Island by the Pacific Whale Watch Association (Gless and Krieger, 2023). However, minke whales were not observed by PSOs during monitoring completed for Navy construction projects at NBK Bangor (DoN, 2021; DoN, 2022; Hamer Environmental, 2021; Sandoval *et al.,* 2022) and NBK Manchester (Sandoval and Johnson, 2021; Sandoval *et al.,* 2022; Hamer Environmental, 2021) and the number of minke whales potentially present near any of the four installations is expected to be very low in any month and even lower in winter months.

Killer Whale (Transient)

Groups of transient killer whales were observed for lengthy periods in Hood Canal in 2003 (59 days) and 2005 (172 days) (London, 2006), but were not observed again until 2016, when they were seen on a handful of days between March and May (including in Dabob Bay). Transient killer whales were observed by PSOs in December 2020 and December 2021 during construction at NBK Bangor (DoN, 2021; DoN, 2022). Transient killer whales have been seen infrequently near NBK Bremerton, including in Dyes Inlet and Sinclair Inlet (*e.g.,* sightings in 2010, 2013, 2015, 2022, and 2023) (Orca Network, 2023). Transient killer whales have occasionally been observed transiting through Rich Passage near NBK Manchester. In 2022, transient killer whales were observed in Possession Sound near NS Everett.

West Coast transient killer whales most often travel in small pods averaging four individuals (Baird and Dill, 1996); however, the most commonly observed group size in Puget Sound (waters east of Admiralty Inlet, including Hood Canal, through South Puget Sound and north to Skagit Bay) from 2004 to 2010 was 6 whales (Houghton *et al.,* 2015). This is consistent with the mean group size of transient killer whales observed by PSOs during monitoring for year 1 of the service pier extension project at NBK Bangor in 2021 (DoN, 2021). Mean group size of killer whales observed at this site during year 2 was 5 (DoN, 2022). Transient killer whales were not observed by PSOs during monitoring completed for other Navy construction projects completed at NBK Bangor (Hamer Environmental, 2021; Sandoval *et al.,* 2022) or NBK Manchester (Sandoval and Johnson, 2021; Sandoval *et al.,* 2022; Hamer Environmental, 2021).

Killer Whale (Resident)

Southern Resident Killer Whales (SRKW) are expected to occur occasionally in the waters surrounding all of the installations except those in Hood Canal, where they have not been reported since 1995 (NMFS, 2006; 86 FR 41668, August 2, 2021). SRKW are rare near NBK Bremerton, with the last confirmed sighting in Dyes Inlet in 1997. Southern residents have been observed in Saratoga Passage and Possession Sound near NS Everett. SRKW were not observed by PSOs during construction activities occurring at NBK Manchester (Sandoval and Johnson, 2021) and NBK Bangor (DoN, 2021; DoN, 2022; Hamer Environmental, 2021; Sandoval *et al.,* 2022).

The stock contains three pods (J, K, and L pods), with pod sizes ranging from approximately 16 (in K pod) to 34 (in L pod) individuals. Group sizes encountered can be smaller or larger if pods temporarily separate or join together.

Critical habitat for SRKW, designated pursuant to the ESA and revised in 2018 (80 FR 9366, March 5, 2018) includes three specific areas: (1) Summer core area in Haro Strait and waters around the San Juan Islands; (2) Puget Sound; and (3) Strait of Juan de Fuca. The primary constituent elements essential for conservation of the habitat are: (1) Water quality to support growth and development; (2) Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth; and (3) Passage conditions to allow for migration, resting, and foraging. The Puget Sound segment of the designated critical habitat for SRKW is defined as the area south of the Deception Pass Bridge, west of the entrance to Admiralty Inlet, and north of the Hood Canal Bridge. Although the three naval installations that fall within this area are excluded from the area designated as Critical Habitat under the ESA, they do contain the aforementioned Primary Constituent Elements (PCEs). However, we note that water quality and habitat for prey species is generally degraded in the vicinity of these industrial environments relative to other areas contacting the PCEs that may be less impacted (see Effects of Specified Activities on Marine Mammals and Their Habitat section). SRKW have been observed in this area in all seasons but most occurrence here (especially the J pod) typically correlates with fall salmon runs (NMFS 2006).

Dall's Porpoise

Dall's porpoise are known to occur in Puget Sound, and have been sighted as far south as Carr Inlet in southern Puget Sound and as far north as Saratoga Passage, north of NS Everett (Nysewander *et al.,* 2005; WDFW, 2008). Dall's porpoise could also occasionally occur in Hood Canal with the last observation in deeper water near NBK Bangor in 2008 (Tannenbaum *et al.,* 2009). However, Dall's porpoise were not observed during vessel line-transect

surveys and other monitoring efforts completed in Hood Canal (including Dabob Bay) in 2011 (HDR, 2012). Dall's porpoises have not been documented in the Rich Passage to Agate Passage area in the vicinity of NBK Bremerton, but have been observed in Possession Sound near NS Everett (primarily during winter) (Nysewander *et al.,* 2005; WDFW, 2008). Dall's porpoises could be present in waters in the vicinity of any of the installations considered here, and are considered more likely to occur during winter months than summer months in groups of up to 25 individuals. Dall's porpoise were not observed by PSOs during monitoring associated with construction activities at NBK Bangor (Hamer Environmental 2021, Sandoval *et al.,* 2022; DoN, 2021; DoN 2022) and NBK Manchester (Sandoval and Johnson, 2021).

Harbor Porpoise

Sightings of harbor porpoise in Hood Canal north of the Hood Canal Bridge have increased in recent years (Evenson *et al.,* 2016; Elliser *et al.,* 2021; Rone *et al.,* 2024). Across three seasons, Jefferson (2016) estimated 185 individuals in Hood Canal based on aerial surveys completed in 2013–2015, and less than a decade later, Rone's (2024) population estimates based on vessel based surveys completed in 2022–2023 in Hood Canal ranged from 308 individuals in the winter to 1,385 individuals in the fall. Mean group size of harbor porpoises for each survey season in the 2013–2016 aerial surveys was 1.7 (Smultea *et al.,* 2017) and similarly, 1.6 individuals per group in Hood Canal during surveys completed in 2023 (Rone *et al.,* 2024).

Information is available on harbor porpoise occurrence in Puget Sound (Navy, 2019; Smultea *et al.,* 2022) and more recently some limited site-specific (within 500 meters) information is available for the Navy installations (DoN, 2021; DoN, 2022; Sandoval and Johnson, 2022).

PSOs associated with a service pier extension project at NBK Bangor monitored for 95 days between July 16, 2020 and January 13, 2021. Harbor porpoise were observed each month during the monitoring period, with peak numbers recorded in August. A total of 420 sightings of harbor porpoise groups were recorded during this time (DoN, 2021). The closest harbor porpoises came to the project site during pile driving operations was 75 m. Harbor porpoise were also observed during year 2 of this project, which took place on 32 days between October 19, 2021 and January 14, 2022. Groups of harbor porpoise were observed on 12 occasions in October, December and January (DoN, 2022); Sightings were estimated to be 8,000 m from the project site during pile driving operations. However, porpoise sightings were notably absent in a 21 square kilometers (km^2) area adjacent to the NBK Bangor within the otherwise high-density region, during surveys completed to collect fine-scale marine mammal occurrence data in Hood Canal (Rone *et al.,* 2024).

At NBK Manchester, a total of 17 harbor porpoise were detected by PSOs associated with a fender pile replacement project at Manchester Fuel Depot on 11 days between September 28, 2021 and December 10, 2021 (Sandoval and Johnson, 2022).

Finally, monitoring reports are not available for NS Everett, but according to the Navy's application, harbor porpoises have been observed infrequently at this installation. See IHA application).

California Sea Lion

California sea lions are typically present most of the year except for mid-June through July in Washington inland waters, with peak abundance between October and April (Navy, 2023). During summer months and associated breeding periods, the inland waters are not considered a high-use area by California sea lions, as they would be returning to rookeries in California waters. However, as described below, surveys at the naval installations indicate that a few individuals may remain year-round (Navy, 2023).

The Navy conducts surveys at its installations in Puget Sound that have sea lion haulouts. Specifically, California sea lion haul-outs occur at NBK Bangor, NBK Bremerton, and NS Everett (though California sea lions may haul out opportunistically at any location). California sea lions have been documented during shore-based surveys at NBK Bangor in Hood Canal since 2008 in all survey months, with as many as 320 individuals observed at one time (October 2018) hauled out on submarines at Delta Pier and on Port Security Barrier (PSB) floats (Navy, 2023). Additionally, California sea lions were observed consistently at NBK Bangor during Navy construction projects: 557 California Sea Lions were observed across 99 days between July 2020 and January 2021 (DoN, 2021); 57 were observed across 32 days between October 2021 and January 2022 (DoN, 2022); 44 California Sea Lions were observed across 14 days between August 2021 and October 2021 (Hamer Environmental, 2021); and 3 were observed across 4 days between December 2021 and January 2022, (Sandoval *et al.,* 2022).

California sea lions have been documented on PSB floats during shore- and boat-based surveys at NBK Bremerton since 2010, with as many as 412 individuals hauled out at one time (October 2019) (Navy, 2023).

California sea lions have been documented during shore-based surveys at NS Everett from 2012 to 2022 in all survey months, with as many as 267 individuals hauled out at one time (April 2020) on PSB floats.

California sea lions haul out on floating platforms in Clam Bay approximately 0.5 mi (0.8 km) offshore from the Manchester Fuel Depot's finger pier, and approximately 13 km (8 mi) from NBK Bremerton. PSO's observed a total of 276 California Sea Lions at NBK Manchester across 11 monitoring days occurring between September and December 2021 (Sandoval and Johnson, 2021).

The Navy conducted surveys of sea lions on the floats from 2012 through 2016, and 2018 through 2022. In 2020, the surveys were expanded to include Orchard Rocks, a haulout approximately 0.8 mi (1.3 km) northeast of Manchester Fuel Depot that is available at lower tides. Between 2012 and 2016, California sea lions were observed in every survey month except July and August, with as many as 130 individuals present in one survey in October 2014. Aerial surveys were conducted by WDFW from March–April 2013, July–August 2013, November 2013, and February 2014. These surveys detected California sea lions on the floating platforms during all survey months except July, with up to 54 individuals present on one survey in November 2013. In 2018, the number of sea lions decreased corresponding to the removal of floats. Numbers subsequently increased following the reintroduction of floats in 2021. During this time, California sea lions were observed on the floating platforms during all survey months except July, with up to 212 individuals present on 1 survey in February 2022.

California sea lions are expected to be exposed to noise from project activities at NBK's Bangor, Bremerton, Manchester, and NS Everett because haul-outs are at these installations or nearby. Exposure is estimated to occur primarily from August through the end of the in-water work window in mid-January or mid-February.

Steller Sea Lion

Steller sea lions have been seasonally documented in shore-based surveys at NBK Bangor in Hood Canal since 2008

with a maximum of 21 individuals observed in November 2019 (Navy, 2023). Surveys at NBK Bangor indicate Steller sea lions begin arriving in September and depart by the end of May (Navy, 2023). Steller sea lions were not observed at NBK Bangor during construction occurring on 14 days between August and October 2021 (Hamer Environmental, 2021), on 4 construction days occurring between December and January 2022 (Sandoval, 2022), or on 32 construction days between October and January (DoN, 2022). However, 87 Steller sea lions were observed across 99 days between July and January 2021 (DoN, 2021).

Steller sea lions have not been detected during shore-based surveys at NBK Bremerton since the surveys were initiated in 2010 (Navy, 2023). A Steller sea lion was sighted on a float on the floating security barrier during a vessel survey in 2012 (Lance, 2012 personal communication) and others were detected during aerial surveys conducted by WDFW (Jeffries, 2000).

Steller sea lions haul out on floating platforms in Clam Bay approximately 0.5 mi (0.8 km) offshore from the NBK Manchester finger pier, and approximately 8 mi (13 km) from NBK Bremerton. The number of Steller sea lions in the vicinity of NBK Manchester is limited by the variable size and availability of floating platforms in Clam Bay. As discussed above, the Navy has conducted surveys of sea lions on the floats since November 2012; however, no surveys were conducted September 2013 through November 2013 and July 2017 through June 2018 (Navy, 2023). Steller sea lions were seen in all surveyed months except for June, July, and August with as many as 43 individuals present in September 2021.

Shore-based surveys conducted since July 2012 at NS Everett have rarely detected Steller sea lions. However, occasional observations have been reported from the PSB or in the Notch Basin, generally one at a time (Navy, 2023). Other than these detections on the installation's PSBs, the nearest known Steller sea lion haulout is 14 mi (23 km) away; therefore, Steller sea lions are expected to be a rare occurrence in waters off this installation during pile driving activities.

Harbor Seal

Harbor seals in Washington inland waters have been divided into three stocks: Hood Canal, Northern Inland Waters, and Southern Puget Sound. The range of the northern inland waters stock includes Puget Sound north of the Tacoma Narrows Bridge, the San Juan Islands, and the Strait of Juan de Fuca, while the southern Puget Sound stock range includes waters south of the Tacoma Narrows Bridge. Therefore, animals present at NBK Bremerton, NBK Manchester, and NS Everett are most likely to be from the northern inland waters stock, while those present at NBK Bangor are expected to be from the Hood Canal stock.

Harbor seals are expected to occur year-round at all installations with the greatest numbers expected at installations with nearby haulout sites. In Hood Canal, where NBK Bangor is located, known haulouts occur on the west side of Hood Canal at the mouth of the Dosewallips River and on the western and northern shorelines in Dabob Bay located approximately 8.1 mi (13 km) away. Vessel-based surveys conducted from 2007 to 2010 at NBK Bangor observed harbor seals in every month of surveys (Agness & Tannenbaum, 2009; Tannenbaum *et al.,* 2009, 2011). Harbor seals were routinely seen during marine mammal monitoring for the Navy's recent construction projects at this site (Hamer Environmental, 2021; Sandoval *et al.,* 2022; DoN, 2021; DoN, 2022). Small numbers of harbor seals have been documented hauling out opportunistically at NBK Bangor (*e.g.,* on the PSB floats, wavescreen at Carderock Pier, buoys, barges, marine vessels, and logs) and on man-made floating structures. The largest number of harbor seals observed in a single survey was 27 individuals in October 2018.

At NS Everett, Navy surveys were conducted regularly between 2012 and 2016, and again beginning in 2019, at which point surveys were expanded to include the entire East Waterway. The largest number of harbor seals observed in a single survey was 578 individuals in September 2019 (Navy, 2023). However, log rafts were removed from the East Waterway in the spring of 2022 and number of seals observed per survey has decreased. Harbor seals occupy the waters and haulout sites near NS Everett year-round. Harbor seal abundance is highest July through October. Mother pup pairs have been observed at NS Everett each summer since 2018, with a peak count of 96 pups observed in August 2021.

No haulouts have been identified at NBK Bremerton or Manchester. Single harbor seals have been observed swimming in these areas or hauled out on nearby rocks or on floats. The nearest documented haulouts to NBK Bremerton are across Sinclair Inlet, approximately 0.7 mi (1.1 km) away, and according to the Navy's application, is estimated to have less than 100 individuals (see IHA application). The nearest documented haulout to NBK Manchester is Orchard Rocks Conservation Area in Rich Passage, approximately 1.0 mi away. As discussed above, the Navy began surveying this area in June 2020, which has led to a dramatic increase in the number of harbor seals observed in proximity to Manchester Fuel Depot. A total of 25 harbor seals were observed by PSOs across 11 monitoring days occurring between September and December 2021 at this Naval installation (Sandoval and Johnson, 2021). The Navy has counted up to 153 harbor seals hauled-out and in the water near Orchard Rocks in June (Navy, 2023). Blakely Rocks is another known haulout in the vicinity of NBK Manchester, located approximately 3.5 mi away on the east side of Bainbridge Island. The haulout at Blakely Rocks is estimated to have less than 100 individuals (Jeffries, 2012 personal communication).

Northern Elephant Seal

No haul-outs occur in Puget Sound with the exception of individual elephant seals occasionally hauling out for two to four weeks to molt, usually during the spring and summer and typically on sandy beaches (Calambokidis and Baird, 1994). These animals are usually yearlings or subadults and their haul-out locations are unpredictable. One male subadult elephant seal was observed hauled out to molt at Manchester Fuel Depot in 2004 and a northern elephant seal was observed north of NBK Bangor in Hood Canal, from Kitsap Memorial Park in August 2020 (DoN, 2021). Northern elephant seals were not observed by PSOs during the Navy's other construction activities occurring at NBK Bangor (Hamer Environmental, 2021; Sandoval *et al.,* 2022; DoN, 2021; DoN, 2022) or NBK Manchester (Sandoval and Johnson, 2021). Although regular haul-outs occur in the Strait of Juan de Fuca, the occurrence of elephant seals in Puget Sound is unpredictable and rare.

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. 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, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, *etc.*). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.,* low-frequency cetaceans). Subsequently, NMFS (2018) 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. Marine mammal hearing groups and their associated hearing ranges are provided in table 4.

TABLE 4—MARINE MAMMAL HEARING GROUPS

(NMFS, 2018)

Hearing group	Generalized hearing range *
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz.
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz.
High-frequency (HF) cetaceans (true porpoises, *Kogia,* river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*).	275 Hz to 160 kHz.
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz.
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz.

* Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.,* 2007) and PW pinniped (approximation).

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 *et al.,* 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information.

Effects of Specified Activities on Marine Mammals and Their Habitat

This section provides a discussion of the ways in which components of the specified activity may impact marine mammals and their habitat. The Estimated Take of Marine Mammals 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 of Marine Mammals 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 whether those impacts are reasonably expected to, or reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Acoustic effects on marine mammals during the specified activity can occur from impact pile driving, and vibratory pile driving and removal in both years, and the use of DTH equipment in year 1 only. These effects may result in Level A or Level B harassment of marine mammals in the project area.

Description of Sound Sources

The marine soundscape is comprised of both ambient and anthropogenic sounds. Ambient sound is defined as the all-encompassing sound in a given place and is usually a composite of sound from many sources both near and far (American National Standards Institute (ANSI), 1995). The sound level of an area is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.,* waves, wind, precipitation, earthquakes, ice, atmospheric sound), biological (*e.g.,* sounds produced by marine mammals, fish, and invertebrates), and anthropogenic sound (*e.g.,* vessels, dredging, aircraft, construction).

The sum of the various natural and anthropogenic sound sources at any given location and time—which comprise ''ambient'' or ''background'' sound—depends not only on the source levels (as determined by current weather conditions and levels of biological and shipping activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10 to 20 dB from day to day (Richardson *et al.,* 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals.

In-water construction activities associated with the project would include impact pile driving, vibratory pile driving and removal, and use of DTH equipment (year 1 only). The sounds produced by these activities fall into one of two general sound types: Impulsive and non-impulsive. Impulsive sounds (*e.g.,* explosions, gunshots, sonic booms, impact pile driving) are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (ANSI, 1986; National Institute of Occupational Safety and Health (NIOSH), 1998; NMFS, 2018). Non-impulsive sounds (*e.g.,* aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems) can be broadband, narrowband or tonal, brief or prolonged (continuous or intermittent), and typically do not have the high peak sound pressure with rapid rise/decay time that impulsive sounds do (ANSI, 1995; NIOSH, 1998; NMFS, 2018). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.,* Ward 1997 in Southall *et al.,* 2007).

Three types of hammers would be used on this project: impact, vibratory, and DTH (year 1 only). Impact hammers

operate by repeatedly dropping and/or pushing a heavy piston onto a pile to drive the pile into the substrate. Sound generated by impact hammers is characterized by rapid rise times and high peak levels, a potentially injurious combination (Hastings and Popper, 2005). Vibratory hammers install piles by vibrating them and allowing the weight of the hammer to push them into the sediment. Vibratory hammers produce significantly less sound than impact hammers. Peak Sound Pressure Levels (SPLs) may be 180 dB or greater, but are generally 10 to 20 dB lower than SPLs generated during impact pile driving of the same-sized pile (Oestman *et al.,* 2009). Rise time is slower, reducing the probability and severity of injury, and sound energy is distributed over a greater amount of time (Nedwell and Edwards, 2002; Carlson *et al.,* 2005).

A DTH hammer is essentially a drill bit that drills through the bedrock using a rotating function like a normal drill, in concert with a hammering mechanism operated by a pneumatic (or sometimes hydraulic) component integrated into to the DTH hammer to increase speed of progress through the substrate (*i.e.,* it is similar to a ''hammer drill'' hand tool). The sounds produced by the DTH method contain both a continuous, non-impulsive component from the drilling action and an impulsive component from the hammering effect. Therefore, we treat DTH systems as both impulsive and continuous, non-impulsive sound source types simultaneously.

Acoustic Effects

The introduction of anthropogenic noise into the aquatic environment from pile driving and removal and DTH equipment is the primary means by which marine mammals may be harassed from the Navy's specified activities. In general, animals exposed to natural or anthropogenic sound may experience behavioral, physiological, and/or physical effects, ranging in magnitude from none to severe (Southall *et al.,* 2007). Generally, exposure to pile driving and removal and DTH noise has the potential to result in behavioral reactions (*e.g.,* avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior) and, in limited cases, auditory threshold shifts (TS). Exposure to anthropogenic noise can also lead to non-observable physiological responses such as an increase in stress hormones. Additional noise in a marine mammal's habitat can mask acoustic cues used by marine mammals to carry out daily functions such as communication and predator and prey detection. The effects of pile driving and removal and DTH noise on marine mammals are dependent on several factors, including but not limited to sound type (*e.g.,* impulsive vs. non-impulsive), the species, age and sex class (*e.g.,* adult male vs. mother with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure (Wartzok *et al.,* 2003; Southall *et al.,* 2007). Here we discuss physical auditory effects (TSs) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced TS as a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). The amount of TS is customarily expressed in dB. A TS can be permanent or temporary. As described in NMFS (2018), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.,* impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.,* spectral content), the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.,* how animal uses sound within the frequency band of the signal; *e.g.,* Kastelein *et al.,* 2014), and the overlap between the animal and the source (*e.g.,* spatial, temporal, and spectral).

Permanent Threshold Shift (PTS)—NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). Available data from humans and other terrestrial mammals indicate that a 40 dB TS approximates PTS onset (Ward *et al.,* 1958; Ward *et al.,* 1959; Ward, 1960; Kryter *et al.,* 1966; Miller, 1974; Henderson *et al.,* 2008). PTS levels for marine mammals are estimates, because there are limited empirical data measuring PTS in marine mammals (*e.g.,* Kastak *et al.,* 2008), largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing PTS are not typically pursued or authorized (NMFS, 2018).

Temporary Threshold Shift (TTS)—NMFS defines TTS as a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). Based on data from cetacean TTS measurements (Southall *et al.,* 2007), a TTS of 6 dB is considered the minimum TS clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Schlundt *et al.,* 2000; Finneran *et al.,* 2000; Finneran *et al.,* 2002). As described in Finneran (2016), marine mammal studies have shown the amount of TTS increases with cumulative sound exposure level (SEL_{cum}) in an accelerating fashion: At low exposures with lower $SEL_{cum,}$ the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher $SEL_{cum,}$ the growth curves become steeper and approach linear relationships with the noise SEL.

Depending on the degree (elevation of threshold in dB), duration (*i.e.,* recovery time), and frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in *Masking,* below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during time when communication is critical for successful mother/calf interactions could have more serious impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.,* 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Currently, TTS data only exist for four species of cetaceans (bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*) and five species of pinnipeds exposed to a limited number of sound sources (*i.e.,* mostly tones and octave-band noise) in laboratory settings (Finneran, 2015). TTS was not observed in trained spotted (*Phoca largha*) and ringed (*Pusa hispida*) seals exposed to impulsive noise at levels matching previous predictions of TTS onset (Reichmuth *et al.,* 2016). In general, harbor seals and

harbor porpoises have a lower TTS onset than other measured pinniped or cetacean species (Finneran, 2015). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species. No data are available on noise-induced hearing loss for mysticetes. For summaries of data on TTS in marine mammals or for further discussion of TTS onset thresholds, please see Southall *et al.* (2007), Finneran and Jenkins (2012), Finneran (2015), and table 5 in NMFS (2018).

Activities for this project include impact and vibratory pile driving, vibratory pile removal, and DTH drilling. There would likely be pauses in activities producing the sound during each day. Given these pauses and the fact that many marine mammals are likely moving through the project areas and not remaining for extended periods of time, the potential for TS declines.

Behavioral Effects—Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.,* minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific, and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.,* species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (*e.g.,* Richardson *et al.,* 1995; Wartzok *et al.,* 2003; Southall *et al.,* 2007; Weilgart, 2007; Archer *et al.,* 2010). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.,* 2012), and can vary depending on characteristics associated with the sound source (*e.g.,* whether it is moving or stationary, number of sources, distance from the source). Please see Appendices B–C of Southall *et al.* (2007) for a review of studies involving marine mammal behavioral responses to sound.

Habituation can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok *et al.,* 2003). It is important to note that habituation is appropriately considered as a ''progressive reduction in response to stimuli that are perceived as neither aversive nor beneficial,'' rather than as, more generally, moderation in response to human disturbance (Bejder *et al.,* 2009). Animals are most likely to habituate to sounds that are predictable and unvarying. The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure.

Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.,* Lusseau and Bejder, 2007; Weilgart, 2007; NRC, 2005). However, there are broad categories of potential response, which we describe in greater detail here, that include alteration of dive behavior, alteration of foraging behavior, effects to breathing, interference with or alteration of vocalization, avoidance, and flight.

Changes in dive behavior can vary widely, and may consist of increased or decreased dive times and surface intervals as well as changes in the rates of ascent and descent during a dive (*e.g.,* Frankel and Clark, 2000; Costa *et al.,* 2003; Ng and Leung, 2003; Nowacek *et al.,* 2004; Goldbogen *et al.,* 2013). Variations in dive behavior may reflect interruptions in biologically significant activities (*e.g.,* foraging) or they may be of little biological significance. The impact of an alteration to dive behavior resulting from an acoustic exposure depends on what the animal is doing at the time of the exposure and the type and magnitude of the response.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (*e.g.,* bubble nets or sediment plumes), or changes in dive behavior. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (*e.g.,* Croll *et al.,* 2001; Nowacek *et al.,* 2004; Madsen *et al.,* 2006; Yazvenko *et al.,* 2007; Melcón *et al.,* 2012). In addition, behavioral state of the animal plays a role in the type and severity of a behavioral response, such as disruption to foraging (*e.g.,* Wensveen *et al.,* 2017). An evaluation of whether foraging disruptions would be likely to incur fitness consequences considers temporal and spatial scale of the activity in the context of the available foraging habitat and, in more severe cases may necessitate consideration of information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

Respiration naturally varies with different behaviors, and variations in respiration rate as a function of acoustic exposure can be expected to co-occur with other behavioral reactions, such as a flight response or an alteration in diving. However, respiration rates in and of themselves may be representative of annoyance or an acute stress response. Various studies also have shown that species and signal characteristics are important factors in whether respiration rates are unaffected or change, again highlighting the importance in understanding species differences in the tolerance of underwater noise when determining the potential for impacts resulting from anthropogenic sound exposure (*e.g.,* Kastelein *et al.,* 2005; Kastelein *et al.,* 2006; Kastelein *et al.,* 2018; Gailey *et al.,* 2007; Isojunno *et al.,* 2018).

Marine mammals vocalize for different purposes and across multiple modes, such as whistling, echolocation click production, calling, and singing. Changes in vocalization behavior in response to anthropogenic noise can occur for any of these modes and may result from a need to compete with an increase in background noise or may reflect increased vigilance or a startle response. For example, in the presence of potentially masking signals, humpback whales and killer whales (*Orcinus orca*) have been observed to increase the length of their songs (Miller *et al.,* 2000; Fristrup *et al.,* 2003; Foote *et al.,* 2004), while right whales have been observed to shift the frequency content of their calls upward while reducing the rate of calling in areas of increased anthropogenic noise (Parks *et al.,* 2007; Rolland *et al.,* 2012). In some cases, however, animals may cease or alter sound production in response to underwater sound (*e.g.,* Bowles *et al.,* 1994; Castellote *et al.,* 2012; Cerchio *et al.,* 2014).

Avoidance is the displacement of an individual from an area or migration path as a result of the presence of a sound or other stressors, and is one of the most obvious manifestations of

disturbance in marine mammals (Richardson *et al.,* 1995). For example, gray whales are known to change direction—deflecting from customary migratory paths—in order to avoid noise from airgun surveys (Malme *et al.,* 1984). Often avoidance is temporary, and animals return to the area once the noise has ceased (*e.g.,* Bowles *et al.,* 1994; Goold, 1996; Stone *et al.,* 2000; Morton and Symonds, 2002; Gailey *et al.,* 2007). Longer-term displacement is possible, however, which may lead to changes in abundance or distribution patterns of the affected species in the affected region if habituation to the presence of the sound does not occur (*e.g.,* Blackwell *et al.,* 2004; Bejder *et al.,* 2006; Teilmann *et al.,* 2006).

A flight response is a dramatic change in normal movement to a directed and rapid movement away from the perceived location of a sound source. The flight response differs from other avoidance responses in the intensity of the response (*e.g.,* directed movement, rate of travel). Relatively little information on flight responses of marine mammals to anthropogenic signals exist, although observations of flight responses to the presence of predators have occurred (Connor and Heithaus, 1996). The result of a flight response could range from brief, temporary exertion and displacement from the area where the signal provokes flight to, in extreme cases, marine mammal strandings (Evans and England, 2001). However, it should be noted that response to a perceived predator does not necessarily invoke flight (Ford and Reeves, 2008), and whether individuals are solitary or in groups may influence the response.

Behavioral disturbance can also impact marine mammals in more subtle ways. Increased vigilance may result in costs related to diversion of focus and attention (*i.e.,* when a response consists of increased vigilance, it may come at the cost of decreased attention to other critical behaviors such as foraging or resting). These effects have generally not been observed in marine mammals, but studies involving fish and terrestrial animals have shown that increased vigilance may substantially reduce feeding rates and efficiency (*e.g.,* Beauchamp and Livoreil, 1997; Fritz *et al.,* 2002; Purser and Radford, 2011). In addition, chronic disturbance can cause population declines through reduction of fitness (*e.g.,* decline in body condition) and subsequent reduction in reproductive success, survival, or both (*e.g.,* Harrington and Veitch, 1992; Daan *et al.,* 1996; Bradshaw *et al.,* 1998).

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (24-hour cycle). Disruption of such functions resulting from reactions to stressors such as sound exposure are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al.,* 2007). Consequently, a behavioral response lasting less than 1 day and not recurring on subsequent days is not considered particularly severe unless it could directly affect reproduction or survival (Southall *et al.,* 2007). Note that there is a difference between multi-day substantive behavioral reactions and multi-day anthropogenic activities. For example, just because an activity lasts for multiple days does not necessarily mean that individual animals are either exposed to activity-related stressors for multiple days or, further, exposed in a manner resulting in sustained multi-day substantive behavioral responses.

To assess the strength of behavioral changes and responses to external sounds and SPLs associated with changes in behavior, Southall *et al.* (2007) developed and utilized a severity scale, which is a 10-point scale ranging from no effect (labeled 0), effects not likely to influence vital rates (low; labeled from 1 to 3), effects that could affect vital rates (moderate; labeled from 4 to 6), to effects that were thought likely to influence vital rates (high; labeled from seven to nine). Southall *et al.* (2021) updated the severity scale by integrating behavioral context (*i.e.,* survival, reproduction, and foraging) into severity assessment. For non-impulsive sounds (*i.e.,* similar to the sources used during the proposed action), data suggest that exposures of pinnipeds to sources between 90 and 140 dB (referenced to 1 micropascal (re 1 μPa)) do not elicit strong behavioral responses; no data were available for exposures at higher received levels for Southall *et al.* (2007) to include in the severity scale analysis. Reactions of harbor seals were the only available data for which the responses could be ranked on the severity scale. For reactions that were recorded, the majority (17 of 18 individuals/groups) were ranked on the severity scale as a 4 (defined as moderate change in movement, brief shift in group distribution, or moderate change in vocal behavior) or lower. The remaining response was ranked as a six (defined as minor or moderate avoidance of the sound source).

The Navy documented marine mammals during construction activities at NBK Manchester (September 28 and December 10, 2021) and NBK Bangor (2021 and 2022) during work that preceded these proposed IHAs as well as during the installation of a service pier. Harbor seals were consistently the most frequently observed marine mammal in the area observed by PSOs. During pile driving activities at these installations, harbor seals were most commonly observed typically traveling and swimming, though some behaviors recorded during pile driving activities indicated that harbor seals were aware of the construction, such as less foraging reported and looking at the construction site or startling. Likewise California sea lions were observed traveling and swimming during pile driving activities, but in a couple instances were observed porpoising or breaching. Harbor porpoises were observed traveling, milling, porpoising and a gray whale was observed slow and fast traveling and milling. At NBK Bangor, a total of three harbor seals were observed foraging, socializing, feeding (when fish kills were apparent) during impact pile driving. Behavior changes noted during pile driving included startle responses, splashing, swimming in circles, re-entering water after being hauled out and looking in all directions and swimming fast.

Stress responses—An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses (*e.g.,* Seyle, 1950; Moberg, 2000). In many cases, an animal's first and sometimes most economical (in terms of energetic costs) response is behavioral avoidance of the potential stressor. Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity. These responses have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness. Neuroendocrine stress responses often involve the hypothalamus-pituitary-adrenal system. Virtually all neuroendocrine functions that are affected by stress—including immune competence, reproduction, metabolism, and behavior—are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance (*e.g.,* Moberg, 1987; Blecha, 2000). Increases in the circulation of glucocorticoids are also equated with stress (Romano *et al.,* 2004).

The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and ''distress'' is the cost of the response. During a stress response, an animal uses

glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose serious fitness consequences. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other functions. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function.

Relationships between these physiological mechanisms, animal behavior, and the costs of stress responses are well-studied through controlled experiments and for both laboratory and free-ranging animals (*e.g.,* Holberton *et al.,* 1996; Hood *et al.,* 1998; Jessop *et al.,* 2003; Krausman *et al.,* 2004; Lankford *et al.,* 2005). Stress responses due to exposure to anthropogenic sounds or other stressors and their effects on marine mammals have also been reviewed (Fair and Becker, 2000; Romano *et al.,* 2002b) and, more rarely, studied in wild populations (*e.g.,* Romano *et al.,* 2002a). For example, Rolland *et al.* (2012) found that noise reduction from reduced ship traffic in the Bay of Fundy was associated with decreased stress in North Atlantic right whales. These and other studies lead to a reasonable expectation that some marine mammals will experience physiological stress responses upon exposure to acoustic stressors and that it is possible that some of these would be classified as ''distress.'' In addition, any animal experiencing TTS would likely also experience stress responses (NRC, 2003).

Auditory Masking—Sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.,* those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation) (Richardson *et al.,* 1995). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.,* snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.,* pile driving, shipping, sonar, seismic exploration) in origin. The ability of a noise source to mask biologically important sounds depends on the characteristics of both the noise source and the signal of interest (*e.g.,* signal-to-noise ratio, temporal variability, direction), in relation to each other and to an animal's hearing abilities (*e.g.,* sensitivity, frequency range, critical ratios, frequency discrimination, directional discrimination, age or TTS hearing loss), and existing ambient noise and propagation conditions. Masking of natural sounds can result when human activities produce high levels of background sound at frequencies important to marine mammals. Conversely, if the background level of underwater sound is high (*e.g.,* on a day with strong wind and high waves), an anthropogenic sound source would not be detectable as far away as would be possible under quieter conditions and would itself be masked.

Airborne Acoustic Effects—Pinnipeds that occur near the project site could be exposed to airborne sounds associated with pile driving and removal that have the potential to cause behavioral harassment, depending on their distance from pile driving activities. Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA. Airborne noise would primarily be an issue for pinnipeds that are swimming or hauled out near the project site within the range of noise levels elevated above the acoustic criteria. We recognize that pinnipeds in the water could be exposed to airborne sound that may result in behavioral harassment when looking with their heads above water. Most likely, airborne sound would cause behavioral responses similar to those discussed above in relation to underwater sound. For instance, anthropogenic sound could cause hauled out pinnipeds to exhibit changes in their normal behavior, such as reduction in vocalizations, or cause them to temporarily abandon the area and move further from the source. However, these animals would likely previously have been 'taken' because of exposure to underwater sound above the behavioral harassment thresholds, which are generally larger than those associated with airborne sound. Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Therefore, we do not believe that authorization of additional incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further.

Anticipated Effects on Marine Mammal Habitat

The Navy's construction activities could have localized, temporary impacts on marine mammal habitat and their prey by increasing in-water sound pressure levels and slightly decreasing water quality. Increased noise levels may affect acoustic habitat (see masking discussion above) and adversely affect marine mammal prey in the vicinity of the project areas (see discussion below). During DTH, impact and vibratory pile driving or removal, elevated levels of underwater noise would ensonify a portion of Puget Sound (Year 1 and Year 2) and Hood Canal (Year 2 only) where both fishes and mammals occur and could affect foraging success. Additionally, marine mammals may avoid the area during construction, however, displacement due to noise is expected to be temporary and is not expected to result in long-term effects to the individuals or populations. Construction activities are of short duration and would likely have temporary impacts on marine mammal habitat through increases in underwater sound.

A temporary and localized increase in turbidity near the seafloor would occur in the immediate area surrounding the area where piles are installed and removed. In general, turbidity associated with the pile installation is localized to about 25-ft (7.6 m) radius around the pile (Everitt *et al.,* 1980). Cetaceans are not expected to be close enough to the project pile driving areas to experience effects of turbidity, and pinnipeds could avoid localized areas of turbidity. Therefore, the impact from increased turbidity levels is expected to be minimal for marine mammals. Furthermore, pile driving and removal at the project site would not obstruct movements or migration of marine mammals.

In-Water Construction Effects on Potential Foraging Habitat—The areas likely impacted by the project are relatively small compared to the available habitat in Puget Sound (Year 1 and Year 2) and Hood Canal (Year 2 only). The total seafloor area affected by pile installation and removal is a small area compared to the vast foraging area available to marine mammals in the area. At best, the impacted areas provide marginal foraging habitat for marine mammals and fishes. Furthermore, pile driving and removal at the project site would not obstruct long-term movements or migration of marine mammals.

Avoidance by potential prey (*i.e.,* fish or, in the case of transient killer whales, other marine mammals) of the immediate area due to the temporary loss of this foraging habitat is also possible. The duration of fish and marine mammal avoidance of this area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution, and behavior is

anticipated. Any behavioral avoidance by fish or marine mammals of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity.

Effects on Potential Prey—Construction activities would produce continuous (*i.e.,* vibratory pile driving and DTH drilling) and intermittent (*i.e.,* impact driving and DTH drilling) sounds. Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* crustaceans, cephalopods, fish, zooplankton). Marine mammal prey varies by species, season, and location. Here, we describe studies regarding the effects of noise on known marine mammal prey.

Fish utilize the soundscape and components of sound in their environment to perform important functions such as foraging, predator avoidance, mating, and spawning (*e.g.,* Zelick and Mann, 1999; Fay, 2009). Depending on their hearing anatomy and peripheral sensory structures, which vary among species, fishes hear sounds using pressure and particle motion sensitivity capabilities and detect the motion of surrounding water (Fay *et al.,* 2008). The potential effects of noise on fishes depends on the overlapping frequency range, distance from the sound source, water depth of exposure, and species-specific hearing sensitivity, anatomy, and physiology. Key impacts to fishes may include behavioral responses, hearing damage, barotrauma (pressure-related injuries), and mortality.

Fish react to sounds that are especially strong and/or intermittent low-frequency sounds, and behavioral responses such as flight or avoidance are the most likely effects. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. The reaction of fish to noise depends on the physiological state of the fish, past exposures, motivation (*e.g.,* feeding, spawning, migration), and other environmental factors. Hastings and Popper (2005) identified several studies that suggest fish may relocate to avoid certain areas of sound energy. Additional studies have documented effects of pile driving on fish; several are based on studies in support of large, multiyear bridge construction projects (*e.g.,* Scholik and Yan, 2001; Scholik and Yan, 2002; Popper and Hastings, 2009). Several studies have demonstrated that impulse sounds might affect the distribution and behavior of some fishes, potentially impacting foraging opportunities or increasing energetic costs (*e.g.,* Fewtrell and McCauley, 2012; Pearson *et al.,* 1992; Skalski *et al.,* 1992; Santulli *et al.,* 1999; Paxton *et al.,* 2017). However, some studies have shown no or slight reaction to impulse sounds (*e.g.,* Pena *et al.,* 2013; Wardle *et al.,* 2001; Jorgenson and Gyselman, 2009).

SPLs of sufficient strength have been known to cause injury to fish and fish mortality. However, in most fish species, hair cells in the ear continuously regenerate and loss of auditory function likely is restored when damaged cells are replaced with new cells. Halvorsen *et al.* (2012a) showed that a TTS of 4 to 6 dB was recoverable within 24 hours for one species. Impacts would be most severe when the individual fish is close to the source and when the duration of exposure is long. Injury caused by barotrauma can range from slight to severe and can cause death, and is most likely for fish with swim bladders. Barotrauma injuries have been documented during controlled exposure to impact pile driving (Halvorsen *et al.,* 2012b; Casper *et al.,* 2013).

The most likely impact to fishes from pile driving activities at the project area would be temporary behavioral avoidance of the area. The duration of fish avoidance of this area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution, and behavior is anticipated. In general, impacts to marine mammal prey species are expected to be minor and temporary due to the expected short daily duration of individual pile driving events and the relatively small areas being affected. It is also not expected that the industrial environment of the Navy installations provides important fish habitat or harbors significant amount of forage fish.

The area likely impacted by the activities is relatively small compared to the available habitat in inland waters in the region. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. As described in the preceding, the potential for Navy construction to affect the availability of prey to marine mammals or to meaningfully impact the quality of physical or acoustic habitat is considered to be insignificant. Effects to habitat will not be discussed further in this document.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through the IHAs, which will inform both NMFS' consideration of ''small numbers,'' and the negligible impact determinations.

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 primarily be by Level B harassment, as use of the acoustic sources (*i.e.,* impact and vibratory pile driving and removal and DTH drilling) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for phocids because predicted auditory injury zones are larger than for mid-frequency cetacean species and/or otariids, and they can be difficult to detect. Auditory injury is unlikely to occur for mid, low, and high-frequency cetacean species and otariids. The proposed mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

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

For acoustic impacts, generally speaking, 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) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Thresholds

NMFS recommends the use of 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—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 or exposure context (*e.g.,* frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.,* bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.,* Southall *et al.,* 2007, 2021; Ellison *et al.,* 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (c) of 120 dB (re 1 μPa) for continuous (*e.g.,* vibratory pile driving, drilling) and above RMS SPL 160 dB re 1 μPa for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

The Navy's proposed activity includes the use of continuous (vibratory pile driving and removal and DTH drilling) and impulsive (impact pile driving and DTH drilling) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1 μPa is applicable, respectively.

Level A harassment—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) 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 proposed activity includes the use of impulsive (impact pile driving and DTH drilling) and non-impulsive (vibratory pile driving and removal) sources.

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.*

TABLE 5—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset acoustic thresholds * (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1:* $L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB	*Cell 2:* $L_{E,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	*Cell 3:* $L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB	*Cell 4:* $L_{E,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	*Cell 5:* $L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB	*Cell 6:* $L_{E,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW)(Underwater)	*Cell 7:* $L_{pk,flat}$: 218 dB; $L_{E,PW,24h}$: 185 dB	*Cell 8:* $L_{E,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW)(Underwater)	*Cell 9:* $L_{pk,flat}$: 232 dB; $L_{E,OW,24h}$: 203 dB	*Cell 10:* $L_{E,OW,24h}$: 219 dB.

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and SEL_{cum} (L_E) has a reference value of 1μPa²s. In this table, thresholds are abbreviated to reflect ANSI standards (ANSI, 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript ''flat'' is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with SEL_{cum} thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The SEL_{cum} thresholds could be exceeded in a multitude of ways (*i.e.,* varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss (TL) coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.,* pile driving and removal and DTH drilling).

The project includes vibratory pile installation and removal, impact pile driving, and DTH drilling in year 1 and vibratory pile installation and removal and impact pile driving in year 2. Source levels for these activities are based on reviews of measurements of the same or similar types and dimensions of piles available in the literature. Source levels for each pile size and activity each year are presented in table 6. Source levels for vibratory installation and removal of piles of the same diameter are assumed to be the same.

NMFS recommends treating DTH systems as both impulsive and continuous, non-impulsive sound source type simultaneously. Thus, impulsive thresholds are used to evaluate Level A harassment, and continuous thresholds are used to evaluate Level B harassment. With regards to DTH mono-hammers, NMFS recommends proxy levels for Level A harassment based on available data

regarding DTH systems of similar sized piles and holes (Heyvaert and Reyff, 2021) (table 1, table 7 and table 8 includes number of piles and duration each year; table 6 includes sound pressure and sound exposure levels for each pile type).

The Navy proposed to use bubble curtains when impact driving steel piles (relevant to Year 2 activities only). For the reasons described in the next paragraph, we assume here that use of the bubble curtain would result in a reduction of 8 dB from the assumed SPL (rms) and SPL (peak) source levels for these pile sizes, and reduce the applied source levels accordingly.

During the 2023 study at NBK Bremerton, the Navy conducted comparative measurements of source levels when impact driving steel piles with and without a bubble curtain. Underwater sound levels were measured at two locations during the installation of one 24-in diameter steel pile and four 36-in steel piles. The bubble curtain used during the measurements reduced median peak sound levels by between 8 and 12 dB, median RMS sound levels by 10 and 12 dB, and median single strike SEL sound levels by 7 and 8 dB. The analysis included in the proposed rule for the regulations preceding these IHAs (83 FR 9366, March 5, 2018) as well as results from the NBK Bangor Trident Support Facilities Explosive Handling Wharf study (Navy 2013), are consistent with these findings. While proper set-up and operation of the system is critical, and variability in performance should be expected, we believe that in the circumstances evaluated here an effective attenuation performance of 8 dB is a reasonable assumption.

TABLE 6—ESTIMATES OF MEAN UNDERWATER SOUND LEVELS GENERATED DURING VIBRATORY AND IMPACT PILE INSTALLATION, DTH DRILLING, AND VIBRATORY PILE REMOVAL FOR YEAR 1 AND YEAR 2

Pile driving method	Pile type	Pile size	dB RMS	dB Peak	dB SEL	Attenuation	Reference
Year 1							
Impact	Concrete	18-in	170	184	159	N/A	Navy 2015.
		24-in	174	188	164	N/A	Navy 2015.
Vibratory	Timber	13-in	161	N/A	N/A	N/A	Greenbusch Group, Inc. 2019.
DTH	Concrete	24-in	167	184	159	N/A	Heyvaert & Reyff 2021.
Year 2							
Impact	Steel [1]	12	177	192	167	−8 dB [1]	Caltrans 2015, 2020.
		36	194	211	181	−8 dB [1]	Navy 2015b.
Vibratory		12	153	N/A	N/A	N/A	Navy 2015b.
		24	161	N/A	N/A	N/A	Navy 2015b.
		36	166	N/A	N/A	N/A	Navy 2015b.

Note: dB peak = peak sound level; DTH = down-the-hole drilling; rms = root mean square; SEL = sound exposure level.
[1] Values modeled for impact driving of 12-inch and 36-inch steel piles will be reduced by 8 dB for noise exposure modeling to account for attenuation from a bubble curtain

TL is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. *TL* parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater *TL* is:

$TL = B * \mathrm{Log10}\,(R1/R2)$,

where

TL = transmission loss in dB
B = transmission loss coefficient
*R*1 = the distance of the modeled SPL from the driven pile, and
*R*2 = the distance from the driven pile of the initial measurement

Absent site-specific acoustical monitoring with differing measured TL, a practical spreading value of 15 is used as the TL coefficient in the above formula. Site-specific TL data for the Puget Sound are not available; therefore, the default coefficient of 15 is used to determine the distances to the Level A harassment and Level B harassment thresholds.

The ensonified area associated with Level A harassment is more technically challenging to predict due to the need to account for a duration component. Therefore, NMFS developed an optional User Spreadsheet tool to accompany the Technical Guidance that can be used to relatively simply predict an isopleth distance for use in conjunction with marine mammal density or occurrence to help predict potential takes. We note that because of some of the assumptions included in the methods underlying this optional tool, we anticipate that the resulting isopleth estimates are typically overestimates of some degree, which may result in an overestimate of potential take by Level A harassment. However, this optional tool offers the best way to estimate isopleth distances when more sophisticated modeling methods are not available or practical. For stationary sources such as pile driving, the optional User Spreadsheet tool predicts the distance at which, if a marine mammal remained at that distance for the duration of the activity, it would be expected to incur PTS. Inputs used in the optional User Spreadsheet tool, and the resulting estimated isopleths, are reported below.

TABLE 7—USER SPREADSHEET INPUTS, YEAR 1

	Vibratory	Impact		DTH
	13-in Timber	18-in Concrete	24-in Concrete	24-in Concrete
	Installation or removal	Installation	Installation	Installation
Spreadsheet Tab Used	A.1) Vibratory Pile Driving	E.1) Impact Pile Driving	E.1) Impact Pile Driving	E.2) DTH Drilling.
Source Level (SPL)	161 RMS	159 SEL	164 SEL	167 RMS, 159 SEL.
Transmission Loss Coefficient	15	15	15	15.

TABLE 7—USER SPREADSHEET INPUTS, YEAR 1—Continued

	Vibratory	Impact		DTH
	13-in Timber	18-in Concrete	24-in Concrete	24-in Concrete
	Installation or removal	Installation	Installation	Installation
Weighting Factor Adjustment (kHz)	2.5	2	2	2.
Activity Duration per day (minutes)	90			80.
Strike Rate per second				12.
Number of strikes per pile		1,000	1,000.	
Number of piles per day	6	5	4	2.
Distance of sound pressure level measurement.	10	10	10	10.

TABLE 8—USER SPREADSHEET INPUTS, YEAR 2

	Vibratory			Impact	
	12-in Steel	24-in Steel	36-in Steel	12-in Steel; BC	36-in Steel; BC
	Installation or removal	Installation or removal	Installation or removal	Installation	Installation
Spreadsheet Tab Used.	A.1) Vibratory Pile Driving	A.1) Vibratory Pile Driving	A.1) Vibratory Pile Driving	E.1) Impact Pile Driving	E.1) Impact Pile Driving.
Source Level (SPL).	153 RMS	161 RMS	166 RMS	167 SEL	181 SEL.
Transmission Loss Coefficient.	15	15	15	15	15.
Weighting Factor Adjustment (kHz).	2.5	2.5	2.5	2	2.
Activity Duration per day (minutes).	30	90	133	N/A	N/A.
Number of strikes per pile.	N/A	N/A	N/A	1,000	1,000.
Number of piles per day.	2	6	4	2	4.
Distance of sound pressure level measurement.	10	10	10	10	10.

BC = Bubble Curtain

TABLE 9—LEVEL A HARASSMENT AND LEVEL B HARASSMENT ISOPLETHS FROM VIBRATORY AND IMPACT PILE DRIVING AND DTH DRILLING

Pile type	Level A harassment isopleths (m)					Level B harassment isopleth (m)	Area of harassment zone (km^2)
	LF	MF	HF	PW	OW		
Year 1 Vibratory							
13-inch timber	8.9	<1	13.2	5.4	<1	5,412	16 km^2.
Impact							
18-inch concrete	73.3	2.6	87.4	39.3	2.9	46	0.007 km^2.
24-inch concrete	136.2	4.8	162.2	72.9	5.3	86	0.02 km^2.
DTH							
24-inch concrete	374.1	13.3	445.6	200.2	14.6	13,594	75 km^2.
Year 2 Vibratory							
12-inch steel	1.3	<1	<1	<1	<1	1,585	8 km^2.
24-inch steel	8.9	<1	13.2	5.4	<1	5,412	16 km^2.
36-inch steel	25.1	2.2	37.0	15.2	1.1	11,659	31 km^2.
Impact							
12-inch steel	39.8	1.4	47.4	21.3	1.6	39.8	0.005 km^2.

TABLE 9—LEVEL A HARASSMENT AND LEVEL B HARASSMENT ISOPLETHS FROM VIBRATORY AND IMPACT PILE DRIVING AND DTH DRILLING—Continued

Pile type	Level A harassment isopleths (m)					Level B harassment isopleth (m)	Area of harassment zone (km^2)
	LF	MF	HF	PW	OW		
36-inch steel	542.1	19.3	645.8	290.1	21.1	541.2	0.92 km^2.

Marine Mammal Occurrence

In this section we provide information about the occurrence of marine mammals, including density or other relevant information that will inform the take calculations.

Available information regarding marine mammal occurrence in the vicinity of the four installations includes density information aggregated in the Navy's Marine Mammal Species Density Database (NMSDD; Navy, 2019) or site-specific survey information from particular installations (*e.g.,* local pinniped counts). More recent density estimates for harbor porpoise are available in Smultea *et al.* (2017) and Rone *et al.,* (2024). First, for each installation we describe anticipated frequency of occurrence and the information deemed most appropriate for the exposure estimates. For all facilities, large whales (humpback whale, minke whale, and gray whale), killer whales (transient and resident), Dall's porpoise, and elephant seal are considered as occurring only rarely and unpredictably, on the basis of past sighting records. For these species, average group size is considered in concert with expected frequency of occurrence to develop the most realistic exposure estimate. Although certain species are not expected to occur at all at some facilities—for example, resident killer whales are not expected to occur in Hood Canal—the Navy has developed an overall take estimate and request for these species for each project year.

All species described above are considered as rare, unpredictably occurring species. A density-based analysis is used for harbor porpoise (table 10), while data from site-specific abundance surveys are used for California sea lion, Steller sea lion, and harbor seal at all installations. One exception is that for Steller sea lion at NBK Bremerton, a density-based analysis is used because local data have resulted in no observations of this species (Navy, 2023).

TABLE 10—MARINE MAMMAL DENSITIES

Species	Region	Density (June–February)
Harbor porpoise	Hood Canal (Bangor)	[1] 0.81
	East Whidbey Island (Everett)	[2] 0.75
	Sinclair Inlet (Bremerton)	[2] 0.53
	Vashon (Manchester)	[2] 0.25
Steller Sea Lion	Puget Sound—Fall/Winter	[3] 0.05

Sources: [1] Rone *et al.,* 2024; [2] Smultea *et al.,* 2017; [3] Navy, 2019.

Take Estimation

Here we describe how the information provided above is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and proposed for authorization.

To quantitatively assess exposure of marine mammals to noise from pile driving activities, the Navy proposed three methods, to be used depending on the species' assumed spatial and temporal occurrence. For species with rare or infrequent occurrence at a given installation during the in-water work window, the likelihood of interaction was reviewed on the basis of past records of occurrence (described in Description of Marine Mammals in the Area of Specified Activities) and the potential maximum duration of work days at each installation, as well as total work days for all installations. Occurrence of the species in this category [*i.e.,* large whales, killer whales, elephant seal (all installations), and Dall's porpoise (Hood Canal only)] would not be anticipated to extend for multiple days. Except for SRKW, the probable duration of all rare, unpredictably occurring species is assumed to be two days, roughly equivalent to one transit in and out of a project site. In the case of SRKW, the probable duration is assumed to be one day only, as SRKW have not been observed near naval installations during work completed previously at these installations. The calculation for species with rare or infrequent occurrence is:

Exposure estimate = expected group size × probable duration

For species that occur regularly but for which site-specific abundance information is not available, density estimates (table 10) were used to determine the number of animals potentially exposed on any one day of pile driving or removal. The calculation for density-based analysis of species with regular occurrence is:

Exposure estimate = N (density) × Zone of Influence (ZOI, area) × days of pile driving

For remaining species, site-specific abundance information (*i.e.,* primarily the mean of monthly average counts per surveys completed between 2008 and 2022) was used. In cases where documented presence of a given pinniped species was variable throughout year and the mean of monthly average count (2008–2022) was ≥1, the mean of monthly maximum counts of surveys completed between 2008 and 2022 was used:

Exposure estimate = Abundance × days of pile driving

Large Whales—For each species of large whale (*i.e.,* humpback whale, minke whale, and gray whale), we assume rare and infrequent occurrence at all installations. For all three species, if observed, they typically occur singly or in pairs. Therefore, for all three species, we assume that a pair of whales may occur in the vicinity of an

installation for a total of two days. We do not expect that this would happen multiple times, and cannot predict where such an occurrence may happen, so propose to authorize take by Level B harassment of four of each large whale species each project year.

It is important to note that the Navy proposes to implement a shutdown of pile driving activity if any large whale is observed within any defined harassment zone (see Proposed Mitigation). Therefore, the proposed IHA is intended to provide insurance against the event that whales occur within Level B harassment zones that cannot be fully observed by monitors. As a result of this proposed mitigation, we do not believe that Level A harassment is a likely outcome upon occurrence of any large whale. The calculated Level A harassment zone is a maximum of 374 m for DTH installation of 24-in concrete piles in year 1 and 542 m for impact installation of 36-in steel piles with a bubble curtain in year, and this requires that a whale be present at that range for the full duration of 1,000 pile strikes. Given the Navy's commitment to shut down upon observation of a large whale in any harassment zone, and the likelihood that the presence of a large whale in the vicinity of any Navy installation would be known due to reporting via Orca Network, we do not expect that any whale would be present within a Level A harassment zone for sufficient duration to actually experience PTS.

Killer Whales—For transient killer whales, the proposed take authorization is derived via the same process described above for large whales: we assume an average group size of six whales occurring for a period of 2 days. The resulting total proposed authorization of take by Level B harassment of 12 for transient killer whales would also account for the low probability that a larger group occurred once. For SRKW, we assume an average group size of 20 whales occurring within the Level B harassment zone on one day each year. A group of 20 SRKW closely represents the average size of the pod most likely to occur near a Navy installation (the J pod), and corresponds to 75 percent of the average of all 3 pods that make up the stock. SRKW have not been observed near naval installations during work completed previously at these installations.

Similar to large whales, the Navy plans to implement shutdown of pile driving activity at any time that any killer whale is observed within any calculated harassment zone. We expect this to minimize the extent and duration of any behavioral harassment. Given the small size of calculated Level A harassment zones—maximum of 13 m for DTH in year 1, and 20 m for the worst-case scenario of impact-driven 36-in steel piles with a bubble curtain—we do not anticipate any potential for Level A harassment of killer whales.

Dall's Porpoise—We assume rare and infrequent occurrence of Dall's porpoise at all installations. If observed, they typically occur in groups of five (Smultea *et al.,* 2017). Therefore, we assume that a group of Dall's porpoise may occur in the vicinity of an installation for a total of two days. We do not expect that this would happen multiple times, and cannot predict where such an occurrence may happen, so conservatively propose to authorize take by Level B harassment of a total of 10 Dall's porpoise each project year.

The Navy plans to implement shutdown of pile driving activity at any time if a Dall's porpoise is observed in the Level A harassment zone. The calculated Level A harassment zone is as large as 445 m for DTH of 24-in concrete in year 1 and as large as 646 m for impact driving of 36-in steel piles with a bubble curtain in year 2. Take by level A harassment would require that a porpoise be present at that range for the full duration of 1,000 pile strikes. Given the rarity of Dall's porpoise in the area, the Navy's commitment to shut down upon observation of a porpoise within the Level A harassment zone, and the likelihood that a porpoise would engage in aversive behavior prior to experiencing PTS, we do not expect that any porpoise would be present within a Level A harassment zone for sufficient duration to actually experience PTS.

Harbor Porpoise—Level B exposure estimates for harbor porpoise were calculated for each installation each year using the appropriate density given in table 10, the largest appropriate ZOI for each pile type, and the appropriate number of construction days.

- *NBK Bangor:* Pile driving is not planned at this installation in year 1. For year 2, using the Hood Canal sub-region density, 36 days of pile driving in year 2, and the largest ZOIs calculated for each pile type at this location (31 km^2 for vibratory installation of 36-in steel piles) produces an estimate of 905 incidents of Level B harassment for harbor porpoise.
- *NBK Bremerton:* In year 1, using the Sinclair Inlet sub-region density, 31 days of pile driving, and the largest ZOI calculated for each pile type at this location (16 km^2 for removal and installation of 13-in timber piles, 0.2 km for impact installation of 24-in concrete piles, and 0.07 km for impact installation of 18-in concrete) produces an estimate of 93 incidents of Level B harassment for harbor porpoise. In year 2, using the Sinclair Inlet sub-region density, 24 days of pile driving, and the largest ZOI calculated for each pile type at this location (16 km^2 for vibratory removal and installation of 24-in steel piles) produces an estimate of 204 incidents of Level B harassment for harbor porpoise.
- *NBK Manchester:* In year 1, using the Vashon sub-region density, 37 days of pile driving, and the largest ZOI calculated for each pile type at this location (75.8 km^2 for DTH of 24-in concrete piles) produces an estimate of 701 incidents of Level B harassment for harbor porpoise. There are no pile driving activities planned at this installation in year 2.
- *NS Everett:* There are no pile driving activities planned at this installation in year 1. In year 2, using the East Whidbey sub-region density, 8 days of pile driving, and the largest ZOI calculated each pile type at this location (8 km^2) produces an estimate of 24 incidents of Level B harassment for harbor porpoise.

The Navy plans to implement shutdown of pile driving activity at any time if a harbor porpoise is observed in the Level A harassment zone. As a result of this proposed mitigation, we do not believe that Level A harassment is a likely outcome. There are two instances where the Level A harassment zone may extend beyond a distance where harbor porpoise may reliably be detected by PSOs. In Year 1, the Level A harassment zone is 445 m during DTH drilling of 24-in concrete at NBK Manchester. In Year 2, the Level A harassment zone is 645 m during impact driving of 36-in steel piles with a bubble curtain at NBK Bangor. However, Rone et al. (2024) reported a notable absence of harbor porpoise within 21 km^2 in front of NBK Bangor. In both cases, harbor porpoise are uncommon in the area. Given the Navy's commitment to shut down upon observation of a porpoise within the Level A harassment zone, and the likelihood that a porpoise would engage in aversive behavior prior to experiencing PTS, we do not expect that any porpoise would be present within a Level A harassment zone for sufficient duration to actually experience PTS.

Across all installations, we propose to authorize 794 takes by Level B harassment of harbor porpoise in year 1 and 1,157 takes by Level B harassment of harbor porpoise in year 2.

Steller Sea Lion—Level B harassment estimates for Steller sea lions were calculated for each installation using the appropriate density given in table 10 or

site-specific abundance, the largest appropriate ZOI for each pile type at each installation, and the appropriate number of days. Please see Marine Mammal Monitoring Report at Navy Region Northwest Installations: 2008–2022 (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*) for details of site-specific abundance information (Navy, 2023).

- *NBK Bangor:* Steller sea lions are routinely seen hauled out from mid-September through May, with a maximum daily haul-out count of 21 individuals in November (based on data collected between 2008 and 2022). Because the mean of monthly average counts per surveys between 2008–2022 was 1, we relied the average of the maximum count of hauled out Steller sea lions for each month in the in-water work window (July–January). The average of the monthly maximum counts during the in-water work window provides an estimate of 7.25 sea lions present per day. Using this value for 36 days in year 2 results in an estimate of 261 incidents of Level B harassment in year 2. There are no pile driving activities planned at this installation in year 1.
- *NBK Bremerton:* Steller sea lions have been documented only twice at this installation between 2008 and 2022. As such density values were used to estimate take at this location. Using the Puget Sound density value for fall-winter, 31 days of pile driving in year 1, and the largest ZOI calculated for each pile type at this location (16 km^2 for removal and installation of 13-in timber piles, 0.2 km for impact installation of 24-in concrete piles, and 0.07 km for impact installation of 18-in concrete) produces an estimate of 9 incidents of Level B harassment for Steller sea lion in year 1. Using the Puget Sound density value for fall-winter, 24 days of pile driving in year 2, and the largest ZOI calculated for each pile type at this location (16 km^2 for vibratory removal and installation of 24-in steel piles) produces an estimate of 18 incidents of Level B harassment for Steller sea lion in year 2.
- *NBK Manchester:* Steller sea lions are observed periodically at NBK Manchester since surveys began in 2012. We estimate take based on the monthly mean counts per surveys conducted from July to February, between 2012 and 2022, which provides an estimate of six Steller sea lions per day. In year 1, using this value for 37 days in results in an estimate of 222 incidents of Level B harassment. There are no pile driving activities planned at this installation in year 2.
- *NS Everett:* Steller sea lions were rarely observed at NS Everett between 2012 and 2022. All observations were of lone individuals hauled out on a PSB or in a nearby basin. We conservatively estimate that one Steller sea lion could occur within the project area per day. Using this value for 8 days in year 2 results in an estimate of 8 incidents of Level B harassment in year 2. There are no pile driving activities planned at this installation in year 1.

Given the small size of calculated Level A harassment zones—maximum of 15 m for the worst-case scenario of DTH-installed 24-in concrete piles in year 1 and maximum of 21 m for the worst-case scenario of impact-driven 36-in steel piles with the use of a bubble curtain in year 2—we do not anticipate any potential for Level A harassment of Steller sea lions.

Across all installations we propose to authorize take by 231 takes by Level B harassment of Steller sea lion in year 1 and 287 takes by Level B harassment of Steller sea lions in year 2.

California Sea Lion—Level B harassment estimates for California sea lions were calculated for each installation using the appropriate site-specific abundance, the largest appropriate ZOI for each pile type at each installation, and the appropriate number of days. Please see Marine Mammal Monitoring Report at Navy Region Northwest Installations: 2008–2022 (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*) for details of site-specific abundance information (Navy, 2023).

- *NBK Bangor:* California sea lions haul out in all months on floating PSB and on submarines docked at Delta Pier, with lower numbers in June through July. We estimate take based on the monthly mean counts per surveys conducted from July to January, between 2012 and 2022, which provides an estimate of 25 California sea lions per day. In year 2, using this value for 36 days results in an estimate of 900 incidents of Level B harassment in year 2. There are no pile driving activities planned at this installation in year 1.
- *NBK Bremerton:* California sea lions are routinely seen hauled out on floats at NBK Bremerton during most of the year. We estimate take based on the monthly mean count per surveys conducted from July through February, between 2010 and 2022, which provides an estimate of 98 California sea lions per day. In year 1, using this value for 31 days generates an estimate of 3,038 incidents of Level B harassment. In year 2, using this value for 24 days generates an estimate of 2,352 incidents of Level B harassment in year 2.
- *NBK Manchester:* California sea lions have been observed at this installation at least once each month of the year, with peak numbers occurring in October and November. Floats used as haulouts are periodically installed and removed, making numbers in the vicinity highly variable. We estimate take based on the monthly mean count per surveys conducted from July through February, between 2012 and 2022, which provides an estimate of 24 California sea lions per day. In year 1, using this value for 37 days generates an estimate of 1,274 incidents of Level B harassment. There are no pile driving activities planned at this installation in year 2.
- *NS Everett:* California sea lions have been observed every month of the year. We estimate take based on the monthly mean count per survey conducted from July through February between 2012 and 2022, which provides an estimate of 48 California sea lions per day. In year 2, using this value for 8 days in year 2 generates an estimate of 384 incidents of Level B exposures. There are no pile driving activities planned at this installation in year 1.

Given the small size of calculated Level A harassment zones—maximum of 15 m for the worst-case scenario of DTH-installed 24-in concrete piles in year 1 and maximum of 21 m for the worst-case scenario of impact-driven 36-in steel piles with the use of a bubble curtain in year 2—we do not anticipate any potential for Level A harassment of California sea lions.

Across all installations we propose to authorize 3,926 takes by Level B harassment of California sea lions in year 1 and 3,636 takes by Level B harassment of California sea lions in year 2.

Harbor Seal—Harbor seals are expected to occur year-round at all installations, with the greatest numbers expected at installations with nearby haul-out sites. Level B exposure estimates for harbor seals were calculated for each installation using the appropriate site-specific abundance, the largest appropriate ZOI for each pile type at each installation, and the appropriate number of days. Please see Marine Mammal Monitoring Report at Navy Region Northwest Installations: 2008–2022 (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*) for details of site-specific abundance information (Navy, 2023).

Harbor seals are expected to be the most abundant marine mammal at all installations, often occurring in and around existing in-water structures in a way that may restrict observers' ability to adequately observe seals and subsequently implement shutdowns. In addition, the calculated Level A harassment zones are significantly larger than those for sea lions, which may also be abundant at various installations at certain times of year. For harbor seals in year 1, the largest calculated Level A harassment zone is 200 m (compared with a maximum zone of 15 m for sea lions), calculated for the worst-case scenario of DTH-installed 24-in concrete piles (other scenarios range from 5–75 m). In year 2, the largest calculated Level A harassment zone is 290 m (compared with a maximum zone of 21 m for sea lions), calculated for the worst-case scenario of impact-driven 36-in steel piles with the use of a bubble curtain (other scenarios range from 1–21 m). Therefore, we assume that some Level A harassment is likely to occur for harbor seals and provide installation-specific estimates below.

- *NBK Bangor:* Harbor seals are year-round residents at NBK Bangor and have been identified at least once during each calendar month over several survey years. They have been observed swimming and hauled out on man-made structures including docks, catwalks under the dock at Marginal Pier, PSBs, and boats along the NBK Bangor waterfront, The Navy plans to place fencing around the catwalks at Marginal Pier, which may reduce harbor seal haulout opportunities at NBK Bangor. Because the mean of monthly average counts per surveys between 2008–2022 was <1, we estimate take by Level B harassment based on the mean maximum count per month of surveys conducted from July to January, between 2008 and 2022, which provides an estimate of 16 harbor seals per day. In year 2, using this value for 36 days results in an estimate of 576 incidents of Level B exposures. There are no pile driving activities planned at this installation in year 1.

The Level A harassment zone expected to occur during impact installation of 36-in steel at NBK Bangor is 290 m. Since the Navy plans to maintain a shutdown zone of at 180 m (see table 13), the Navy estimates and NMFS agrees that one seal per day (n = 20) could remain within the calculated Level A harassment zone for a sufficient period to accumulate enough energy to result in PTS. As such, we propose to authorize 20 incidents of take by Level A harassment.

- *NBK Bremerton:* Observations of harbor seals are intermittent at NBK Bremerton. They are primarily observed swimming in the water around piers and structures and less frequently hauled out on floats and docked submarines. Because the mean of monthly average counts per surveys between 2008–2022 was <1, we estimate take based on the mean maximum count per month of surveys from July to February, between 2010 and 2022, which provides an estimate of two harbor seals per day. In year 1, using this value for 31 days results in an estimate of 62 incidents of Level B exposures. In year 2, using this value for 24 days results in an estimate of 48 incidents of Level B harassment.

In year 1, the Level A harassment zone expected to occur during impact installation of 18-in steel at NBK Bremerton is 39 m and the Level A harassment zone expected to occur during impact installation of 24-in steel is 73 m. Although the Navy plans to shut down at distances slightly larger than these Level A harassment zones (see table 12), the Navy assumes and NMFS agrees that it is possible that one seal per day could go unobserved and remain within the calculated zone for a sufficient period to accumulate enough energy to result in PTS. As such, we propose to authorize 20 takes by Level A harassment. In year 2, the largest Level A harassment zone is much smaller (<10 m) and as such we do not expect take by Level A harassment to occur and we do not propose to authorize such take.

- *NBK Manchester:* No harbor seal haulouts have been identified at NBK Manchester, but seals regularly haul out at Orchard Rocks and are observed swimming through the project area. We estimate take based on the monthly mean count per survey conducted from July through February between 2020 and 2022 (Orchard Rocks was incorporated into surveys in 2020), which provides an estimate of 10 harbor seals per day. In year 1, using this value for 37 days results in an estimate of 370 incidents of Level B harassment. There are no pile driving activities planned at this installation in year 2.

The Level A harassment zone expected to occur during DTH installation of 24-in concrete at NBK Manchester is 200 m. Since the Navy plans to shut down at 150 m due to practicability concerns (see table 12), the Navy assumes and NMFS agrees that one seal per day (n = 37) could remain within the calculated zone for a sufficient period to accumulate enough energy to result in PTS. As such, we propose to authorize 37 incidents of take by Level A harassment.

- *NS Everett:* Harbor seals haul out year round on floats, riprap, and human structures at NS Everett. We estimate take based on the monthly mean count per survey conducted from July through February between 2019 and 2022 (the east side of East Waterway was incorporated into surveys in 2019), which provides an estimate of 266 harbor seals per day. In year 2, using this value for 8 days results in an estimate of 2,128 incidents of Level B harassment. There are no planned pile driving activities at this installation in year 1.

The largest Level A harassment zone expected to occur at NS Everett is 21 m and the Navy plans to shut down at this distance should a harbor seal be observed entering or within this zone. As such we do not expect take by Level A harassment to occur and we do not propose to authorize such take here.

Any individuals exposed to the higher levels associated with the potential for PTS closer to the source might also be behaviorally disturbed, however, for the purposes of quantifying take we do not count those exposures of one individual as both a Level A harassment take and a Level B harassment take, and therefore takes by Level B harassment calculated as described above are further modified to deduct the proposed amount of take by Level A harassment. Therefore, in year 1, across all installations, NMFS proposes to authorize 57 takes by Level A harassment and 432 takes by Level B harassment for harbor seal, for a total of 489 takes. In year 2, across all installations, NMFS proposes to authorize 20 takes by Level A harassment and 2,752 takes by Level B harassment for harbor seal, for a total of 2,772 takes.

Northern Elephant Seal—Northern elephant seals are considered rare visitors to Puget Sound. However, solitary juvenile elephant seals have been known to sporadically haul out to molt in Puget Sound during spring and summer months. Because there are occasional sightings in Puget Sound, the Navy reasons that exposure of up to one seal to noise above Level B harassment thresholds could occur for a two-day duration for a total of 2 takes by Level B harassment of northern elephant seals each year.

The total proposed take authorization for all species each year is summarized in table 11 below. No authorization of take by Level A harassment is proposed for authorization except a total of 57 such incidents for harbor seals in year 1 and 20 such incidents for harbor seals in year 2.

TABLE 11—PROPOSED TAKE AUTHORIZATION BY LEVEL B HARASSMENT

Species	Stock	Year 1			Year 2		
		Level A harassment	Level B harassment	Proposed take as a percentage of stock abundance	Level A harassment	Level B harassment	Proposed take as a percentage of stock abundance
Humpback Whale	CenAmer./S Mex-CA-OR-WA	0	0	0	0	0	0
	Mex-CA-OR-WA		1	<1	0	1	<1
	Hawai'i		3	<1	0	3	<1
Minke Whale	CA-OR-WA	0	4	<1	0	4	<1
Gray Whale	Eastern N Pacific	0	4	<1	0	4	<1
Killer Whale	W Coast Transient	0	12	3	0	12	3
	E.N.P.—S Resident	0	20	27	0	20	27
Harbor Porpoise	WA. Inland	0	794	7	0	1,157	10
Dall's Porpoise	CA-OR-WA	0	10	<1	0	10	<1
Steller Sea Lion	Eastern US	0	231	<1	0	287	<1
California Sea Lion	US	0	3,926	2	0	3,636	1.4
Northern Elephant Seal	CA Breeding	0	2	<1	0	2	<1
Harbor Seal	WA N Inland	57	375	4	0	2176	13
	Hood Canal	0	0	0	20	576	17

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 the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the 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 the 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, NMFS considers 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, and impact on operations.

Timing—As described previously, the Navy would adhere to in-water work windows designed for the protection of fish. These timing windows would also benefit marine mammals by limiting the annual duration of construction activities. At NBK Bangor, the Navy would adhere to a July 16 through January 15 window, while at the remaining facilities this window is extended to February 15 each project year.

On a daily basis, in-water construction activities would occur only during daylight hours (sunrise to sunset) except from July 16 to September 15, when impact pile driving would only occur starting 2 hours after sunrise and ending 2 hours before sunset in order to protect marbled murrelets (*Brachyramphus marmoratus*) during the nesting season. The exception is NBK Bremerton, where marbled murrelets do not occur.

Shutdown Zone—For all pile driving, removal, and DTH drilling, the Navy would implement shutdowns within designated zones. The purpose of a shutdown zone is generally 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). For all pile driving activities, the Navy would establish a minimum shutdown zone with a radial distance of 10 m. This minimum zone is 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. In most circumstances where the predicted Level A harassment zone exceeds the minimum zone, the Navy proposes to implement a shutdown zone greater or equal to the predicted Level A harassment zone (see tables 12 and 13). However, in cases where it would be challenging to detect marine mammals at the Level A harassment isopleth and frequent shutdowns would create practicability concerns (*e.g.,* for phocids during DTH at NBK Manchester in year 1 and impact pile driving at NBK Bangor in year 2), smaller shutdown zones have been proposed. In addition, the Navy proposes to implement shutdown upon observation of any large whales and killer whales within a calculated Level B harassment zone. Recognizing that the entirety of the Level B harassment zone cannot practicably be monitored, the Orca Network would be consulted prior to commencing pile driving each day, and pile driving would also be delayed or shutdown if low-frequency or mid-frequency cetaceans are reported near or approaching the Level B harassment zone. In all cases, predicted injury zones are calculated on the basis of cumulative sound exposure, as peak pressure source levels produce smaller predicted zones.

Finally, construction activities would be halted upon observation of a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met entering or within the harassment zone.

TABLE 12—SHUTDOWN ZONES, YEAR 1

Activity	Pile size/type	Shutdown zones (m)					Level B harassment zone (m)	Level B monitoring zone (m)
		LF	MF	HF	PW	OW		
Impact Installation	18-in Concrete	100	50	100	40	10	46	N/A
	24-in Concrete	170	90	170	75	10	86	N/A
Vibratory Installation or Removal	13-in Timber	[2] 5,412	[2] 5,412	15	10	10	5,412	[1] 400
DTH	24-in Concrete	[2] 13,594	[2] 13,594	[3] 450	150	20	13,594	[1] 450

[1] Observers must be able to monitor at minimum the Level B monitoring zone prior to commencing vibratory pile driving and removal and DTH drilling.
[2] This shutdown zone likely extends beyond the distance that low- and mid-frequency cetaceans can be reliably detected. Observers will monitor this shutdown zone to the maximum extent possible based on the number and location of PSOs deployed and weather conditions.
[3] This shutdown zone likely extends beyond the distance that harbor porpoise can be reliably detected. However, harbor porpoise are uncommon near NKB Manchester, and it is likely that they would engage in aversive behavior prior to experiencing PTS. As such, we do not expect that any porpoise would be present within a Level A harassment zone for sufficient duration to actually experience PTS.

TABLE 13—SHUTDOWN ZONES, YEAR 2

Activity	Pile size/type	Shutdown zones (m)					Level B harassment zone (m)	Level B monitoring zone (m)
		LF	MF	HF	PW	OW		
Impact Installation	12-in Steel	50	50	50	30	10	39.8	N/A
	36-in Steel	650	650	[3] 650	180	25	541.2	N/A
Vibratory Installation or Removal	12-in Steel	1,585	1,585	10	10	10	1,585	[1] 400
	24-in Steel	[2] 5,412	[2] 5,412	15	10	10	5,412	[1] 400
	36-in Steel	[2] 11,659	[2] 11,659	40	20	10	11,659	[1] 400

[1] Observers must be able to monitor at minimum the Level B monitoring zone prior to commencing vibratory pile driving and removal
[2] This shutdown zone likely extends beyond the distance that low- and mid-frequency cetaceans can be reliably detected. Observers will monitor this shutdown zone to the maximum extent possible based on the number and location of deployed PSOs and weather conditions
[3] This shutdown zone likely extends beyond the distance that harbor porpoise can be reliably detected. However, harbor porpoise were notably absent within 21 km^2 in front of NKB Bangor (Rone *et al.,* 2024) and it is likely that they would engage in aversive behavior prior to experiencing PTS. As such, we do not expect that any porpoise would be present within a Level A harassment zone for sufficient duration to actually experience PTS.

Protected Species Observers—The number and placement of PSOs during all construction activities (described in the Proposed Monitoring and Reporting section) would ensure that the entire shutdown zone is visible, except in cases when the shutdown zone is based on the Level B harassment zone (large whales and killer whales). In such cases, PSOs must be able to monitor at minimum the Level A harassment zone. The Navy would employ at least three PSOs for all pile driving and DTH drilling.

Monitoring for Level B Harassment—PSOs would monitor the shutdown zones and beyond to the extent that PSOs can see. Monitoring beyond the shutdown zones enables observers to be aware of and communicate the presence of marine mammals in the project areas outside the shutdown zones and thus prepare for a potential cessation of activity should the animal enter the shutdown zone. Additionally, prior to commencing pile driving, PSOs will contact Navy marine biologists or the Orca Network directly to obtain reports of large whales in the area.

In order to document observed incidents of harassment, PSOs record all marine mammal observations, regardless of location. The PSO's location and the location of the pile being driven are known, and the location of the animal may be estimated as a distance from the observer and then compared to the location from the pile. It may then be estimated whether the animal was exposed to sound levels constituting incidental harassment on the basis of predicted distances to relevant thresholds in post-processing of observational data, and a precise accounting of observed incidents of harassment created.

Pre and Post-Activity Monitoring—Prior to the start of daily in-water construction activity, or whenever a break in pile driving of 30 minutes or longer occurs, PSOs will observe the shutdown zone, Level A harassment zone, and Level B harassment zone (to the extent possible based on the number and location of PSOs and weather conditions) for a period of 30 minutes. Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine that the shutdown zones and, during vibratory driving and removal and DTH drilling, the Level B monitoring zone, are clear of marine mammals, If these zones are obscured by fog or poor lighting conditions, in-water construction activity will not be initiated until the entire shutdown zone is visible. Pile driving may commence following 30 minutes of observation when the determination is made that the shutdown zones and, during vibratory driving and removal and DTH drilling, the Level B monitoring zone, are clear of marine mammals. If a marine mammal is observed entering or within these zones, pile driving activity must be delayed or halted. During vibratory driving and removal and DTH, the Navy will shut down upon any observation of large whales and killer whales. If pile driving is delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zone or 15 minutes have passed without re-detection of the animal.

The Navy also plans to take measures to ensure that killer whales and large cetaceans (*i.e.,* humpback whale, gray whale, and minke whale) are not located within the vicinity of the project area, including, but not limited to, contacting and/or reviewing the latest sightings data from the Orca Network and/or Center for Whale Research, including passive acoustic detections, to determine the location of the nearest marine mammal sightings.

Soft Start—The use of a soft start procedure is believed to provide additional protection to marine mammals by warning marine mammals or providing them with a chance to leave the area prior to the hammer operating at full capacity. The Navy 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 30-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 30 minutes or longer; the requirement to implement soft start for impact driving is independent of whether vibratory driving has occurred within the prior 30 minutes. Soft start is not required during vibratory pile driving activities.

Bubble Curtain—A bubble curtain would be used for all impact driving of steel piles to attenuate noise. A bubble curtain would be employed during impact installation or proofing of steel pile where water depths are greater than 2 ft (0.67 m). Bubble curtains are not proposed for installation of other pile types due to the relatively low source levels, as the requirement to deploy the curtain system at each driven pile results in a significantly lower production rate. Where a bubble curtain is used, the contractor would be required to turn it on prior to the soft start in order to flush fish from the area closest to the driven pile.

To avoid loss of attenuation from design and implementation errors, the Navy will require specific bubble curtain design specifications, including testing requirements for air pressure and flow at each manifold ring prior to initial impact hammer use, and a requirement for placement on the substrate. The bubble curtain must distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column. The lowest bubble ring shall be in contact with the mudline for the full circumference of the ring, and the weights attached to the bottom ring shall ensure 100 percent mudline contact. No parts of the ring or other objects shall prevent full mudline contact. The contractor shall also train personnel in the proper balancing of air flow to the bubblers, and must submit an inspection/performance report to the Navy for approval within 72 hours following the performance test. Corrections to the noise attenuation device to meet the performance standards shall occur prior to use for impact driving.

Based on our evaluation of the applicant's proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on the affected 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 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 while conducting the activities. 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 activity; 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 cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.,* marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Visual Monitoring—Marine mammal monitoring must be conducted in accordance with the Marine Mammal Monitoring and Mitigation Plan. Marine mammal monitoring during pile driving and removal and DTH drilling must be conducted by NMFS-approved PSOs in a manner consistent with the following:

- PSOs must be independent of the activity contractor (for example, employed by a subcontractor), and have no other assigned tasks during monitoring periods;
- At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization;
- Other PSOs may substitute other relevant experience, education (degree in biological science or related field) or training for experience performing the duties of a PSO during construction activities pursuant to a NMFS-issued incidental take authorization;
- Where a team of three or more PSOs is required, a lead observer or monitoring coordinator will be designated. The lead observer will be required to have prior experience working as a marine mammal observer during construction activity pursuant to a NMFS-issued incidental take authorization; and
- PSOs must be approved by NMFS prior to beginning any activity subject to each IHA.

PSOs should also have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- 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, times, and reason for implementation of mitigation (or why mitigation was note implemented when required); and marine mammal behavior; and
- 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.

Visual monitoring will be conducted by a minimum of three trained PSOs positioned at suitable vantage points practicable (*e.g.,* from a small boat, the pile driving barge, on shore, piers, or any other suitable location). One PSO will have an unobstructed view of all water within the shutdown zone, and during vibratory pile driving and removal and DTH drilling, the Level B monitoring zone. Remaining PSOs will observe as much as the Level A and Level B harassment zones as possible.

Monitoring will be conducted 30 minutes before, during, and 30 minutes after all in water construction activities. In addition, PSOs will record all incidents of marine mammal occurrence, regardless of distance from activity, and will document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving activities include the time to install or 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 30 minutes.

Acoustic Monitoring

The Navy plans to conduct hydroacoustic monitoring for a subset of impact-driven steel piles for projects including more than three piles where a bubble curtain is used (relevant to year 2 project activities only).

Reporting

The Navy will submit a draft marine mammal monitoring report to NMFS within 90 days after the completion of pile driving activities, or 60 days prior to a requested date of issuance of any future IHAs for the project, or other projects at the same location, whichever comes first. The marine mammal monitoring report will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report will include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including: (1) The number and type of piles that were driven and the method (*e.g.,* impact or vibratory); and (2) Total duration of driving time for each pile (vibratory driving) and number of strikes for each pile (impact driving);
- PSO locations during marine mammal monitoring;
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
- Upon observation of a marine mammal, the following information: (1) Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting; (2) Time of sighting; (3) Identification of the animal(s) (*e.g.,* genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species; (4) Distance and location of each observed marine mammal relative to the pile being driven for each sighting; (5) Estimated number of animals (min/max/best estimate); (6) Estimated number of animals by cohort (adults, juveniles, neonates, group composition, *etc.*); (7) Animal's closest point of approach and estimated time spent within the harassment zone; and (8) Description of any marine mammal behavioral observations (*e.g.,* observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (*e.g.,* no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);
- Number of marine mammals detected within the harassment zones, by species; and
- Detailed information about implementation of any mitigation (*e.g.,* shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any.

A final report must be prepared and submitted within 30 calendar days following receipt of any NMFS comments on the draft report. If no comments are received from NMFS within 30 calendar days of receipt of the draft report, the report will be considered final. All PSO data would be submitted electronically in a format that can be queried such as a spreadsheet or database and would be submitted with the draft marine mammal report.

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the Holder must report the incident to the Office of Protected Resources (OPR), NMFS (*PR.ITP.MonitoringReports@noaa.gov* and *itp.fleming@noaa.gov*) and the West Coast Regional Stranding Coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, the Holder must immediately cease the activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHAs. The Holder must not resume their activities until notified by NMFS. The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact 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 (50 CFR 216.103). 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 impacts or responses (*e.g.,* intensity, duration), the context of any impacts or responses (*e.g.,* critical reproductive time or location, foraging impacts affecting energetics), 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' 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 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).

To avoid repetition, the majority of our analysis applies to all the species listed in table 3, given that many of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are described independently in the analysis below.

Pile driving activities associated with the maintenance projects, as described 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 (for all species other than harbor seal) from underwater sounds generated from pile driving. Potential takes could occur if individual marine mammals are present in the ensonified zone when pile driving is happening.

No serious injury or mortality would be expected even in the absence of the proposed mitigation measures. For all species other than the harbor seal, no Level A harassment is anticipated given the nature of the activities, *i.e.,* much of the anticipated activity would involve measures designed to minimize the possibility of injury. The potential for injury is small for cetaceans and sea lions, and is expected to be essentially eliminated through implementation of the proposed mitigation measures—use of the bubble curtain for steel piles (relevant to year 2 only), soft start (for impact driving), and shutdown zones. Impact driving, as compared with vibratory driving, has source characteristics (short, sharp pulses with higher peak levels and much sharper rise time to reach those peaks) that are potentially injurious or more likely to produce severe behavioral reactions. Given sufficient notice through use of soft start, marine mammals are expected to move away from a sound source that is annoying prior to becoming potentially injurious or resulting in more severe behavioral reactions. Additionally, environmental conditions in inland waters are expected to generally be good, with calm sea states, and we expect conditions would allow a high marine mammal detection capability, enabling a high rate of success in implementation of shutdowns to avoid injury.

As described previously, there are multiple species that are considered rare in the proposed project areas and for which we propose to authorize limited take, by Level B harassment, of a single group for a minimal period of time in each authorization year (one or two days).

ESA critical habitat for southern resident killer whale occurs in Puget Sound (see the Description of Marine Mammals in the Area of Specified Activities section of this notice). NMFS did not identify in-water sound levels as a separate essential feature of critical habitat, though anthropogenic sound is recognized as one of the primary threats to SRKW (NMFS 2019). The exposure of SRKW to sound from the proposed activities would be minimized by the required proposed mitigation measures (*e.g.,* shutdown zones equivalent to the Level B harassment zones). The effects of the activities on SRKW habitat generally, such as sedimentation and impacts to availability of prey species, are expected to be limited both spatially and temporally, constrained to the immediate area around the pile driver(s) at each pier and returning to baseline levels quickly. Additionally, the timing of the in-water work window for the projects is intended to limit impacts to ESA-listed fishes, which would accordingly reduce potential impacts to SRKW prey.

Puget Sound is part of a BIA for migrating gray whales (Calambokidis *et al.,* 2015). However, gray whales in this area typically remain further north, primarily in the waters around Whidbey Island (Calambokidis *et al.,* 2018) (an area where only 8 days of pile driving are planned). Therefore, even though the project areas overlap with the BIA, the infrequent occurrence of gray whales suggests that the proposed projects would have minimal, if any, impact on the migration of gray whales, and would therefore not affect reproduction or survival.

Aside from the SRKW critical habitat and BIA for gray whales, there are no known important areas for other marine mammals, such as feeding or pupping areas. Therefore, we do not expect meaningful impacts to these species (*i.e.,* humpback whale, gray whale, minke whale, transient and resident killer whales, Dall's porpoise, and northern elephant seal) and preliminarily find, for both the proposed Year 1 and Year 2 IHAs, that the total marine mammal take from the specified activities will have a negligible impact on these marine mammal species.

For remaining species (harbor porpoise, California sea lion, Steller sea lion, and harbor seal), we discuss the likely effects of the specified activities in greater detail. Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from 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, Inc., 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.

The Navy has conducted multi-year activities potentially affecting marine mammals, and typically involving greater or similar levels of activity than is contemplated here in various locations such as San Diego Bay and some of the installations considered herein (NBK Bangor, NBK Bremerton, NBK Manchester). Reporting from these activities has similarly reported no apparently consequential behavioral reactions or long-term effects on marine mammal populations (Lerma, 2014; Navy, 2016; Sandoval *et al.,* 2022; Sandoval and Johnson, 2022; Hamer Environmental 2021; DoN, 2021 and 2022). Repeated exposures of individuals to relatively low levels of sound outside of preferred habitat areas are unlikely to significantly disrupt critical behaviors. Thus, even repeated Level B harassment of some small subset of the overall stock is unlikely to result in any significant realized decrease in viability 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 adverse 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 area while the activity is occurring. While vibratory driving and DTH drilling associated with some project components may produce sound at distances of many kms from the pile driving site, thus intruding on higher-quality habitat, the project sites themselves and the majority of sound fields produced by the specified activities are within industrialized areas. Therefore, we expect that animals annoyed by project sound would simply avoid the area and use more-preferred habitats.

In addition to the expected effects resulting from authorized Level B harassment, we anticipate that harbor seals may sustain some limited Level A harassment in the form of auditory injury at two installations in year 1 (NBK Bremerton and NBK Manchester) and one installation in year 2 (NBK Bangor), assuming they remain within a given distance of the pile driving activity for the full number of pile strikes. However, seals in these locations that experience PTS would likely only receive slight PTS, *i.e.,* minor degradation of hearing capabilities within regions of hearing that align most completely with the energy produced by pile driving, *i.e.,* the low-frequency region below 2 kHz, not severe hearing impairment or

impairment in the regions of greatest hearing sensitivity. If hearing impairment occurs, it is most likely that the affected animal would lose a few decibels in its hearing sensitivity, which in most cases is not likely to meaningfully affect its ability to forage and communicate with conspecifics. As described above, we expect that marine mammals would be likely to move away from a sound source that represents an aversive stimulus, especially at levels that would be expected to result in PTS, given sufficient notice through use of soft start.

The pile driving activities are also not expected to have significant adverse effects on these affected marine mammals' habitats. The activities may cause some fish to leave the area of disturbance, thus temporarily impacting marine mammals' foraging opportunities in a limited portion of the foraging range; but, because of the short duration of the activities and the relatively small area of the habitat that may be affected (with no known particular importance to marine mammals), the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences.

In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the specified activities will have only minor, short-term effects on individuals that will not have any bearing on those individuals' fitness. Thus the specified activities are not expected to impact rates of recruitment or survival and will therefore have a negligible impact on those species or stocks.

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 any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- The anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior;
- The additional impact of PTS of a slight degree to few individual harbor seals at two locations in year 1 and one location in year 2 is not anticipated to increase individual impacts to a point where any population-level impacts might be expected;
- The absence of any significant habitat within the industrialized project areas, including 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 adverse impact.
- Effects on species that serve as prey for marine mammals from the activities are expected to be short-term and, therefore, any associated impacts on marine mammal feeding are not expected to result in significant or long-term consequences for individuals, or to accrue to adverse impacts on their populations from either project;
- The ensonifed areas from both projects are very small relative to the overall habitat ranges of all species and stocks, and will not cause more than minor impacts in any ESA-designated critical habitat, BIAs or any other areas of known biological importance.

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, specific to each of the Year 1 and Year 2 IHAs, will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted previously, only take of small numbers of marine mammals may be authorized under sections 101(a)(5)(A) and (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. When the predicted number of individuals to be taken is less than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

We propose to authorize incidental take of 14 marine mammal stocks each project year (table 11). The total amount of taking proposed for authorization is less than 1 percent for eight of these stocks in year 1 and year 2, equal or less than 10 percent for an additional four stocks in year 1 and three stocks in year 2, and equal or less than 27 percent for another stock in year 1 and three stocks in year 2, all of which we consider relatively small percentages and thus small numbers of marine mammals relative to the estimated overall population abundances for those stocks.

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, for each of the Year 1 and Year 2 IHAs, that small numbers of marine mammals would be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has 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

Section 7(a)(2) of the ESA of 1973 (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 whenever we propose to authorize take for endangered or threatened species, in this case with the West Coast Regional Office.

NMFS is proposing to authorize take of SRKW, as well as two DPSs of humpback whale (Central American/Southern Mexico—California—Oregon—Washington and Mainland Mexico—California—Oregon—Washington), which are listed under the ESA.

The NMFS Office of Protected Resources has requested initiation of section 7 consultation with the NMFS West Coast Region for the issuance of these IHAs. NMFS will conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue two consecutive IHAs to the Navy for conducting the NAVFAC NW MPR Project in Puget Sound, Washington between July 2024 and July 2025, and July 2025 and July 2026, provided the previously mentioned mitigation,

monitoring, and reporting requirements are incorporated. Drafts of the proposed IHAs can be found at: *http://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.*

Request for Public Comments

We request comment on our analyses, the proposed authorizations, and any other aspect of this notice of proposed IHAs for the proposed construction project. We also request comment on the potential renewal of these proposed IHAs as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for each IHA or a subsequent renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the Description of Proposed Activity section of this notice is planned or (2) the activities as described in the Description of Proposed Activity section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed renewal IHA effective date (recognizing that the renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).
- The request for renewal must include the following:

(1) An explanation that the activities to be conducted under the requested renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.,* reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: April 5, 2024.

Kimberly Damon-Randall,

Director, Office of Protected Resources, National Marine Fisheries Service.

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BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD846]

Spring Meeting of the Advisory Committee to the U.S. Section to the International Commission for the Conservation of Atlantic Tunas

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

ACTION: Notice of the Advisory Committee 2024 spring meeting.

SUMMARY: The Advisory Committee to the U.S. Section to the International Commission for the Conservation of Atlantic Tunas (ICCAT) announces its annual spring meeting, to be held April 30–May 1, 2024 in Miami, Florida.

DATES: The open sessions of the Committee meeting will be held on April 30, 2024, 8:30 a.m. to 3:45 p.m. and May 1, 2024, 10:15 a.m. to 4 p.m. Closed sessions will be held on April 30, 2024, 4 p.m. to 6 p.m. and on May 1, 2024, 9 a.m. to 10 a.m. All times are Eastern Daylight Savings time.

ADDRESSES: The meeting will be held at the Courtyard by Marriott Miami Coconut Grove, 2649 South Bayshore Drive, Miami, Florida 33133.

FOR FURTHER INFORMATION CONTACT: Bryan Keller, Office of International Affairs, Trade, and Commerce, (301) 427–7725 or at *bryan.keller@noaa.gov.*

SUPPLEMENTARY INFORMATION: The Advisory Committee to the U.S. Section to ICCAT will meet in open session to receive and discuss information on the outcomes of ICCAT's 2023 annual meeting and the U.S. implementation of ICCAT decisions; ICCAT intersessional meetings in 2024; relevant NMFS research and monitoring activities; the results of the meetings of the Committee's Species Working Groups; and other matters relating to the international management of ICCAT species. The public will have access to the open sessions of the meeting, but there will be no opportunity for public comment during the meeting. An agenda is available from the Committee's Executive Secretary upon request (see **FOR FURTHER INFORMATION CONTACT**).

The Committee will meet in its Species Working Groups in closed session in the afternoon of April 30, 2024, and in the morning of May 1, 2024. These sessions are not open to the public, but the results of the Species Working Group discussions will be reported to the full Advisory Committee during the Committee's open session on May 1, 2024.

Special Accommodations

The meeting is accessible to people with disabilities. Requests for auxiliary aids should be directed to Bryan Keller (see **FOR FURTHER INFORMATION CONTACT**) at least 5 days prior to the meeting date.

Authority: 16 U.S.C. 971 *et seq.;* 16 U.S.C. 1801 *et seq.*

Dated: April 5, 2024.

Alexa Cole,

Director, Office of International Affairs, Trade, and Commerce, National Marine Fisheries Service.

[FR Doc. 2024–07616 Filed 4–10–24; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD866]

New England Fishery Management Council; Public Meetings

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

ACTION: Notice of public meetings.

SUMMARY: The New England Fishery Management Council (Council) is holding three regional workshops to hear and discuss feedback from the public to inform development of its Atlantic Cod Management Transition Plan. Workshop summaries will be presented at a future Council meeting.

DATES: These meetings will be held between the dates of Tuesday, April 30, 2024, and Thursday, May 2, 2024. See **SUPPLEMENTARY INFORMATION** for more details on specific dates and times.

ADDRESSES: See **SUPPLEMENTARY INFORMATION** for specific addresses.

Council address: New England Fishery Management Council, 50 Water Street, Mill 2, Newburyport, MA 01950.

FOR FURTHER INFORMATION CONTACT: Cate O'Keefe, Ph.D., Executive Director, New