to serve in the absence of the Chair from among the Commission membership. Both members would serve in those capacities for the duration of the Commission, at the pleasure of the Director.

Commission members would, upon request, be reimbursed for travel and per diem as it pertains to official business of the Commission in accordance with 5 U.S.C. 5701 *et seq.* Commission members would serve without compensation, except that federal government employees who are members of the Commission would remain covered by their compensation system pursuant to 41 CFR 102–3.130(h).

Members would not be permitted to reference or otherwise utilize their membership on the Commission in connection with public statements made in their personal capacities without a disclaimer that the views expressed are their own and do not represent the views of the Commission, NIST, the Department of Commerce, or the U.S. Government.

Nomination Information

1. Nominations are sought from all fields, sectors, and perspectives described above.

2. Each member should be a qualified expert with public or private sector experience in one or more of the following areas: (a) management and organizational structure; (b) laboratory management and safety; (c) safety training and operations; (d) hazardous materials safety and security; (e) emergency medical response; or (f) organizational safety culture. The field of eminence for which the candidate is qualified should be specified in the nomination letter. A summary of the candidate's qualifications should be included with the nomination, including (where applicable) current or former service on federal advisory boards and federal employment. In addition, each nomination letter should state that the candidate acknowledges the responsibilities of serving and will actively participate in good faith in the tasks of the Commission, as appropriate. Third-party nomination letters should state that the candidate agrees to the nomination.

3. NIST seeks a diverse Commission membership.

Alicia Chambers,

NIST Executive Secretariat.

[FR Doc. 2022–23825 Filed 11–1–22; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XC247]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Relocation of National Oceanic and Atmospheric Administration Research Vessels at Naval Station Newport, Rhode Island

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

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

SUMMARY: NMFS has received a request from the U.S. Navy on behalf of NOAA Office of Marine and Aviation Operations (OMAO) for authorization to take marine mammals incidental to construction activities associated with the relocation of NOAA research vessels at Naval Station Newport in Rhode Island. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) 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 authorization and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than December 2, 2022.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.taylor@noaa.gov.*

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and would generally be posted online at *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: Jessica Taylor, Office of Protected Resources, NMFS, (301) 427–8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *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.

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 incidental harassment authorization 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 mitigation, monitoring and reporting of the takings are set forth. 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 an IHA) 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 NOAA Administrative Order 216–6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review. We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On May 6, 2022, NMFS received a request from the U.S. Navy on behalf of OMAO for an IHA to take marine mammals incidental to construction activities associated with the relocation of NOAA research vessels to the Naval Station Newport in Rhode Island. NMFS reviewed the Navy's application and the Navy provided a revised application on July 14, 2022. The application was deemed adequate and complete on October 5, 2022. OMAO's request is for take of 7 species of marine mammals, by Level B harassment and, for a subset of these species, Level A harassment. Neither OMAO nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate. OMAO plans to commence in-water construction activities on February 1, 2024 yet has requested the IHA in advance due to OMAO's NEPA requirements.

Description of Proposed Activity

Overview

OMAO proposes to establish adequate pier, shore side, and support facilities for four NOAA research vessels in Coddington Cove at Naval Station (NAVSTA) Newport in Newport, Rhode Island. As part of the proposed activity, a new pier, trestle, small boat floating dock, and bulkhead would be constructed in Coddington Cove in order to meet NOAA docking/berthing requirements for these four vessels. These construction activities would involve the use of impact and vibratory pile driving, vibratory pile extraction, rotary drilling, and down-the-hole (DTH) mono-hammer excavation events, which have the potential to take marine mammals, by Level A and Level B harassment. The project would also include shore side administrative, warehouse, and other support facilities.

Currently two of the four Rhode Island NOAA research vessels are located at Pier 2 at NAVSTA Newport; however, Pier 2 does not provide adequate docking and berthing for these vessels to meet NOAA requirements. The two other NOAA Atlantic Fleet vessels are located in New Hampshire, Virginia, South Carolina, or Mississippi. As many of the NOAA research cruises are conducted in the northeast, relocating four vessels to the project area provides logistical advantages and operational efficiencies.

Coddington Cove, which opens to Narragansett Bay, covers an area of approximately 395 acres (1.6 square kilometers) and is located near the southeast corner of NAVSTA Newport. Construction activities would last for approximately 1 year from February 1, 2024 to January 31, 2025 of which in-water work would take place over 343 non-consecutive days.

Dates and Duration

In-water construction activities are estimated to occur over 343 non-consecutive days from February 1, 2024 to January 31, 2025. OMAO anticipates that all work would be limited to daylight hours. Specific construction activities may occur concurrently over a period of approximately 138 days. Table 1 provides a summary of proposed scenarios in which equipment may be used concurrently.

TABLE 1—SUMMARY OF MULTIPLE EQUIPMENT SCENARIOS

Structure	Activity	Equipment and quantity
Bulkhead	Template installation (16-inch steel) and steel pipe pile installation (18-inch).	Vibratory Hammer (2). Vibratory Hammer (1), Impact Hammer (1). Vibratory Hammer (2), DTH Mono-hammer (1).
Bulkhead and Trestle	Template extraction from Bulkhead (16-inch steel), Install sheet piles Bulkhead (Z26–700), Install steel pipe piles at Trestle (18-inch).	Vibratory Hammer (3). Vibratory Hammer (1), Impact Hammer (1), Rotary Drill (1). Vibratory Hammer (2), Impact Hammer (1), Rotary Drill (1).
Pier	Template Install (16-inch steel) and Install steel pipe piles (30-inch) at Pier.	Vibratory Hammer (2). Vibratory Hammer (1), Impact Hammer (1) Vibratory Hammer (1), Impact Hammer (1), Rotary Drill (1).
Pier fender piles, gangway, and floating dock	Install pipe piles (16-inch) at Pier and install steel pipe piles at Small Boat Floating Dock (18-Inch).	Vibratory Hammer (2) Vibratory Hammer (1), Impact Hammer (1).

TABLE 1—SUMMARY OF MULTIPLE EQUIPMENT SCENARIOS—Continued

Structure	Activity	Equipment and quantity
	Template Extraction from Pier (16-inch steel) and install shafts (36-inch) at Small Boat Floating Dock.	Vibratory Hammer (2), Impact Hammer (1). Vibratory Hammer (1), Impact Hammer (1). Vibratory (2), DTH Monohammer (1).

Specific Geographic Region

NAVSTA Newport encompasses 1,399 acres (5.66 (square kilometers) km^2) extending 6–7 miles (9.7–11.3 kilometers (km)) along the western shore of Aquidneck Island in the towns of Portsmouth and Middletown, Rhode Island and the city of Newport, Rhode Island. The base footprint also includes the northern third of Gould Island in the town of Jamestown, Rhode Island. The base is located in the southern part of the state where Narragansett Bay adjoins the Atlantic Ocean. Figure 1 shows the site of where the proposed action would occur in Coddington Cove.

Coddington Cove covers an area of approximately 395 acres (1.6 km^2) and is partially protected by Coddington Point to the south and a breakwater to the north. The northwest section of the cove opens to Narragansett Bay. Water depths in the proposed project area of Coddington Cove are less than 34 ft (10.4 m) mean lower low water. The proposed project area experiences semi-diurnal tides, an average water temperature of 36–68 °F (2.2–20 °C), and salinity of 31 parts per thousand. Narragansett Bay is approximately 22 nautical miles (nm) (40 km) long and 7 nm (16 km) wide. Narragansett Bay's most prominent bathymetric feature is a submarine valley that runs between Conanicut and Aquidneck Islands to Rhode Island Sound, and defines the East Passage of Narragansett Bay. The shipping channel in the East Passage serves as the primary shipping channel for the rest of Narragansett Bay and is generally 100 ft (30.5 m) deep. The shipping channel from the lower East Passage splits just south of Gould Island with the western shipping channel heading to Quonset Point and the eastern shipping channel heading to Providence and Fall River (Navy, 2008). Vessel noise from commercial shipping and recreational activities contribute to the ambient underwater soundscape in the proposed project area. Based upon underwater noise data collected at the Naval Undersea Warfare Center (NUWC) and the shallow depth of nearshore water, the ambient underwater noise in the proposed project area is expected to be approximately 120 dB RMS.

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Figure 1. Proposed NAVSTA Project Area

Detailed Description of the Specified Activity

The proposed activity would establish adequate pier, shore side, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at NAVSTA Newport, RI. This includes the construction of a new pier, trestle, small boat floating dock, bulkhead, and shore side facilities in Coddington Cove for which the in-water schedule is shown in Table 2. Upland construction at the Pier landing and parking facilities near Building 11 (Figure 1) would not involve any in-water work and is not expected to result in any takes of marine mammals; these activities are therefore not further discussed.

TABLE 2—PROPOSED IN-WATER WORK SCHEDULE

Facility	Construction period	Pile type and diameter (in)	Number of piles	Method of pile driving/extraction	Daily production rate	Minutes to drive/ extract/ drill a single pile	Number of impact strikes/pile	Total production days [1]
Abandoned guide piles along bulkhead.	February 2024	12″ steel	3	Vibratory extraction	3 piles/day	30	N/A	1
Floating dock demolition.	February 2024	12″ timber	4	Vibratory extraction	4 piles/day	30	N/A	1
Bulkhead Construction	February–April 2024	18″ steel	115	Vibratory/impact	8 piles/day	30	1,000	15

TABLE 2—PROPOSED IN-WATER WORK SCHEDULE—Continued

Facility	Construction period	Pile type and diameter (in)	Number of piles	Method of pile driving/extraction	Daily production rate	Minutes to drive/ extract/ drill a single pile	Number of impact strikes/pile	Total production days [1]
			12	DTH Mono-hammer [2 3].	1 hole/day	300	13	12
		Steel sheet pile Z26–700, 18″ deep.	230 (115 pairs).	Vibratory	8 pairs/day	30	N/A	15
		16 template steel pile	60 (4x 15 moves).	Vibratory installation/ extraction.	4 piles/day	30	N/A	30
Trestle bents 1–18	April–June 2024 *	18″ steel pipe pile	36	Vibratory/impact	2 piles/day	30	1,500	18
			4	Rotary drilling [4]	1 hole/day	300	N/A	4
		16″ template steel pipe pile.	72 (4x 18 moves).	Vibratory installation/ extraction.	4 piles/day	30	N/A	36
Trestle bent 19	June 2024	30″ steel pipe pile	2	Vibratory/impact	2 piles/day	45	2,000	1
		16″ template steel pipe pile.	4 (4x 1 moves).	Vibratory installation/ extraction.	4 piles/day	30	N/A	2
Pier	June–December 2024 **.	30″ steel pipe pile	120	Vibratory/impact	4 piles/day	45	2,000	30
			12	Rotary drilling [4]	1 hole/day	300	N/A	12
		16″ template steel pipe pile.	120 (4x 30 moves).	Vibratory installation/ extraction.	4 piles/day	30	N/A	60
Fender Piles	September 2024–January 2025 **.	16″ steel pipe pile	201	Vibratory	4 piles/day	20	N/A	50
		16″ template steel pipe pile.	96 (4x 24 moves).	Vibratory installation/ extraction.	4 piles/day	30	N/A	48
Gangway support piles for small boat floating dock.	January 2025 **	18″ steel pipe piles	4	Vibratory/impact	2 piles/day	30	1,000	2
Small floating dock	January 2025 **	36″ steel casing shaft with rock socket (guide pile).	2	Vibratory/impact	1 pile/day	60	1,000	2
			2	DTH Mono-hammer [2 3 5].	1 hole/day	300	13 strikes/ second	2
		16″ template steel pipe pile.	4 (4x 1 moves).	Vibratory installation/ extraction.	4 piles/day	30	N/A	2

* Pile installation at Bulkhead and Trestle may be concurrent.
** Pile installation of Fender piles, Gangway, and Floating Dock may be concurrent.
[1] Total production days for template piles includes the time to install and the time to extract the piles.
[2] "Down-the-hole" (DTH) mono-hammer excavation may be used to clear boulders and other hard driving conditions for pipe piling at the bulkhead. DTH mono-hammer would only be used when obstructions or refusal (hard driving) occurs that prevents the pile from being advanced to the required tip elevation using vibratory/impact driving. The DTH mono-hammer is placed inside of the steel pipe pile and operates at the bottom of the hole to clear through rock obstructions, hammer does not "drive" the pile but rather cleans the pile and removes obstructions such that the piles may be installed to "minimum" tip elevation.
[3] DTH mono-hammer uses both impulsive (strikes/second) and continuous methods (minutes).
[4] Rotary drilling may be used to clear boulders/obstructions for trestle and pier. Core barrel would be lowered through the pile and advanced using rotary methods to clear the obstruction. After the obstruction is cleared, the piling would be advanced to the required tip elevation using impact driving methods.
[5] DTH mono-hammer would be used to create a rock socket at each of the 36-inch shafts for the floating dock.

Pier and Trestle: A new pile supported concrete pier would be constructed approximately 450 ft (137.1 m) north of the existing T-pier in Coddington Cover (Figure 1). The new pier would be approximately 62 ft (18.9 m) wide and and 587 ft (178.9 m) long, encompassing an area of 36,400 square ft (ft^2, 3,381.6 m^2). Structural support piles for the new pier would consist of 120 30″ steel pipe piles. These piles would be driven by vibratory and impact hammers to a depth required to achieve bearing capacity. A rotary drill may be used to clear any obstructions, such as glacial boulders. Fender piles would be installed and consist of 201 16″ diameter steel pipe piles.

In order to access the pier, a 28 ft (8.5 m) wide by 525 ft (160 m) long pile-supported trestle would be constructed. The trestle would cover an area of approximately 14,200 ft^2 (1,319.2 m^2) over the water. The entrance to the trestle would be located upland and span over two existing bulkheads, a sheet pile bulkhead, and a new bulkhead connected to the pier. Structural support piles for the trestle concrete deck would include 36 18″ steel pipe piles and 2 30″ steel pipe piles. The piles would be driven by impact and vibratory hammers to depths required to achieve bearing capacity. If construction crews encounter obstructions, such as glacial boulders, a rotary drill may be used.

Trestle and pier piles would be installed using a template that would be secured by 4 16″ steel pipe piles. Once the pier or trestle piles are installed in the template, the template would be removed and relocated to the next section of the pier/trestle construction. The template piles would be installed and removed by vibratory installation and extraction. Use of the template would require the driving and removal of the template piles approximately 19 times for the trestle and 30 times for the pier, for a total of 196 installation/ extraction moves of the pipe piles.

Small Boat Floating Dock: A small boat floating dock would be constructed northwest of the pier and trestle structure. The dock would be approximately 20 ft (6.1 m) wide by 66 ft (20.1 m) long, and provide berthing on two sides. The floating system would consist of a single heavy duty 20 ft (6.1 m) by 66 ft (20.1 m) concrete float of approximately 1,300 ft^2 (120.8 m^2) and two 5.5 ft (1.7 m) wide by 80 ft (24.3 m) long gangway segments of approximately 440 ft^2 (40.9 m^2) each. The gangway would be supported by 4 18″ steel pipe piles. These piles would be driven by vibratory installation followed by impact installation to achieve bearing capacity. Two 36″ steel pipe guide piles would provide lateral support to the floating dock. The guide piles would be rock socketed into the bedrock. Shafts would be installed using vibratory and impact driving methods, then set into rock socket anchors and filled with concrete. DTH excavation using a mono-hammer would be used to create the rock sockets. Additionally, an abandoned dock currently exists at the proposed site of the floating dock. Demolition of the abandoned dock involving the vibratory extraction of 3 12″ steel pipe piles and 4 12″ timber piles would take place before the small boat floating dock would be installed.

Bulkhead: In order to reinforce and stabilize an existing deteriorating bulkhead, a new bulkhead of approximately 728 ft (221.9 m) in length would be constructed near the proposed new pier location. A combination of approximately 115 18″ steel pipe piles and 230 steel Z-shaped sheet piles (55″ long and 8″ deep) would be installed along the face of the existing bulkhead using vibratory and impact driving. If obstructions, such as solid bedrock, boulders, or debris are encountered, pile installation may require the use of DTH mono-hammer excavation to break up rock or moving the obstruction aside using mechanical means. Piles would be installed using a template that would be secured by 4 16″ steel pipe piles. The use of the template would require the vibratory driving and extraction of the 4 template piles approximately 15 times for a total of 60 installation/extraction moves of the pipe template piles.

Pile installation and removal would occur using barge-mounted cranes and land-based cranes equipped with vibratory and impact hammers. Piles would initially be installed using vibratory methods, then finished with impact hammers as necessary. Impact hammers would also be used where obstructions or sediment conditions do not permit the efficient use of vibratory hammers. Rotary drilling may be used to clear obstructions during pile driving. DTH mono-hammer excavation combines the use of rotary drilling and percussive hammering to fracture rock. This method may also be used to clear obstructions in addition to set piles in rock sockets. Piles would be driven using a vibratory pile driver whenever possible in order to reduce impacts.

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, incorporated here by reference, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *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 these activities, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (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 authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates 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. Atlantic and Gulf of Mexico SARs (*e.g.,* Hayes *et al.,* 2022). All values presented in Table 3 are the most recent available at the time of publication (available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*).

TABLE 3—MARINE MAMMAL SPECIES [4] LIKELY IMPACTED BY THE SPECIFIED ACTIVITIES

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [1]	Stock abundance (CV, Nmin, most recent abundance survey) [2]	PBR	Annual M/SI [3]
Order Artiodactyla—Infraorder Cetacea—Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae:						
Atlantic white-sided dolphins.	*Lagenorhynchus acutus*	Western North Atlantic	-, -, N	93,233 (0.71, 54,443, 2016).	544	27
Common dolphins	*Delphinus delphis*	Western North Atlantic	-, -, N	172,974 (0.21, 145,216, 2016).	1,452	390
Family Phocoenidae (porpoises):						
Harbor Porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	-, -, N	95,543 (0.31, 74,034, 2016).	851	164
Order Carnivora—Pinnipedia						
Family Phocidae (earless seals):						
Harbor Seal	*Phoca vitulina*	Western North Atlantic	-, -, N	61,336 (0.08, 57,637, 2018).	1,729	339
Gray Seal	*Halichoerus grypus*	Western North Atlantic	-, -, N	27,300 (0.22, 22,785, 2016).	1,389	4,453
Harp Seal	*Pagophilus groenlandicus*	Western North Atlantic	-, -, N	7.6 M (UNK, 7.1, 2019)	426,000	178,573

TABLE 3—MARINE MAMMAL SPECIES [4] LIKELY IMPACTED BY THE SPECIFIED ACTIVITIES—Continued

Common name	Scientific name	Stock	ESA/ MMPA status; strategic (Y/N) [1]	Stock abundance (CV, Nmin, most recent abundance survey) [2]	PBR	Annual M/SI [3]
Hooded Seal	*Cystophora cristata*	Western North Atlantic	-, -, N	593,500 (UNK, UNK, 2005).	UNK	1,680

[1] Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR 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 stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments/.* CV is coefficient of variation; Nmin 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. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.
[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/;* Committee on Taxonomy (2022)).

As indicated above, all seven species (with seven managed stocks) in Table 3 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. While several species of whales have been documented seasonally in New England waters, the 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. The humpback (*Megaptera novaeangliae*), fin (*Balaenoptera physalus*), sei (*Balaenoptera borealis*), sperm (*Physeter macrocephalus*) and North Atlantic right whales (*Eubaleana glacialis*) occur seasonally in the Atlantic Ocean, offshore of Rhode Island. However, due to the depths of Narragansett Bay and near shore location of the project area, these marine mammals are unlikely to occur in the project area. Therefore, OMAO did not request, and NMFS is not proposing to authorize takes of these species.

Atlantic White-Sided Dolphin

Atlantic white-sided dolphins occur in the temperate waters of the North Atlantic and specifically off the coast of North Carolina to Maine in U.S. waters (Hayes *et al.,* 2022). The Gulf of Maine population of white-sided dolphin primarily occurs in continental shelf waters from Hudson Canyon to Georges Bank, and in the Gulf of Maine and lower Bay of Fundy. From January to May, this population occurs in low numbers from Georges Bank to Jeffreys Ledge (off New Hampshire) with even lower numbers south of Georges Bank. They are most common from June through September from Georges Bank to lower Bay of Fundy, with densities declining from October through December (Payne and Heinemann, 1990; Hayes *et al.,* 2022).

Since stranding recordings for the Atlantic white-sided dolphin began in Rhode Island in the late 1960s, this species has become the third most frequently recorded small cetacean. There are occasional unconfirmed opportunistic reports of white-sided dolphins in Narragansett Bay, typically in fall and winter. Atlantic white-sided dolphins in Rhode Island inhabit the continental shelf, with a slight tendency to occur in shallower water in the spring when they are most common (approximately 64 percent of records). Seasonal occurrence of Atlantic white-sided dolphins decreases significantly following spring with 21 percent of records in summer, 10 percent in winter, and 7.6 percent in fall (Kenny and Vigness-Raposa, 2010).

Mass strandings of up to 100 animals or more is common for this species. In an analysis of stranded marine mammals in Cape Cod and southeastern Massachusetts, Bogomolni *et al.* (2010) found that 69 percent of stranded white-sided dolphins were involved in mass stranding events with no significant cause determined, and 21 percent were classified as disease-related. Impacts from contaminants and pesticides, as well as climate-related changes, pose the greatest threats for Atlantic white-sided dolphins.

Common Dolphin

The common dolphin is one of the most widely distributed species of cetaceans, found world-wide in temperate and subtropical seas. In the North Atlantic, they are common along the shoreline of Massachusetts and at sea sightings have been concentrated over the continental shelf between the 100-meter (m) and 2000-m isobaths over prominent underwater topography and east to the mid-Atlantic Ridge. The common dolphin occurs from Cape Hatteras northeast to Georges Bank from mid-January to May and in the Gulf of Maine from mid-summer to autumn (Hayes *et al.,* 2022).

Strandings occur year-round. In the stranding record for Rhode Island, common dolphins are the second most frequently stranded cetacean (exceeded only by harbor porpoises) and the most common delphinid. There were 23 strandings in Rhode Island between 1972 and 2005 (Kenny and Vigness-Raposa, 2010). A short-beaked common dolphin was most recently recorded in Narragansett Bay in October of 2016 (Hayes *et al.,* 2022). There are no recent records of common dolphins far up rivers, however such occurrences would only show up in the stranding database if the stranding network responded, and there is no centralized clearinghouse for opportunistic sightings of that type. In Rhode Island, there are occasional opportunistic reports of common dolphins in Narragansett Bay up as far as the Providence River, usually in winter. The greatest threats for common dolphins include impacts from contaminants, anthropogenic sound, and climate change (Hayes *et al.,* 2022).

Harbor Porpoise

Harbor porpoises occur in northern temperate and subarctic coastal and offshore waters in both the Atlantic and Pacific Oceans. In the western North Atlantic, harbor porpoises occur in the northern Gulf of Maine and southern Bay of Fundy region in waters generally less than 150 m deep, primarily during the summer (July to September). During fall (October to December) and spring (April to June), harbor porpoises are widely dispersed between New Jersey and Maine. Lower densities of harbor porpoise occur during the winter (January to March) in waters off New York to New Brunswick, Canada (Hayes *et al.,* 2022).

Harbor porpoises are the most stranded cetacean in Rhode Island. Their occurrence is strongly seasonal and the highest occurrence is in spring at approximately 70 percent of all records. Harbor porpoises may occur in Narragansett Bay during the winter, but reports are second- and third-hand anecdotal reports (Kenny, 2013). As harbor porpoises spend a significant amount of time in nearshore areas, harbor porpoises are vulnerable to contaminants, ship traffic, and physical habitat modifications in addition to fishery bycatch and sources of anthropogenic underwater noise (Hall *et al.,* 2006; Todd *et al.,* 2015; Oakley *et al.,* 2017; Hayes *et al.,* 2022).

Harbor Seal

Harbor seals occur in all nearshore waters of the North Atlantic and North Pacific Oceans and adjoining seas above approximately 30°N (Burns, 2009). They are year-round residents in the coastal waters of eastern Canada and Maine (Katona *et al.,* 1993), occurring seasonally from southern New England to New Jersey from September through late May (Schneider and Payne, 1983; Schroeder, 2000; Rees *et al.,* 2016, Toth *et al.,* 2018). Harbor seals' northern movement occurs prior to pupping season that takes place from May through June along the Maine coast. In autumn to early winter, harbor seals move southward from the Bay of Fundy to southern New England and mid-Atlantic waters (Rosenfeld *et al.,* 1988; Whitman and Payne, 1990; Jacobs and Terhune, 2000; Hayes *et al.,* 2022). Overall, there are five recognized subspecies of harbor seal, two of which occur in the Atlantic Ocean. The western Atlantic harbor seal is the subspecies likely to occur in the proposed project area. There is some uncertainly about the overall population stock structure of harbor seals in the western North Atlantic Ocean. However, it is theorized that harbor seals along the eastern U.S. and Canada are all from a single population (Temte *et al.,* 1991; Anderson and Olsen, 2010).

Harbor seals are regularly observed around all coastal areas throughout Rhode Island, and occasionally well inland up bays, rivers, and streams. In general, rough estimates indicate that approximately 100,000 harbor seals occur in New England waters (DeAngelis, 2020). Seals are very difficult to detect during surveys, since they tend to be solitary and the usual sighting cue is only the seal's head above the surface. Available data on harbor seals in New England are strongly dominated by stranding records, which comprise 446 of 507 total records for harbor seals (88 percent) (Kenny and Vigness-Raposa, 2010). Of the available records, 52.5 percent are in spring, 31.2 percent in winter, 9.5 percent in summer, and 6.9 percent in fall. In Rhode Island, there are no records offshore of the 90-meter isobath. Based upon seasonal monitoring in Rhode Island, seals begin to arrive in Narragansett Bay in September, with numbers slowly increasing in March before dropping off sharply in April. By May, seals have left the Bay (DeAngelis, 2020).

Seasonal nearshore marine mammal surveys were conducted at NAVSTA Newport between May 2016 and February 2017. The surveys were conducted along the western shoreline of Coasters Harbor Island northward to Coggeshall Point and eastward to include Gould Island. The only species that was sighted during the survey was harbor seal. During the spring survey of 2016, one live harbor seal was sighted on May 12 and one harbor seal carcass was observed and reported to the Mystic Aquarium Stranding Network (Moll, *et al.,* 2016, 2017; Navy, 2017b). A group of three harbor seals was sighted on February 1 2017, during the winter survey.

In Rhode Island waters, harbor seals prefer to haul out on isolated intertidal rock ledges and outcrops. Numerous Naval Station employees have reported seals hauled out on an intertidal rock ledge named ''The Sisters,'' which is north-northwest of Coddington Point and approximately 3,500 ft (1,066.8 m) from the proposed project area (see Figure 4–1 of the application) (NUWC Division, 2011). This haulout site has been studied by the NUWC Division Newport since 2011 and has demonstrated a steady increase in use during winter months when harbor seals are present in the Bay. Harbor seals are rarely observed at ''The Sisters'' haulout in the early fall (September–October) but sighted in consistent numbers in mid-November (0–10 animals), and are regularly observed with a gradual increase of more than 20 animals until numbers peak in the upper 40s during March, typically at low tide. The number of harbor seals begin to drop off in April and by mid-May, they are not observed hauled out at all (DeAngelis, 2020). Haulout spaces at ''The Sisters'' haulout site is primarily influenced by tide level, swell, and wind direction (Moll *et al.,* 2017; DeAngelis, 2020).

In addition to ''The Sisters'' haul out, there are 22 haulout sites in Narragansett Bay (see Figure 4–1 in the application). During a 1 day Narragansett Bay-wide count in 2018, there were at least 423 seals observed and all 22 haulout sites were represented. Preliminary results from the Bay-wide count for 2019 recorded 572 harbor seals, which also included counts from Block Island (DeAngelis, 2020).

Gray Seal

Gray seals within U.S. waters are from the western North Atlantic stock and are expected to be part of the eastern Canadian population. The western North Atlantic stock is centered in Canadian waters, including the Gulf of St. Lawrence and the Atlantic coasts of Nova Scotia, Newfoundland, and Labrador, Canada, and the northeast U.S. continental shelf (Hayes *et al.,* 2022). In U.S. waters, year-round breeding of approximately 400 animals has been documented on areas of outer Cape Cod and Muskeget Island in Massachusetts.

Gray seal occurrences in Rhode Island are mostly represented by stranding records—155 of 193 total records (80 percent). Gray seal records in the region are primarily from the spring (approximately 87 percent), with much smaller numbers in all other seasons. Kenney and Vigness-Raposa (2010) found strandings to be broadly distributed along ocean-facing beaches in Long Island and Rhode Island, with a few spring records in Connecticut. Habitat use by gray seals in Rhode Island is poorly understood. They are seen mainly when stranded or hauled out, and are infrequently observed at sea. There are very few observations of gray seals in Rhode Island other than strandings. The annual numbers of gray seal strandings in the Rhode Island study area since 1993 have fluctuated markedly, from a low of 1 in 1999 to a high of 24 in 2011 (Kenney, 2020). The very strong seasonality of gray seal occurrence in Rhode Island between March and June is linked to the timing of pupping in January and February. Most stranded individuals encountered in Rhode Island area appear to be post-weaning juveniles and starved or starving juveniles (Nawojchik, 2002; Kenney, 2005). Annual informal surveys conducted since 1994 observed a small number of gray seals in Narragansett Bay in 2016, although the majority of seals observed were harbor seals (ecoRI News, 2016).

Harp Seal

The harp seal is a highly migratory species, and its range can extend from the Canadian Arctic to New Jersey (Sergeant, 1965; Stenson and Sjare, 1997; Hayes *et al.,* 2021). Harp seals are classified into three stocks, which coincide with specific pupping sites on pack ice. These pupping sites are as follows: (1) Eastern Canada, including the areas off the coast of Newfoundland and Labrador and the area near the

Magdalen Islands in the Gulf of St. Lawrence; (2) the West Ice off eastern Greenland, and (3) the ice in the White Sea off the coast of Russia ((Lavigne and Kovacs, 1988; Bonner, 1990; Hayes *et al.,* 2021). In U.S. waters, the species has an increasing presence in the coastal waters between Maine and New Jersey with a general presence from January through May (Hayes *et al.,* 2021).

Harp seals in Rhode Island are known almost exclusively from strandings (approximately 98 percent). Strandings are widespread on ocean-facing beaches throughout Long Island and Rhode Island and the records occur almost entirely during spring (approximately 68 percent) and winter (approximately 30 percent). Harp seals are nearly absent in summer and fall. Harp seals also make occasional appearances well inland up rivers (Kenny and Vigness-Raposa, 2010). During late winter of 2020, a healthy harp seal was observed hauled out and resting near ''The Sisters'' haulout site (DeAngelis, 2020).

Hooded Seal

The hooded seal is a highly migratory species, and its range can extend from the Canadian Arctic to as far south as Puerto Rico (Mignucci-Giannoni and Odell, 2001; Hayes *et al.,* 2019). In U.S. waters, the species has an increasing presence in the coastal waters between Maine and Florida. Hooded seals in the U.S. are considered members of the western North Atlantic stock and generally occur in New England waters from January through May and further south off the southeast U.S. coast and in the Caribbean in the summer and fall seasons (McAlpine *et al.,* 1999; Harris *et al.,* 2001; and Mignucci-Giannoni and Odell, 2001; Hayes *et al.,* 2019).

Hooded seal occurrences in Rhode Island are predominately from stranding records (approximately 99 percent). They are rare in summer and fall but most common in the area during spring and winter (45 percent and 36 percent of all records, respectively) (Kenney, 2005; Kenny and Vigness-Raposa, 2010). Hooded seal strandings are broadly distributed across ocean-facing beaches in Rhode Island and they occasionally occur well up rivers, but less often than harp seals. Hooded seals have been recorded in Narragansett Bay but are considered occasional visitors and are expected to be the least encountered seal species in the Bay (RICRMC, 2010).

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 and Holt, 2013).

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

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section provides a discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The Estimated Take 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 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 effect on annual rates of recruitment or survival.

Acoustic effects on marine mammals during the specified activities can occur from vibratory and impact pile driving as well as rotary drilling and DTH mono-hammer events. The effects of underwater noise from OMAO's proposed activities have the potential to result in Level A and Level B harassment of marine mammals in the proposed action 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 (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 10–20 decibels (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 activities 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 and vibratory pile driving, vibratory removal, and rotary drilling and DTH mono-hammer excavation events. The sounds produced by these activities fall into one of two general sound types: impulsive and non-impulsive. Impulsive sounds (*e.g.,* explosions, 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; NIOSH, 1998; NMFS, 2018). Non-impulsive sounds (*e.g.,* machinery operations such as drilling or dredging, vibratory pile driving, underwater chainsaws, 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 raid rise/decay time that impulsive sounds do (ANSI 1995; NIOSH 1998; NMFS 2018). DTH mono-hammer excavation includes the use of rotary drilling (non-impulsive sound source) and percussive hammering (impulsive sound source). The distinction between impulsive and non-impulsive sound sources 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 mono-hammer. 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 considered impulsive. Vibratory hammers install piles by vibrating them and allowing the weight of the hammer to push them into the sediment. Vibratory hammers produce non-impulsive, continuous sounds. Vibratory hammering generally produces sounds pressure levels (SPLs) 10 to 20 dB lower than 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).

DTH systems, involving both mono-hammers and cluster-hammers, and rotary drills will also be used during the proposed construction. In rotary drilling, the drill bit rotates on the rock while the drill rig applies pressure. The bit rotates and grinds continuously to fracture the rock and create a hole. Rotary drilling is considered an intermittent, non-impulsive noise source. 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). Rock socketing involves using DTH equipment to create a hole in the bedrock inside which the pile is placed to give it lateral and longitudinal strength. The sounds produced by the DTH methods 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.

The likely or possible impacts of OMAO's proposed activities on marine mammals could be generated from both non-acoustic and acoustic stressors. Potential non-acoustic stressors include the physical presence of the equipment, vessels, and personnel; however, we expect that any animals that approach the project site(s) close enough to be harassed due to the presence of equipment or personnel would be within the Level A or Level B harassment zones from pile driving/removal and would already be subject to harassment from the in-water activities. Therefore, any impacts to marine mammals are expected to primarily be acoustic in nature. Acoustic stressors include heavy equipment operation during pile installation and removal (*i.e.,* impact and vibratory pile driving and removal, rotary drilling, and DTH mono-hammer excavation).

Acoustic Impacts

The introduction of anthropogenic noise into the aquatic environment from pile driving and removal equipment is the primary means by which marine mammals may be harassed from OMAO's specified activities. In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe (Southall *et al.,* 2007). Generally, exposure to pile driving and removal and other construction noise has the potential to result in auditory threshold shifts and behavioral reactions (*e.g.,* avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). 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 demolition 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 (threshold shifts) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced threshold shift (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 threshold shift 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 threshold shift approximates PTS onset (see Ward *et al.,* 1958, 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)—TTS is 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 (see Southall *et al.,* 2007), a TTS of 6 dB is considered the minimum threshold shift 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, 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 *Auditory 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.

Many studies have examined noise-induced hearing loss in marine mammals (see Finneran (2015) and Southall *et al.* (2019) for summaries). For cetaceans, published data on the onset of TTS are limited to the captive bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*), and for pinnipeds in water, measurements of TTS are limited to harbor seals, elephant seals (*Mirounga angustirostris*), and California sea lions (*Zalophus californianus*). These studies examine hearing thresholds measured in marine mammals before and after exposure to intense sounds. The difference between the pre-exposure and post-exposure thresholds can be used to determine the amount of threshold shift at various post-exposure times. The amount and onset of TTS depends on the exposure frequency. Sounds at low frequencies, well below the region of best sensitivity, are less hazardous than those at higher frequencies, near the region of best sensitivity (Finneran and Schlundt, 2013). At low frequencies, onset-TTS exposure levels are higher compared to those in the region of best sensitivity (*i.e.,* a low frequency noise would need to be louder to cause TTS onset when TTS exposure level is higher), as shown for harbor porpoises and harbor seals (Kastelein *et al.,* 2019a, 2019b, 2020a, 2020b). In addition, TTS can accumulate across multiple exposures, but the resulting TTS will be less than the TTS from a single, continuous exposure with the same SEL (Finneran *et al.,* 2010; Kastelein *et al.,* 2014; Kastelein *et al.,* 2015a; Mooney *et al.,* 2009). This means that TTS predictions based on the total, cumulative SEL will overestimate the amount of TTS from intermittent exposures such as sonars and impulsive sources. Nachtigall *et al.* (2018) and Finneran (2018) describe the measurements of hearing sensitivity of multiple odontocete species (bottlenose dolphin, harbor porpoise, beluga, and false killer whale (*Pseudorca crassidens*)) when a relatively loud sound was preceded by a warning sound. These captive animals were shown to reduce hearing sensitivity when warned of an impending intense sound. Based on these experimental observations of captive animals, the authors suggest that wild animals may dampen their hearing during prolonged exposures or if conditioned to anticipate intense sounds. Another study showed that echolocating animals (including odontocetes) might have anatomical specializations that might allow for conditioned hearing reduction and filtering of low-frequency ambient noise, including increased stiffness and control of middle ear structures and placement of inner ear structures (Ketten *et al.,* 2021). Data available on noise-induced hearing loss for mysticetes are currently lacking (NMFS, 2018).

Activities for this project include impact and vibratory pile driving, vibratory pile removal, rotary drilling, and DTH mono-hammer excavation. 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 threshold shift declines.

Behavioral harassment—Exposure to noise from pile driving and removal also has the potential to behaviorally disturb marine mammals. 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; Southall *et al.,* 2021). 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).

The following subsections provide examples of behavioral responses that provide an idea of the variability in behavioral responses that would be expected given the differential sensitivities of marine mammal species to sound and the wide range of potential acoustic sources to which a marine mammal may be exposed. Behavioral responses that could occur for a given sound exposure should be determined from the literature that is available for each species, or extrapolated from closely related species when no information exists, along with contextual factors. 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. 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 respiration, interference with or alteration of vocalization, avoidance, and flight.

Pinnipeds may increase their haul out time, possibly to avoid in-water disturbance (Thorson and Reyff, 2006). 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). In general, pinnipeds seem more tolerant of, or at least habituate more quickly to, potentially disturbing underwater sound than do cetaceans, and generally seem to be less responsive to exposure to industrial sound than most cetaceans.

Alteration of Dive Behavior—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). Seals exposed to non-impulsive sources with a received sound pressure level within the range of calculated exposures (142–193 dB re 1 μPa), have been shown to change their behavior by modifying diving activity and avoidance of the sound source (Götz *et al.,* 2010; Kvadsheim *et al.,* 2010). 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.

Alteration of Feeding Behavior—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.,* Silve *et al.,* 2016; Wensveen *et al.,* 2017). A determination of whether foraging disruptions incur fitness consequences would require 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. Goldbogen *et al.* (2013) indicate that disruption of feeding and displacement could impact individual fitness and health. However, for this to be true, we would have to assume that an individual could not compensate for this lost feeding opportunity by either immediately feeding at another location, by feeding shortly after cessation of acoustic exposure, or by feeding at a later time. There is no indication this is the case, particularly since unconsumed prey would likely still be available in the environment in most cases following the cessation of acoustic exposure. Information on or estimates of the energetic requirements of the individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal will help better inform a determination of whether foraging disruptions incur fitness consequences.

Respiration—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. Studies with captive harbor porpoises showed increased respiration rates upon introduction of acoustic alarms (Kastelein *et al.,* 2001; Kastelein *et al.,* 2006a) and emissions for underwater data transmission (Kastelein *et al.,* 2005). 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, 2006, 2018; Gailey *et al.,* 2007; Isojunno *et al.,* 2018).

Vocalization—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). Killer whales off the northwestern coast of the United States have been observed to increase the duration of primary calls once a threshold in observing vessel density (*e.g.,* whale watching) was reached, which has been suggested as a response to increased masking noise produced by the vessels (Foote *et al.,* 2004; NOAA, 2014). 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). Studies also demonstrate that even low levels of noise received far from the noise source can induce changes in vocalization and/or behavioral responses (Blackwell *et al.,* 2013, 2015).

Avoidance—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). Avoidance is qualitatively different from the flight response, but also differs in the magnitude of the response (*i.e.,* directed movement, rate of travel, *etc.*). Often avoidance is temporary, and animals return to the area once the noise has ceased. Acute avoidance responses have been observed in captive porpoises and pinnipeds exposed to a number of different sound sources (Kastelein *et al.,* 2001; Finneran *et al.,* 2003; Kastelein *et al.,* 2006a; Kastelein *et al.,* 2006b; Kastelein *et al.,* 2015b; Kastelein *et al.,* 2015c; Kastelein *et al.,* 2018). Short-term avoidance of seismic surveys, low frequency emissions, and acoustic deterrents have also been noted in wild populations of odontocetes (Bowles *et al.,* 1994; Goold, 1996; Goold and Fish, 1998; Morton and Symonds, 2002; Hiley *et al.,* 2021) and to some extent in mysticetes (Malme *et al.,* 1984; McCauley *et al.,* 2000; 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).

Forney *et al.* (2017) described the potential effects of noise on marine mammal populations with high site fidelity, including displacement and auditory masking. In cases of Western gray whales (*Eschrichtius robustus*) (Weller *et al.,* 2006) and beaked whales (*Ziphius cavirostris*), anthropogenic effects in areas where they are resident or exhibit site fidelity could cause severe biological consequences, in part because displacement may adversely affect foraging rates, reproduction, or health, while an overriding instinct to remain in the area could lead to more severe acute effects. Avoidance of overlap between disturbing noise and areas and/or times of particular importance for sensitive species may be critical to avoiding population-level impacts because (particularly for animals with high site fidelity) there may be a strong motivation to remain in the area despite negative impacts.

Flight Response—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). There are limited data on flight response for marine mammals in water; however, there are examples of this response in species on land. For instance, the probability of flight responses in Dall's sheep *Ovis dalli dalli* (Frid, 2003), hauled out ringed seals (*Phoca hispida*) (Born *et al.,* 1999), Pacific brant (*Branta bernicla nigricans*), and Canada geese (*B. canadensis*) increased as a helicopter or fixed-wing aircraft more directly approached groups of these animals (Ward *et al.,* 1999). 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 one 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.

Many of the contextual factors resulting from the behavioral response studies (*e.g.,* close approaches by multiple vessels or tagging) would not occur during the proposed action. In 2016, the Alaska Department of Transportation and Public Facilities (ADOT&PF) documented observations of marine mammals during construction activities (*i.e.,* pile driving) at the Kodiak Ferry Dock (see 80 FR 60636, October 7, 2015). In the marine mammal monitoring report for that project (ABR, 2016), 1,281 Steller sea lions were observed within the Level B disturbance zone during pile driving or drilling (*i.e.,* documented as Level B harassment take). Of these, 19 individuals demonstrated an alert behavior, 7 were fleeing, and 19 swam away from the project site. All other animals (98 percent) were engaged in activities such as milling, foraging, or fighting and did not change their behavior. Three harbor seals were observed within the disturbance zone during pile driving activities; none of them displayed disturbance behaviors. Fifteen killer whales and three harbor porpoise were also observed within the Level B harassment zone during pile driving. The killer whales were travelling or milling while all harbor porpoises were travelling. No signs of disturbance were noted for either of these species. The proposed action involves impact and vibratory pile driving, vibratory pile removal, rotary drilling, and DTH mono-hammer excavation. Given the similarities in activities and habitat (*e.g.,* cool-temperate waters, industrialized area), we expect similar behavioral responses from the same and similar species affected by OMAO's proposed action. That is, disturbance, if any, is likely to be temporary and localized (*e.g.,* small area movements).

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 4 to

6), to effects that were thought likely to influence vital rates (high; labeled 7 to 9). 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 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 6 (defined as minor or moderate avoidance of the sound source).

Habituation—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). Animals are most likely to habituate to sounds that are predictable and unvarying. 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). 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. As noted, behavioral state may affect the type of response. For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al.,* 1995; NRC, 2003; Wartzok *et al.,* 2003). Controlled experiments with captive marine mammals have showed pronounced behavioral reactions, including avoidance of loud sound sources (Ridgway *et al.,* 1997; Finneran *et al.,* 2003). Observed responses of wild marine mammals to loud impulsive sound sources (typically seismic airguns or acoustic harassment devices) have been varied but often consist of avoidance behavior or other behavioral changes suggesting discomfort (Morton and Symonds, 2002; see also Richardson *et al.,* 1995; Nowacek *et al.,* 2007).

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), however distress is an unlikely result of these projects based on observations of marine mammals during previous, similar projects.

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. Narragansett Bay supports cargo vessel traffic as well as numerous recreational and fishing vessels, and background sound levels in the proposed project area are already elevated.

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 incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further.

Marine Mammal Habitat Effects

OMAO's proposed construction activities could have localized, temporary impacts on marine mammal habitat, including 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). Elevated levels of underwater noise would ensonify the project areas 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.

A temporary and localized increase in turbidity near the seafloor would occur in the immediate area surrounding the area where piles are installed or removed. In general, turbidity associated with pile installation is localized to about a 25-ft (7.6 m) radius around the pile (Everitt *et al.,* 1980). Turbidity and sedimentation effects are expected to be short-term, minor, and localized. Re-suspended sediments in Coddington Cove are expected to remain in Coddington Cove due to the circular nature of the currents with ambient conditions returning a few hours after completion of construction. Cetaceans are not expected to be close enough to the pile driving areas to experience effects of turbidity, and any pinnipeds could avoid localized areas of turbidity. Therefore, we expect the impact from increased turbidity levels to be discountable to marine mammals and do not discuss it further.

In-Water Construction Effects on Potential Foraging Habitat

The area likely impacted by the project is relatively small compared to the available habitat in Narragansett Bay. In addition, the area is highly influenced by anthropogenic activities and habitat in this area has been previously disturbed by as a part of offshore remediation activities. The total seafloor area affected by pile installation and removal is a small area compared to the vast amount of habitat available to marine mammals in the area. All marine mammal species using habitat near the proposed project area are primarily transiting the area. There are no known foraging or haulout areas within one half mile of the proposed project area. 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) 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

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* fish). 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 which 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, 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 4–6 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 and removal and construction 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.

Construction activities have the potential to have adverse impacts on forage fish in the project area in the form of increased turbidity. Forage fish form a significant prey base for many marine mammal species that occur in the project area. Increased turbidity is expected to occur in the immediate vicinity (on the order of 10 ft (3 m) or less) of construction activities. Turbidity within the water column has the potential to reduce the level of oxygen in the water and irritate the gills of prey fish in the proposed project area. However, fish in the proposed project area would be able to move away from and avoid the areas where increase turbidity may occur. Given the limited area affected and ability of fish to move to other areas, any effects on forage fish are expected to be minor or negligible.

In summary, given the short daily duration of sound associated with individual pile driving and removal events and the relatively small areas being affected, pile driving and removal activities associated with the proposed actions are not likely to have a permanent, adverse effect on any fish habitat, or populations of fish species. 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. Thus, we conclude that impacts of the specified activities are not likely to have more than short-term adverse effects on any prey habitat or populations of prey species. Further, any impacts to marine mammal habitat are not expected to result in significant or long-term consequences for individual marine mammals, or to contribute to adverse impacts on their populations.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of ''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.,* pile driving and removal, DTH, and rotary 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 high frequency species and phocids because predicted auditory injury zones are larger than for mid-frequency species. Auditory injury is unlikely to occur for mid-frequency species. 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). Thresholds have also been developed identifying the received level of in-air sound above which exposed pinnipeds would likely be behaviorally harassed.

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 (RMS SPL) of 120 dB (referenced to 1 micropascal (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.

OMAO's proposed activities includes the use of continuous (vibratory hammer/rotary drill/DTH mono-hammer) and impulsive (impact hammer/DTH mono-hammer) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1 μPa are applicable.

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). OMAO's proposed activity includes the use of impulsive (impact hammer/DTH mono-hammer) and non-impulsive (vibratory hammer/rotary drill/DTH mono-hammer) 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: *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 thresholds * (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1:* $L_{p,0\text{-}pk,flat}$: 219 dB; $L_{E,p,LF,24h}$: 183 dB	*Cell 2:* $L_{E,p,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	*Cell 3:* $L_{p,0\text{-}pk,flat}$: 230 dB; $L_{E,p,MF,24h}$: 185 dB	*Cell 4:* $L_{E,p,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	*Cell 5:* $L_{p,0\text{-}pk,flat}$: 202 dB; $L_{E,p,HF,24h}$: 155 dB	*Cell 6:* $L_{E,p,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	*Cell 7:* $L_{p,0\text{-}pk,flat}$: 218 dB; $L_{E,p,PW,24h}$: 185 dB	*Cell 8:* $L_{E,p,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	*Cell 9:* $L_{p,0\text{-}pk,flat}$: 232 dB; $L_{E,p,OW,24h}$: 203 dB	*Cell 10:* $L_{E,p,OW,24h}$: 219 dB.

* Dual metric 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 are recommended for consideration.

Note: Peak sound pressure level ($L_{p,0\text{-}pk}$) has a reference value of 1 μPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of 1μPa²s. In this Table, thresholds are abbreviated to be more reflective of International Organization for Standardization standards (ISO 2017). The subscript "flat" is being included to indicate peak sound pressure are flat weighted or unweighted within the generalized hearing range of marine mammals (*i.e.,* 7 Hz to 160 kHz). The subscript associated with cumulative sound exposure level 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 weighted cumulative sound exposure level 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 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 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.,* impact pile driving, vibratory pile driving, vibratory pile removal, rotary drilling, and DTH).

The intensity of underwater sound is greatly influenced by factors such as the size and type of piles, type of driver or drill, and the physical environment in which the activity takes place. In order to calculate distances to the Level A harassment and Level B harassment thresholds for the methods and piles being used in this project, NMFS used representative source levels (Table 6) from acoustic monitoring at other locations.

TABLE 6—SOURCE LEVELS FOR PROPOSED ACTIVITIES

Method	Pile type	Pile diameter	Peak (dB re 1 μPa)	RMS (dB re 1 μPa)	SEL (dB re 1 μPa 2-sec sec)	Reference
Vibratory Extraction	Steel pipe [1]	12″	171	155	155	Caltrans 2020, Table 1.2–1d.
	Timber	12″	NA	152	NA	NMFS 2021a, Table 4.
Vibratory Installation	Steel pipe	18″	NA	162 [2]	162	NAVFAC Mid-Atlantic 2019, Table 6–4.
	Sheet pile	Z26–700 [3]	NA	156	NA	NMFS 2019, p.37846.
	Steel pipe	30″	NA	167	167	Navy 2015, p.14.
	Casing/shaft for steel pipe.	36″	NA	175	175	NAVFAC Mid-Atlantic 2019, Table 6–4.
DTH Mono-hammer	Steel pipe	18″	172	167	146	Egger, 2021; Guan and Miner 2020; Heyvaert and Reyff, 2021.
	Casing/shaft for steel pipe.	36″ [4]	194	167	164	Reyff and Heyvaert 2019; Reyff 2020; and Denes et al. 2019.
Rotary Drilling	Steel pipe	18″ and 30″	NA	154	NA	Dazey et al. 2012.
Impact Install	Steel pipe [5]	18″	208	187	176	Caltrans 2020, Table 1.2–1a.
	Steel pipe	30″	211	196	181	NAVFAC Southwest 2020, p.A–4.
Vibratory Installation/Extraction	Steel pipe	16″	NA	162	162	NAVFAC Mid-Atlantic 2019, Table 6–4.

[1] 13-inch steel pipe used as proxy because data were not available for vibratory install/extract of 12-inch steel pipe.
[2] Although conservative, this 162 dB RMS is consistent with source level value used for 18-inch steel pipe in for Dry Dock 1 at Portsmouth Naval Shipyard (84 FR 13252, April 4, 2019).
[3] 30-inch steel pipe pile used as the proxy source for vibratory driving of steel sheet piles because data were not available for Z26–700 (Navy 2015 [p. 14]).
[4] Guidance from NMFS states: For each metric, select the highest SL provided among these listed references (Reyff and Heyvaert, 2019); (Reyff J., 2020); (Denes *et al.,* 2019).
[5] Impact install of 20-inch steel pipe used as proxy because data were not available for 18-inch.

Notes: All SPLs are unattenuated; dB = decibels; NA = Not applicable/Not available; RMS = root mean square; SEL = sound exposure level; Caltrans = California Department of Transportation; NAVFAC = Naval Facilities Engineering Systems Command; dB re 1 µPa = dB referenced to a pressure of 1 microPascal, measures underwater SPL. dB re 1 µPa2-sec = dB referenced to a pressure of 1 microPascal squared per second, measures underwater SEL.

Single strike SEL are the proxy source levels presented for impact pile driving and were used to calculate distances to PTS. All data referenced at 10 meters.

NMFS recommends treating DTH systems as both impulsive and continuous, non-impulsive sound source types 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 (Denes *et al.,* 2019; Guan and Miner, 2020; Reyff and Heyvaert, 2019; Reyff, 2020; Heyvaert and Reyff, 2021) (Table 1 includes number of piles and duration; Table 6 includes sound pressure levels for each pile type). At the time of the Navy's application submission, NMFS recommended that the RMS sound pressure level at 10 m should be 167 dB when evaluating Level B harassment (Heyvaert and Reyff, 2021 as cited in NMFS 2021b) for all DTH pile/hole sizes. However, since that time, NMFS has received additional clarifying information regarding DTH data presented in Reyff and Heyvaert (2019) and Reyff (2020) that allows for different RMS sound pressure levels at 10 m to be recommended for piles/holes of varying diameters. Therefore, NMFS proposes to use the following proxy RMS sound pressure levels at 10 m to evaluate Level B harassment from this sound source in this analysis (Table 6): 167 dB RMS for the 18-inch steel pipe piles (Heyvaert and Reyff, 2021) and 174 dB RMS for the 36 inch steel shafts (Reyff and Heyvaert, 2019; Reyff, 2020).

Level B Harassment Zones

Transmission loss (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:

$$TL = B * \log_{10} (R_1/R_2),$$

Where:

TL = transmission loss in dB
B = transmission loss coefficient; for practical spreading equals 15
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.

The recommended TL coefficient for most nearshore environments is the practical spreading value of 15. This value results in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions, known as practical spreading. As is common practice in coastal waters, here we assume practical spreading (4.5 dB reduction in sound level for each doubling of distance). Practical spreading was used to determine sound propagation for this project.

The TL model described above was used to calculate the expected noise propagation from vibratory pile driving/extracting, impact pile driving, rotary drilling, and DTH mono-hammer excavation using representative source levels to estimate the harassment zones or area exceeding the noise criteria. Utilizing the described practical spreading model, NMFS calculated the Level B isopleths shown in Tables 7 and 8. The largest calculated Level B isopleth, with the exception of concurrent activities, discussed below, is 46,416 m for the vibratory installation of the 36″ steel casing/shaft guide piles with rock socket to build the small boat floating dock; however, this distance is truncated by shoreline in all directions, so sound would not reach the full distance of the calculated Level B harassment isopleth. This activity would generate a maximum ensonified area of 3.31 km² (Table 8).

Level A Harassment Zones

The ensonified area associated with Level A harassment is technically more 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 going to be 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 are reported in Tables 1 (number piles/day and duration to drive a single pile) and 6 (source levels/distance to source levels). The resulting estimated isopleths are reported below in Tables 7 and 8. The largest Level A isopleth would be generated by the impact driving of the 30″ steel pipe pile at the proposed pier for high-frequency cetaceans (3,500.3 m; Table 7). This activity would have a maximum ensonified area of 6.49 km² (Table 7). Excluding concurrent activities, described below, the largest calculated Level B isopleth would be generated by the vibratory installation of the 36″ steel casing/shaft guide piles at the proposed small boat floating dock (46,416 m; Table 8), though as noted above, this distance would be truncated by shoreline in all directions, so sound would not reach the full distance of the calculated Level B harassment isopleth. This activity would have a maximum ensonified area of 3.31 km² (Table 8).

TABLE 7—MAXIMUM DISTANCES TO LEVEL A HARASSMENT AND LEVEL B HARASSMENT THRESHOLDS FOR IMPULSIVE SOUND

[Impact Hammer and DTH Mono-Hammer]

Structure	Pile size and type	Activity	Level A (PTS onset) harassment			Level B (behavioral) harassment
			Maximum distance to 185 dB SEL_{cum} threshold(m)/ area of harassment zone (km²) MF cetacean	Maximum distance to 155 dB SEL_{cum} threshold(m)/ area of harassment zone (km²) HF cetacean	Maximum distance to 185 dB SEL_{cum} threshold(m)/ area of harassment zone (km²) Phocid	Maximum distance 160 dB RMS SPL (120 dB DTH) threshold (m)/ area of harassment zone (km²) All Marine Mammals
Bulkhead construction (Combination Pipe/Z-pile).	18″ steel pipe	Impact Install	48.5/0.0037	1,624.7/0.66	729.9/0.21	631/0.16
		DTH Mono-Hammer	4.6/0.000033	154.2/0.028	69.3/0.0075	13,594/3.31
Trestle (Bents 1–18)	18″ steel pipe	Impact Install	25.2/0.0020	844.9/1.21	379.6/0.38	631/0.82
Trestle (Bent 19)	30″ steel pipe	Impact Install	65.8/0.014	2,205.0/3.72	990.7/1.47	2,512/4.44
Pier	30″ steel pipe	Impact Install	104.5/0.034	3,500.3/6.49	1,572.6/2.50	2,512/4.44
Gangway support piles (small boat floating dock).	18″ steel pipe	Impact Install	19.3/0.00058	644.8/0.17	289.7/0.049	631/0.16
Small Boat Floating Dock	36″ Steel Casing/Shaft with Rock Socket (Guide Pile).	Impact Install	35.5/0.002	1,189.5/0.45	534.4/0.12	3,415/2.14
		DTH Mono-Hammer	73/0.0084	2,444.5/1.21	1,098.2/0.42	13,594/3.31

Notes: dB = decibel; DTH = down-the-hole; dB RMS SPL = decibel root mean square sound pressure. level; dB SEL_{cum} = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; km² = square kilometer.

TABLE 8—MAXIMUM DISTANCES TO LEVEL A HARASSMENT AND LEVEL B HARASSMENT THRESHOLDS FOR CONTINUOUS

[Vibratory Hammer/Rotary Drill]

Structure	Pile size and type	Activity	Level A (PTS onset) harassment			Level B (behavioral) harassment
			Maximum distance to 198 dB SEL_{cum} threshold(m)/ area of harassment zone (km²) MF cetacean	Maximum distance to 173 dB SEL_{cum} threshold(m)/ area of harassment zone (km²) HF cetacean	Maximum distance to 201 dB SEL_{cum} threshold(m)/ area of harassment zone (km²) Phocid	Maximum distance 120 dB RMS SPL (120 dB DTH) threshold (m)/ area of harassment zone (km²) All Marine Mammals
Abandoned guide piles along bulkhead.	12″ steel pipe	Vibratory Extract	0.3/0	5.3/0.000044	2.2/0.000008	2,514/1.26
Floating dock demolition (Timber Guide Piles).	12″ timber	Vibratory Extract	0.2/0	4/0.000025	1.7/0.000005	1,359/0.53
Bulkhead construction (Combination Pipe/Z-pile).	18″ steel pipe	Vibratory Install	1.8/0.000005	29.7/0.0014	12.2/0.00023	6,310/3.31
	Steel sheet Z26–700	Vibratory Install	0.7/0.000001	11.8/0.00022	4.9/0.000038	2,512/1.26
	16″ steel pipe template piles	Vibratory Install/Extract	1.1/0.000002	18.7/0.00055	7.7/0.000093	6,310/3.31
Trestle (Bents 1–18)	18″ steel pipe	Vibratory Install	0.7/0.000002	11.8/0.00044	4.8/0.000072	6,310/8.53
	18″ steel pipe hole	Rotary Drill	0.0/0	0.6/0.000001	0.4/0.000001	1,848/2.98
	16″ steel pipe template piles	Vibratory Install/Extract	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Trestle (Bent 19)	30″ steel pipe	Vibratory Install	2.0/0.000013	33.2/0.0034	13.7/0.00059	13,594/8.53
	16″ steel pipe template piles	Vibratory Install/Extract	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Pier	30″ steel pipe	Vibratory Install	3.2/0.000032	52.8/0.0087	21.7/0.0015	13,594/8.53
	30″ hole	Rotary Drill	0.0/0	0.6/0.000001	0.4/0.000001	1,848/2.98
	16″ steel pipe template piles	Vibratory Install/Extract	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Fender Piles	16″ steel pipe	Vibratory Install	0.9/0.000003	14.3/0.00064	5.9/0.00011	6,310/8.53
	16″ steel pipe template piles	Vibratory Install/Extract	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Gangway support piles (small boat floating dock).	18″ steel pipe	Vibratory Install	0.7/0.000001	11.8/0.00022	4.8/0.000036	6,310/3.31
Small Boat Floating Dock	36″ Steel Casing/Shaft Guide Piles with Rock Socket.	Vibratory Install	5.2/0.000042	86.6/0.012	35.6/0.002	46,416/3.31
	16″ steel pipe template piles	Vibratory Install/Extract	1.1/0.000002	18.7/0.00055	7.7/0.000093	6,310/3.31

Notes: dB = decibel; dB RMS SPL = decibel root mean square sound pressure level; dB SELcum = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; km² = square kilometer.

Concurrent Activities

Simultaneous use of two or three impact, vibratory, or DTH hammers, or rotary drills, could occur (potential combinations described in Table 1) and may result in increased sound source levels and harassment zone sizes, given the proximity of the structure sites and the rules of decibel addition (Table 9).

NMFS (2018b) handles overlapping sound fields created by the use of more than one hammer differently for impulsive (impact hammer and Level A harassment zones for drilling with a DTH hammer) and continuous sound sources (vibratory hammer, rotary drill, and Level B harassment zones for drilling with a DTH hammer) (Table 9) and differently for impulsive sources with rapid impulse rates of multiple strikes per second (DTH) and slow impulse rates (impact hammering) (NMFS 2021). It is unlikely that the two impact hammers will strike at the same instant, and therefore, the SPLs will not be adjusted regardless of the distance between impact hammers. In this case, each impact hammer will be considered to have its own independent Level A harassment and Level B harassment zones.

When two DTH hammers operate simultaneously their continuous sound components overlap completely in time. When the Level B isopleth of one DTH sound source encompasses the isopleth of another DTH sound source, the sources are considered additive and combined using the rules for combining sound source levels generated during pile installation, described in Table 9.

TABLE 9—RULES FOR COMBINING SOUND SOURCE LEVELS GENERATED DURING PILE INSTALLATION

Hammer types	Difference in SSL	Level A zones	Level B zones
Vibratory, Impact	Any	Use impact zones	Use largest zone.
Impact, Impact	Any	Use zones for each pile size and number of strikes.	Use zone for each pile size.
Vibratory, Vibratory Rotary drill, or DTH, DTH	0 or 1 dB	Add 3 dB to the higher source level	Add 3 dB to the higher source level.
	2 or 3 dB	Add 2 dB to the higher source level	Add 2 dB to the higher source level.
	4 to 9 dB	Add 1 dB to the higher source level	Add 1 dB to the higher source level.
	10 dB or more	Add 0 dB to the higher source level	Add 0 dB to the higher source level.

Note: The method is based on a method created by Washington State Department of Transportation (WSDOT 2020) and has been updated and modified by NMFS.

When two continuous noise sources have overlapping sound fields, there is potential for higher sound levels than for non-overlapping sources. When two or more continuous noise sources are used simultaneously, and the isopleth of one sound source encompasses the isopleth of another sound source, the sources are considered additive and source levels are combined using the rules of decibel addition (Table 9; NMFS 2021c).

For simultaneous use of three or more continuous sound sources, NMFS first identifies the three overlapping sources with the highest sound source level. Then, using the rules for combining sound source levels generated during pile installation (Table 9), NMFS determines the difference between the lower two source levels, and adds the appropriate number of decibels to the higher source level of the two. Then, NMFS calculates the difference between the newly calculated source level and the highest source level of the three identified in the first step, and again, adds the appropriate number of decibels to the highest source level of the three.

For example, with overlapping isopleths from 24″, 36″, and 42″ diameter steel pipe piles with sound source levels of 161, 167, and 168 dB RMS respectively, NMFS would first calculate the difference between the 24″ and 36″ source levels (167 dB − 161 dB = 6 dB. Then, given that the difference is 6 dB, as described in Table 9, NMFS would then add 1 dB to the highest of the two sound source levels (167 dB), for a combined noise level of 168 dB. Next, NMFS calculates the difference between the newly calculated 168 dB and the sound source level of the 42″ steel pile (168 dB). Since 168 dB − 168 dB = 0 dB, 3 dB is added to the highest value (168 dB + 3 dB = 171 dB). Therefore, for the combination of 24″, 36″, and 42″ steel pipe piles, zones would be calculated using a combined sound source level of 171 dB.

If an impact hammer and a vibratory hammer are used concurrently, the largest Level B harassment zone generated by either hammer would apply, and the Level A harassment zone generated by the impact hammer would apply. Simultaneous use of two or more impact hammers does not require source level additions as it is unlikely that two hammers would strike at the same exact instant. Thus, sound source levels are not adjusted regardless of distance, and the zones for each individual activity apply.

For activity combinations that do require sound source level adjustment, Table 10 shows the revised proxy source levels for concurrent activities based upon the rules for combining sound source levels generated during pile installation, described in Table 9. Resulting Level A harassment and Level B harassment zones for concurrent activities are summarized in Table 11. The maximum Level A harassment isopleth would be 2,444.5 m for high-frequency cetaceans generated by concurrent use of two vibratory pile drivers and DTH mono-hammer during installation of 36″ shafts for the small boat floating dock (Table 11). The maximum Level B harassment isopleth would be 54,117 m for the concurrent use of DTH mono-hammer and two vibratory pile drivers for installation of 36″ shafts for the small boat floating dock (Table 11).

TABLE 10—PROXY VALUES FOR SIMULTANEOUS USE OF NON-IMPULSIVE SOURCES

Structure	Activity and proxy	New proxy
Bulkhead	Vibratory Install 16-inch steel pipe piles—162 dB RMS	165 dB RMS
	Vibratory Install 18-inch steel pipe piles—162 dB RMS.	
	Vibratory Install 18-inch steel pipe piles—162 dB	168 dB RMS
	DTH Install 18-inch steel pipe piles—167 dB.	

TABLE 10—PROXY VALUES FOR SIMULTANEOUS USE OF NON-IMPULSIVE SOURCES—Continued

Structure	Activity and proxy	New proxy
Bulkhead and Trestle	Vibratory Install/extract 16-inch steel pipe piles—162 dB RMS Vibratory Install Z26–700 sheet piles—156 dB RMS. Vibratory Install 18-inch steel pipe piles—162 dB RMS.	166 dB RMS
	Vibratory Install/extract 16-inch steel pipe piles—162 dB RMS Vibratory Install Z26–700 sheet piles—156 dB RMS. Rotary Drill 18-inch steel pipe piles—154 dB RMS.	163 dB RMS
Pier	Vibratory Install/extract 16-inch steel pipe piles—162 dB RMS Vibratory Install 30-inch steel pipe piles—167 dB RMS.	168 dB RMS
	Vibratory Install/extract 16-inch steel pipe piles—162 dB RMS Rotary Drill 30-inch steel pipe piles—154 dB RMS.	163 dB RMS
Pier Fender Piles and Small Boat Floating Dock.	Vibratory Install/extract 16-inch steel pipe piles—162 dB RMS Vibratory Install 18-inch steel pipe piles—162 dB RMS.	165 dB RMS
	Vibratory Install/extract 16-inch steel pipe piles—162 dB RMS Vibratory Install 36-inch steel pipe piles—175 dB RMS.	175 dB RMs
	Vibratory Install 36-inch steel casing—175 dB DTH Install 36-inch steel casing—167 dB.	176 dB

TABLE 11—MAXIMUM DISTANCES TO LEVEL A AND LEVEL B HARASSMENT THRESHOLDS FOR CONCURRENT ACTIVITIES

Structure	Pile sizes and type	Activity	Total production days	Level A (PTS onset) harassment			Level B (behavioral) harassment
				Maximum distance to continuous 198 dB SEL_{cum}; DTH 185 dB SEL_{cum} thresholds (m)/area of harassment zone (km²) MF cetacean	Maximum distance to continuous 173 dB SEL_{cum}; DTH 155 dB SEL_{cum} thresholds (m)/Area of harassment zone (km²) HF cetacean	Maximum distance to continuous 201 dB SEL_{cum}; DTH 185 dB SEL_{cum} thresholds (m)/area of harassment zone (km²) Phocid	Maximum distance 120 dB RMS SPL threshold (m)/area of harassment zone (km²) (continuous and DTH)
Bulkhead	Install of 16-inch and 18-inch steel pipe piles.	Install/Extract using two Vibratory Pile Drivers.	15	3.7/0.000021	61.6/0.0060.	25.3/0.001.	10,000/3.31
	Install of 18-inch steel pile	Install using two Vibratory Pile Drivers and DTH mono-hammer.	12	Vibratory: 1.8/0.000005 DTH: 4.6/0.000033.	Vibratory: 29.7/0.0014 DTH: 154.2/0.028.	Vibratory: 12.2/0.00023 DTH: 69.3/0.0075.	15,848.93/3.31
Bulkhead and Trestle.	Install of 16-inch and 18-inch steel pipe and Z26–700 steel sheet piles.	Install/Extract using three Vibratory Pile Drivers.	15	4.1/0.000026	68.3/0.0073.	28.1/0.0012.	10,000/3.31
		Install/Extract using two Vibratory Pile Drivers and a Rotary Drill.	14	2.9/0.000013	47.8/0.0036.	19.7/0.00061.	7,356/3.31
Pier	Install of 16- and 30-inch steel pipe.	Install/Extract using two Vibratory Pile Drivers.	30	5.9/0.00011	97.6/0.030.	40.1/0.0050.	15,849/8.53
		Install/Extract using a vibratory pile driver and rotary drill.	27	2.0/0.0031	33.1/0.0034.	13.6/0.00058.	7,356/8.53
Pier Fender Piles and Gangway Support for Small Boat Floating Dock.	Install of 16- and 18-inch steel pipe.	Install/Extract using two Vibratory Pile Drivers.	17	2.3/0.000017	38.8/0.0047.	16.0/0.0008.	10,000/8.53
	Install of 16-inch steel pipe and 36-inch shafts.	Install using two Vibratory Pile Drivers.	20	9.6/0.00029	159.5/0.080.	65.6/0.013.	46,416/8.53

TABLE 11—MAXIMUM DISTANCES TO LEVEL A AND LEVEL B HARASSMENT THRESHOLDS FOR CONCURRENT ACTIVITIES—Continued

Structure	Pile sizes and type	Activity	Total production days	Level A (PTS onset) harassment			Level B (behavioral) harassment
				Maximum distance to continuous 198 dB SEL_{cum}; DTH 185 dB SEL_{cum} thresholds (m)/area of harassment zone (km²) MF cetacean	Maximum distance to continuous 173 dB SEL_{cum}; DTH 155 dB SEL_{cum} thresholds (m)/Area of harassment zone (km²) HF cetacean	Maximum distance to continuous 201 dB SEL_{cum}; DTH 185 dB SEL_{cum} thresholds (m)/area of harassment zone (km²) Phocid	Maximum distance 120 dB RMS SPL threshold (m)/area of harassment zone (km²) (continuous and DTH)
	Install of 36-inch shafts	Install using two Vibratory Pile Drivers and DTH mono-hammer.	2	Vibratory: 5.2/ 0.000042 DTH: 73/0.0084.	Vibratory: 86.6/ 0.012 DTH: 2,444.5/ 1.21.	Vibratory: 35.6/ 0.002 DTH: 1,098.2/ 0.42.	DTH: 54,117/ 8.53

dB RMS SPL = decibel root mean square sound pressure level; dB SEL_{cum} = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; km² = square kilometer.

The Level B harassment zones in Table 11 were calculated based upon the adjusted source levels for simultaneous construction activities (Table 10). OMAO has not proposed any scenarios for concurrent work in which the Level A harassment isopleths would need to be adjusted from that calculated for single sources. Regarding implications for Level A harassment zones when multiple vibratory hammers, or vibratory hammers and rotary drills, are operating concurrently, given the small size of the estimated Level A harassment isopleths for all hearing groups during vibratory pile driving, the zones of any two hammers or hammer and drill are not expected to overlap. Therefore, compounding effects of multiple vibratory hammers operating concurrently are not anticipated, and NMFS has treated each source independently.

Regarding implications for Level A harassment zones when vibratory hammers are operating concurrently with a DTH hammer, combining isopleths for these sources is difficult for a variety of reasons. First, vibratory pile driving relies upon non-impulsive PTS thresholds, while DTH hammers use impulsive thresholds. Second, vibratory pile driving accounts for the duration to drive a pile, while DTH account for strikes per pile. Thus, it is difficult to measure sound on the same scale and combine isopleths from these impulsive and non-impulsive, continuous sources. Therefore, NMFS has treated each source independently at this time.

Regarding implications for impact hammers used in combination with a vibratory hammer or DTH hammer, the likelihood of these multiple sources' isopleths completely overlapping in time is slim primarily because impact pile driving is intermittent. Furthermore, non-impulsive, continuous sources rely upon non-impulsive TTS/PTS thresholds, while impact pile driving uses impulsive thresholds, making it difficult to calculate isopleths that may overlap from impact driving and the simultaneous action of a non-impulsive continuous source or one with multiple strikes per second. Thus, with such slim potential for multiple different sources' isopleths to overlap in space and time, specifications should be entered as ''normal'' into the User Spreadsheet for each individual source separately.

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. Potential exposures to construction noise for each acoustic threshold were estimated using marine mammal density estimates (N) from the Navy Marine Species Density Database (NMSDD) (Navy, 2017a). OMAO evaluated data reflecting monthly densities of each species to determine minimum, maximum, and average annual densities within Narragansett Bay. Table 12 summarizes the average annual densities of species that may be impacted by the proposed construction activities, with the exception of harbor seals as the density value for this species in the table represents the maximum density value for seals.

TABLE 12—AVERAGE DENSITIES BY SPECIES USED IN EXPOSURE ANALYSIS

Species	Average density in project area (species per km²)
Atlantic White-sided Dolphin	0.003
Common Dolphin	0.011
Harbor Porpoise	0.012
Harbor Seal	0.623
Gray Seal	0.131
Harp Seal	0.05
Hooded Seal	0.001

The NMSDD models reflect densities for seals as a guild due to difficulty in distinguishing these species at sea. Harbor seal is expected to be the most common pinniped in Narragansett Bay with year-round occurrence (Kenney and Vigness-Raposa, 2010). Therefore, OMAO used the maximum density for the seal guild for harbor seal. Gray seals are the second most common seal to be observed in Rhode Island waters and, based on stranding records, are commonly observed during the spring to early summer and occasionally observed during other months of the year (Kenney, 2020). Therefore, the average density for the seal guild was used for gray seal occurrence in Narragansett Bay. Minimum densities for the seal guild were used for harp seal and hooded seals as they are considered occasional visitors in Narragansett Bay but are rare in comparison to harbor and gray seals (Kenney, 2015). NMFS has carefully reviewed and concurs with the use of these densities proposed by OMAO.

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.

For each species, OMAO multiplied the average annual density by the largest ensonified area (Tables 7, 8, 11) and the maximum days of activity (Tables 7, 8, 11) (take estimate = N × ensonified area × days of pile driving) in order to calculate estimated take by Level A harassment and Level B harassment. OMAO used the pile type, size, and construction method that produce the largest isopleth to estimate exposure of marine mammals to noise impacts. The exposure estimate was rounded to the nearest whole number at the end of the calculation. Table 13 shows the total estimated number of takes for each species by Level A harassment and Level B harassment for individual and concurrent activities as well as estimated take as a percent of stock abundance. Estimated take by activity type for individual and concurrent equipment use for each species is shown in Tables 6–12 through 6–17 in the application. OMAO is requesting take by Level A harassment of 4 species (harbor porpoise, harbor seal, gray seal, and harp seal) incidental to construction activities using one equipment type. In addition, OMAO is requesting one take of harbor seals by Level A harassment during concurrent use of a DTH mono-hammer and two vibratory hammers for installation of 36″ shafts for the small boat floating dock.

To account for group size, OMAO conservatively increased the estimated take by Level B harassment from 9 to 16 Atlantic white-sided dolphins, as the calculated take was less than the documented average group size (NUWC, 2017). NMFS agrees with this approach, and is proposing to authorize 16 takes by Level B harassment of Atlantic white-sided dolphins. The species density for the hooded seal was too low to result in any calculated estimated takes. In order to be conservative, OMAO requested, and NMFS is proposing to authorize, 1 take by Level B harassment of hooded seals for each month of construction activity when this species may occur in the project area. Hooded seals may occur in the project area from January through May which is a total of 5 months. Therefore, OMAO is requesting, and NMFS is proposing to authorize, 5 takes by Level B harassment of hooded seals for individual construction activities and 5 takes by Level B harassment of hooded seals for concurrent construction activities for a total of 10 takes by Level B harassment of hooded seals.

TABLE 13—TOTAL ESTIMATED TAKE BY LEVEL A HARASSMENT AND LEVEL B HARASSMENT FOR INDIVIDUAL AND CONCURRENT ACTIVITIES

Species	Individual activities		Concurrent activities		Total requested take	% of stock
	Level A harassment	Level B harassment	Level A harassment	Level B harassment		
Atlantic white-sided dolphin	0	6	0	3	16 [1]	0.2
Short-beaked common dolphin	0	26	0	13	39	0.2
Harbor Porpoise	2	27	0	13	42	0.044
Harbor Seal	55	1,478	1	589	2,123	3.46
Gray Seal	11	312	0	125	448	1.64
Harp Seal	4	117	0	47	168	0.002
Hooded Seal	0	[2] 5	0	[2] 5	10	0.002

[1] Requested take has been increased to mean group size (NUWC, 2017). Mean group size was not used for those take estimates that exceeded the mean group size.

[2] OMAO is conservatively requesting 1 take by Level B harassment of hooded seal per month of construction when this species may occur in the project area (January through May).

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.

NMFS proposes the following mitigation measures be implemented for OMAO's pile installation and removal activities.

Shutdown Zones

OMAO will establish shutdown zones for all pile driving activities. The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Shutdown zones would be based upon the Level A harassment zone for each pile size/type and driving method, as shown in Table 14. If the

Level A harassment zone is too large to monitor, the shutdown zone would be limited to a radial distance of 200 m from the acoustic source (86 FR 71162, December 15, 2021; 87 FR 19886, April 6, 2022). For example, the largest Level A harassment zone for high-frequency cetaceans extends approximately 2,444,5 m from the source during DTH mono-hammer excavation while installing the 36-in steel shafts for the small boat floating dock (Table 7). OMAO plans to maintain maximum shutdown zone of 200 m for that activity, consistent with prior projects in the area (87 FR 11860, March 2, 2022).

A minimum shutdown zone of 10 m would be applied for all in-water construction activities if the Level A harassment zone is less than 10 m (*i.e.,* vibratory pile driving, drilling). The 10 m shutdown zone would also serve to protect marine mammals from collisions with project vessels during pile driving and other construction activities, such as barge positioning or drilling. If an activity 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 indicated in Table 14 or 15 minutes have passed without re-detection of the animal. Construction activities must 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.

If a marine mammal enters the Level B harassment zone, in-water work would proceed and PSOs would document the marine mammal's presence and behavior.

TABLE 14—SHUTDOWN ZONES AND LEVEL B HARASSMENT ZONES BY ACTIVITY

Pile type/size	Driving method	Shutdown zone (m)		Level B harassment zone (m)
		Cetaceans	Pinnipeds	All marine mammals
12″ steel pipe	Vibratory extraction	10	10	2,600.
12″ timber	Vibratory extraction	15	10	3,500.
16″ steel pipe	Vibratory install/extract	20	10	6,400.
18″ steel pipe	Impact install	[1] 200	[1] 200	640.
	Vibratory install	30	15	6,400.
	DTH Mono-hammer	[1] 200	[1] 200	Maximum harassment zone.[2]
	Rotary drilling 18″ holes	10	10	1,900.
Z26–700 steel sheets	Vibratory install	15	10	2,600.
30″ steel pipe	Impact install	[1] 200	[1] 200	2,600.
	Vibratory install	55	25	Maximum harassment zone.[2]
30″ steel pipe	Rotary drilling	10	10	1,900.
36″ steel pipe	Impact install	[1] 200	[1] 200	3,400.
	Vibratory install	90	40	Maximum harassment zone [2]
36″ shafts	DTH Mono-hammer	[1] 200	[1] 200	Maximum harassment zone.[2]

[1] Distance to shutdown zone distances implemented for other similar projects in the region (NAVFAC, 2019).
[2] Harassment zone would be truncated due to the presence of intersecting land masses and would encompass a maximum area of 3.31 km^2.

Protected Species Observers

The placement of protected species observers (PSOs) during all construction activities (described in the Proposed Monitoring and Reporting section) would ensure that the entire shutdown zone is visible. Should environmental conditions deteriorate such that the entire shutdown zone would not be visible (*e.g.,* fog, heavy rain), pile driving would be delayed until the PSO is confident marine mammals within the shutdown zone could be detected.

Monitoring for Level A Harassment and Level B Harassment

PSOs would monitor the full shutdown zones and the remaining Level A harassment and the Level B harassment zones to the extent practicable. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable 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.

Pre-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 would observe the shutdown, Level A harassment, and Level B harassment for a period of 30 minutes. Pile driving may commence following 30 minutes of observation when the determination is made that the shutdown zones are clear of marine mammals. If a marine mammal is observed within the shutdown zones listed in Table 14, construction activity would be delayed until the animal has voluntarily exited and been visually confirmed beyond the shutdown zone indicated in Table 14 or has not been observed for 15 minutes. When a marine mammal for which Level B harassment take is authorized is present in the Level B harassment zone, activities would begin and Level B harassment take would be recorded. A determination that the shutdown zone is clear must be made during a period of good visibility (*i.e.,* the entire shutdown zone and surrounding waters are visible). If the shutdown zone is obscured by fog or poor lighting conditions, in-water construction activity would not be initiated until the entire shutdown zone is visible.

Soft-Start

Soft-start procedures are used to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, contractors would be required to provide an initial set of three strikes from the hammer at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strike sets. Soft start would be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.

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 action; or (4) biological or behavioral context of exposure (*e.g.,* age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or 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 during in-water construction activities would be conducted by PSOs meeting NMFS' standards and in a manner consistent with the following:

- Independent PSOs (*i.e.,* employees of the entity conducting construction activities may not serve as PSOs) who have no other assigned tasks during monitoring periods would be used;
- At least one PSO would have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization;
- Other PSOs may substitute education (degree in biological science or related field) or training for experience; and
- Where a team of three or more PSOs is required, a lead observer or monitoring coordinator would be designated. The lead observer would be required to have prior experience working as a marine mammal observer during construction.

PSOs would 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 the 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 not 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 would be conducted by a minimum of two trained PSOs positioned at suitable vantage points. Any activity for which the Level B harassment isopleth would exceed 1,900 meters would require a minimum of three PSOs to effectively monitor the entire Level B harassment zone. PSOs would likely be located on Gould Island South, Gould Island Pier, Coddington Point, Bishop Rock, Breakwater, or Taylor Point as shown in Figure 11–1 in the application. All PSOs would have access to high-quality binoculars, range finders to monitor distances, and a compass to record bearing to animals as well as radios or cells phones for maintaining contact with work crews.

Monitoring would be conducted 30 minutes before, during, and 30 minutes after all in water construction activities. In addition, PSOs would record all incidents of marine mammal occurrence, regardless of distance from activity, and would 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.

OMAO and the Navy shall conduct briefings between construction supervisors and crews, PSOs, OMAO and Navy staff prior to the start of all pile driving activities and when new personnel join the work. These briefings would explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

Hydro-Acoustic Monitoring

OMAO would implement in situ acoustic monitoring efforts to measure SPLs from in-water construction activities by collecting and evaluating acoustic sound recording levels during activities. Stationary hydrophones would be placed 33 ft (10 m) from the noise source, in accordance with NMFS' most recent guidance for the collection of source levels. If there is the potential for Level A harassment, a second monitoring location would be set up at an intermediate distance between cetacean/phocid shutdown zones and Level A harassment zones. Hydrophones would be deployed with a static line from a stationary vessel. Locations of hydro-acoustic recordings would be collected via GPS. A depth sounder and/or weighted tape measure would be used to determine the depth of the water. The hydrophone would be attached to a weighted nylon cord or chain to maintain a constant depth and distance from the pile area. The nylon cord or chain would be attached to a float or tied to a static line.

Each hydrophone would be calibrated at the start of each action and would be checked frequently to the applicable standards of the hydrophone manufacturer. Environmental data would be collected, including but not limited to, the following: wind speed and direction, air temperature, humidity, surface water temperature, water depth, wave height, weather conditions, and other factors that could contribute to influencing the airborne and underwater sound levels (*e.g.,* aircraft, boats, *etc.*). The chief inspector would supply the acoustics specialist with the substrate composition, hammer or drill model and size, hammer or drill energy settings and any changes to those settings during the piles being monitored, depth of the pile being driven or shaft excavated, and blows per foot for the piles monitored. For acoustically monitored piles and shafts, data from the monitoring locations would be post-processed to obtain the following sound measures:

- Maximum peak pressure level recorded for all the strikes associated with each pile or shaft, expressed in dB re 1 μPa. For pile driving and DTH mono-hammer excavation, this maximum value would originate from the phase of pile driving/drilling during which hammer/drill energy was also at maximum (referred to as Level 4);
- From all the strikes associated with each pile occurring during the Level 4 phase these additional measures would be made:

(1) mean, median, minimum, and maximum RMS pressure level in [dB re 1 μPa];

(2) mean duration of a pile strike (based on the 90 percent energy criterion);

(3) number of hammer strikes;

(4) mean, median, minimum, and maximum single strike SEL in [dB re μPa2 s];

- Cumulative SEL as defined by the mean single strike SEL + 10*log10 (number of hammer strikes) in [dB re μPa2 s];
- Median integration time used to calculate SPL RMS;
- A frequency spectrum (pressure spectral density) in [dB re μPa2 per Hertz {Hz}] based on the average of up to eight successive strikes with similar sound. Spectral resolution would be 1 Hz, and the spectrum would cover nominal range from 7 Hz to 20 kHz;
- Finally, the cumulative SEL would be computed from all the strikes associated with each pile occurring during all phases, *i.e.,* soft-start, Level 1 to Level 4. This measure is defined as the sum of all single strike SEL values. The sum is taken of the antilog, with log10 taken of result to express in [dB re μPa2 s].

Hydro-acoustic monitoring would be conducted for at least 10% and up to 10 of each different pile type for each method of installation as shown in Table 13–1 in the application All acoustic data would be analyzed after the project period for pile driving, rotary drilling, and DTH mono-hammer excavation events to confirm SPLs and rate of transmission loss for each construction activity.

Reporting

OMAO would 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 would include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report would 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, vibratory, down-the-hole, *etc.*);

(2) Total duration of time for each pile (vibratory driving) number of strikes for each pile (impact driving); and

(3) For down-the-hole drilling, duration of operation for both impulsive and non-pulse components.

- PSO locations during marine mammal monitoring; and
- 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.

For each observation of a marine mammal, the following would be reported:

- Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting;
- Time of sighting;
- 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;
- Distance and location of each observed marine mammal relative to the pile being driven or hole being drilled for each sighting;
- Estimated number of animals (min/max/best estimate);
- Estimated number of animals by cohort (adults, juveniles, neonates, group composition, *etc.*);
- Animal's closest point of approach and amount of time spent in harassment zone;
- 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 specified actions that ensued, and resulting changes in behavior of the animal(s), if any.

If no comments are received from NMFS within 30 days, the draft report would constitute the final reports. If comments are received, a final report addressing NMFS' comments would be required to be submitted within 30 days after receipt of comments. All PSO datasheets and/or raw sighting data 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, OMAO would report the incident to the Office of Protected Resources (OPR) (*PR.ITP.MonitoringReports@noaa.*gov), NMFS and to the Northeast Region (GARFO) regional stranding coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, OMAO would immediately cease the specified activities until NMFS 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. OMAO would not resume their activities until notified by NMFS.

The report would include the following information:

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

OMAO would also provide a hydro-acoustic monitoring report based upon hydro-acoustic monitoring conducted during construction activities. The hydro-acoustic monitoring report would include:

- Hydrophone equipment and methods: recording device, sampling rate, distance (meter) from the pile where recordings were made; depth of water and recording device(s);
- Type and size of pile being driven, substrate type, method of driving during recordings (*e.g.,* hammer model and energy), and total pile driving duration;
- Whether a sound attenuation device is used and, if so, a detailed description of the device used and the duration of its use per pile;
- For impact pile driving and/or DTH mono-hammer excavation (per pile): Number of strikes and strike rate; depth of substrate to penetrate; pulse duration and mean, median, and maximum sound levels (dB re: 1 μPa): root mean square sound pressure level (SPL_{rms}); cumulative sound exposure level (SEL_{cum}), peak sound pressure level (SPL_{peak}), and single-strike sound exposure level (SEL_{s-s});
- For vibratory driving/removal and/or DTH mono-hammer excavation (per pile): Duration of driving per pile; mean, median, and maximum sound levels (dB re: 1 μPa): root mean square sound pressure level (SPL_{rms}), cumulative sound exposure level (SEL_{cum}) (and timeframe over which the sound is averaged);
- One-third octave band spectrum and power spectral density plot; and
- General daily site conditions, including date and time of activities, water conditions (*e.g.,* sea state, tidal state), and weather conditions (*e.g.,* percent cover, visibility.

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 OMAO vessel relocation project have the potential to disturb or displace marine mammals. Specifically, the project activities may result in take, in the form of Level B harassment, and for harbor porpoise, harbor seal, gray seal, and harp seal, Level A harassment, from underwater sounds generated from pile driving and removal, DTH, and rotary drilling. Potential takes could occur if individuals are present in zones ensonified above the thresholds for Level B harassment, identified above, when these activities are underway.

No serious injury or mortality would be expected, even in the absence of required mitigation measures, given the nature of the activities. Further, no take by Level A harassment is anticipated for Atlantic white-sided dolphins, short-beaked common dolphins, and harp seals due to the application of planned mitigation measures, such as shutdown zones that encompass the Level A harassment zones for these species. The potential for harassment would be minimized through the construction method and the implementation of the planned mitigation measures (see Proposed Mitigation section).

Take by Level A harassment is proposed for 4 species (harbor porpoise, harbor seal, gray seal, and harp seal) as the Level A harassment zones exceed the size of the shutdown zones for specific construction scenarios. Therefore, there is the possibility that an animal could enter a Level A harassment zone without being detected, and remain within that zone for a duration long enough to incur PTS. Any take by Level A harassment is expected to arise from, at most, a small degree of PTS (*i.e.,* minor degradation of hearing capabilities within regions of hearing that align most completely with the energy produced by impact pile driving such as the low-frequency region below 2 kHz), not severe hearing impairment or impairment within the ranges of greatest hearing sensitivity. Animals would need to be exposed to higher levels and/or longer duration than are expected to occur here in order to incur any more than a small degree of PTS.

Further, the amount of take proposed for authorization by Level A harassment is very low for all marine mammal stocks and species. For three species, Atlantic white-sided dolphin, short-beaked common dolphin, and harp seal, NMFS anticipates and proposes to authorize no Level A harassment take over the duration of OMAO's planned activities; for the other four stocks, NMFS proposes to authorize no more than 56 takes by Level A harassment for any stock. If hearing impairment occurs, it is most likely that the affected animal would lose only a few decibels in its hearing sensitivity. Due to the small degree anticipated, any PTS potential incurred would not be expected to affect the reproductive success or survival of any individuals, much less result in adverse impacts on the species or stock.

Additionally, some subset of the individuals that are behaviorally harassed could also simultaneously incur some small degree of TTS for a short duration of time. However, since the hearing sensitivity of individuals that incur TTS is expected to recover completely within minutes to hours, it is unlikely that the brief hearing impairment would affect the individual's long-term ability to forage and communicate with conspecifics, and would therefore not likely impact reproduction or survival of any individual marine mammal, let alone adversely affect rates of recruitment or survival of the species or stock.

As described above, NMFS expects that marine mammals would likely move away from an aversive stimulus, especially at levels that would be expected to result in PTS, given sufficient notice through use of soft start. OMAO would also shut down pile driving activities if marine mammals enter the shutdown zones (see Table 14) further minimizing the likelihood and degree of PTS that would be incurred.

Effects on individuals that are taken by Level B harassment in the form of behavioral disruption, on the basis of reports in the literature as well as monitoring from other similar activities, would likely be limited to reactions such as avoidance, increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.,* Thorson and Reyff 2006). Most likely, individuals would simply move away from the sound source and temporarily avoid the area where pile driving is occurring. If sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area while the activities are occurring. We expect that any avoidance of the project areas by marine mammals would be temporary in nature and that any marine mammals that avoid the project areas during construction would not be permanently displaced. Short-term avoidance of the project areas and energetic impacts of interrupted foraging or other important behaviors is unlikely to affect the reproduction or survival of individual marine mammals, and the effects of behavioral disturbance on individuals is not likely to accrue in a manner that would affect the rates of recruitment or survival of any affected stock.

Since June 2022, an Unusual Mortality Event (UME) has been declared for Northeast pinnipeds in which elevated numbers of sick and dead harbor seals and gray seals have been documented along the southern and central coast of Maine (NOAA Fisheries, 2022). As of October 18, 2022, the date of writing of this notice, 22 grays seals and 230 harbor seals have stranded. However, we do not expect takes that may be authorized under this rule to exacerbate or compound upon these ongoing UMEs. As noted previously, no injury, serious injury, or mortality is expected or will be authorized, and takes of harbor seal and gray seal will be reduced to the level of least practicable adverse impact through the incorporation of the required mitigation measures. For the WNA stock of gray seal, the estimated U.S. stock abundance is 27,300 animals (estimated 424,300 animals in the Canadian portion of the stock). Given that only 448 takes may be authorized for this stock, we do not expect this authorization to exacerbate or compound upon the ongoing UME. For the WNA stock of harbor seals, the estimated abundance is 61,336 individuals. The estimated M/SI for this stock (339) is well below the PBR (1,729) (Hayes *et al.,* 2020). As such, the takes of harbor seal that may be authorized are not expected to exacerbate or compound upon the ongoing UME.

The project is also not expected to have significant adverse effects on affected marine mammals' habitats. No ESA-designated critical habitat or biologically important areas (BIAs) are located within the project area. The project activities would not modify existing marine mammal habitat for a significant amount of time. The activities may cause a low level of turbidity in the water column and some fish may 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. Seasonal nearshore marine mammal surveys were conducted at NAVSTA Newport from May 2016 to February 2017, and several harbor seal haul outs were identified in Narragansett Bay, but no pupping was observed.

For all species and stocks, take would occur within a limited, relatively confined area (Coddington Cove) of the stock's range. Given the availability of suitable habitat nearby, any displacement of marine mammals from the project areas is not expected to affect marine mammals' fitness, survival, and reproduction due to the limited geographic area that would be affected in comparison to the much larger habitat for marine mammals within Narragansett Bay and outside the bay along the Rhode Island coasts. Level A harassment and Level B harassment would be reduced to the level of least practicable adverse impact to the marine mammal species or stocks and their habitat through use of mitigation measures described herein.

Some individual marine mammals in the project area, such as harbor seals, may be present and be subject to repeated exposure to sound from pile driving activities on multiple days. However, pile driving and extraction is not expected to occur on every day, and these individuals would likely return to normal behavior during gaps in pile driving activity within each day of construction and in between work days. As discussed above, there is similar transit and haulout habitat available for marine mammals within and outside of the Narragansett Bay along the Rhode Island coast, outside of the project area, where individuals could temporarily relocate during construction activities to reduce exposure to elevated sound levels from the project. Therefore, any behavioral effects of repeated or long duration exposures are not expected to negatively affect survival or reproductive success of any individuals. Thus, even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any effects on rates of reproduction and survival of the stock.

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 proposed for authorization;
- No Level A harassment of Atlantic white-sided dolphins, short-beaked common dolphins, or harp seals is proposed;
- The small Level A harassment takes of harbor porpoises, harbor seals, gray seals, and hooded seals proposed for authorization are expected to be of a small degree;
- The intensity of anticipated takes by Level B harassment is relatively low for all stocks. Level B harassment would be primarily in the form of behavioral disturbance, resulting in avoidance of the project areas around where impact or vibratory pile driving is occurring, with some low-level TTS that may limit the detection of acoustic cues for relatively brief amounts of time in relatively confined footprints of the activities;
- Nearby areas of similar habitat value (*e.g.,* transit and haulout habitats) within and outside of Narragansett Bay are available for marine mammals that may temporarily vacate the project area during construction activities;
- The specified activity and associated ensonifed areas do not include habitat areas known to be of special significance (BIAs or ESA-designated critical habitat);
- 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;
- The ensonified areas are very small relative to the overall habitat ranges of all species and stocks, and would not adversely affect ESA-designated critical habitat for any species or any areas of known biological importance;

• The lack of anticipated significant or long-term negative effects to marine mammal habitat; and

• The efficacy of the mitigation measures in reducing the effects of the specified activities on all species and stocks.

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 would have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under 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 fewer 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.

The instances of take NMFS proposes to authorize is below one-third of the estimated stock abundance for all impacted stocks (Table 13). (In fact, take of individuals is less than 4% of the abundance for all affected stocks.) The number of animals that we expect to authorize to be taken would be considered small relative to the relevant stocks or populations, even if each estimated take occurred to a new individual. Furthermore, these takes are likely to only occur within a small portion of the each stock's range and the likelihood that each take would occur to a new individual is low.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals 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 Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is proposed for authorization or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to OMAO for conducting pile driving activities incidental to the NOAA vessel relocation project at Naval Station Newport, RI from February 1, 2024 to January 31, 2025, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.*

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed pile driving activities. We also request comment on the potential renewal of this proposed IHA 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 this 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 Activities section of this notice is planned or (2) the activities as described in the Description of Proposed Activities 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: October 27, 2022.

Kimberly Damon-Randall,

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

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

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South Atlantic Fishery Management Council; Public Meeting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and