E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XF200]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Port of Adak Pier 5 Improvements Project at Adak Island, Alaska

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 Aleut Corporation (TAC) for authorization to take marine mammals incidental to the Port of Adak Pier 5 Improvements Project (hereafter referred to as the Pier 5 Improvements Project), Adak Island, Alaska. 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 the **Request for Public Comments** section 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 [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Comments should be addressed to Howard Goldstein, Biologist, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.Goldstein@noaa.gov*. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*. In case of problems accessing these documents, please call the contact listed below.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Howard Goldstein, Office of Protected Resources, NMFS, (301) 427-8417.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed IHA is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other "means of effecting the least practicable adverse impact" on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as "mitigation"); and requirements pertaining to the 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 NAO 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed 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.

Investing in Infrastructure and Jobs Act

The Pier 5 Improvements Project is published on the Federal Permitting Dashboard as a Department of Transportation project. Requirements for publication and tracking on the Federal Permitting Dashboard include a suite of provisions designed to expedite the environmental review, including enhanced interagency coordination as well as milestone tracking. The Pier 5 Improvements Project page, including milestones and schedules related to the environmental review and permitting for the project can be found at: *https://www.permits.performance.gov/permitting-project/dot-projects/port-adak-pier-five-improvements-project*.

Summary of Request

On August 6, 2025, NMFS received a request from TAC for an IHA to take marine mammals incidental to pile removal and installation activities associated with the Pier 5 Improvements Project at Adak Island, Alaska. Following NMFS' review of the application, and discussions between NMFS and TAC, TAC submitted a revised application on February 11, 2026, which NMFS deemed adequate and complete on March 2, 2026. TAC's request is for take of five species of marine mammals, by Level B harassment and Level A harassment. Neither TAC nor NMFS expect serious injury or mortality to result from this activity and none is proposed to be authorized; therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

TAC is proposing to fix and modernize the fender and piling system at Pier 5 on Adak Island, Alaska, to current industry and safety standards as well as upgrade the pier lighting and utilities. The project would remove the existing timber pile fender system, timber wale top rail, steel egress ladders, under-deck catwalk system, and abandoned pipelines and related utilities and infrastructure; and would replace the damaged concrete pier support piles and the entire timber fender system with a heavy-duty steel pile (circular pipe-shaped) and fender sleeve assembly with greater capacity for absorbing energy from berthing vessels. The current footprint of the pier or pier deck would not be altered. The project would enable goods to be more efficiently and safely loaded and unloaded from small/large commercial and military vessels and allow for the safe embarking/disembarking of the vessel's crew, which would support the local and regional economy as well as the seafood industry. The pier also includes a NOAA data collection structure as well as serves as an oil spill response storage hub.

Pier 5, which was constructed by the U.S. Navy in 1980, is 730 feet (ft) (222.5 meters [m]) long with concrete decking consisting of precast concrete panels and concrete topping/wear surface. The initial 165 ft (50.3 m) is 40 ft (12.2 m) wide and the next 565 ft (172.2 m) is 90 ft wide (27.4 m). Pier 5 and the surrounding infrastructure are remnants of the former Adak Naval Air Station and have experienced significant wear due to harsh environmental conditions and limited maintenance since military decommissioning. Due to the condition of the current fender and piling system at Pier 5, both large and small commercial and military vessels that have called on or been interested in calling on the Port of Adak have been unable to moor or had complications when mooring. Additionally, the electrical, firewater, potable water, and wastewater systems on Pier 5 have been abandoned in place and have not been repaired or upgraded. Limited electrical service is provided to a NOAA data collection structure, accessed by galvanized steel stairs on either side of Pier 5.

The Port of Adak also serves as an oil spill response hub for the Alaska Chadux Network, an industry-funded non-profit oil spill response organization headquartered in Anchorage, Alaska. The unmanned equipment stored at the Port of Adak would be used for oil spill response for vessels passing through the Great Circle Route from North America to Asia. Pier 5 cannot currently support the movement of equipment and must rely on nearby Adak airfield to fly in response personnel.

The specified activities that have the potential to result in take of marine mammals include vibratory removal and impact and vibratory installation of piles.

Dates and Duration

The proposed IHA would be valid for the statutory maximum of 1 year from the date of effectiveness, and will become effective upon written notification from the applicant to NMFS, but not beginning later than 1 year from the date of issuance or extending beyond 2 years from the date of issuance. The project would likely occur between April and November 2027 and would require up to 126 days of pile removal and installation. The window for pile removal and installation activities is planned from May 1 through September 30 but may extend from April 1 through November 30. In-water pile removal and installation activities may not be continuous and would only occur during daylight hours, and typically over a 12-hour work day, up to 7 days per week.

Specific Geographic Region

The proposed activities would occur at Pier 5 of the Port of Adak, a maritime facility owned by TAC in the city of Adak, on the northern shoreline of Adak Island, Alaska. Adak Island is a remote island in the central Aleutians. The pier is located at 100 Mechanic Road in the City of Adak, Alaska. The geographical coordinates of the 2.39-acre property are approximately 51 degrees 51’ 42.57” North, 176 degrees 38’ 15.73” West. The seafloor footprint of the pile removal and installation activities would be within the existing footprint of Pier 5 and would not be enlarged.

The waters around Adak Island represent a complex, high-energy marine ecosystem characterized by deep, nutrient-rich, and cold water that supports a high density of benthic invertebrates, marine mammals, and seabirds. The area serves as a transitional zone between the North Pacific Ocean and the Bering Sea, influenced by strong currents that drive vertical mixing and create productive feeding grounds.

The coastline of Adak Island is characterized by steep slopes and extremely deep water depths just offshore. Adak Island is subject to strong winds and frequent storms due to its maritime climate in the Bering Sea/North Pacific Ocean. The project area includes a large portion of Sweeper Cover and a small portion of the adjacent Kuluk Bay. Water depths within Sweeper Cove range from 36 to 132 (ft) (10.9 to 40.2 m). A breakwater at the entrance to Sweeper Cove creates a protected harbor. The island is ice-free and open to navigation all year.

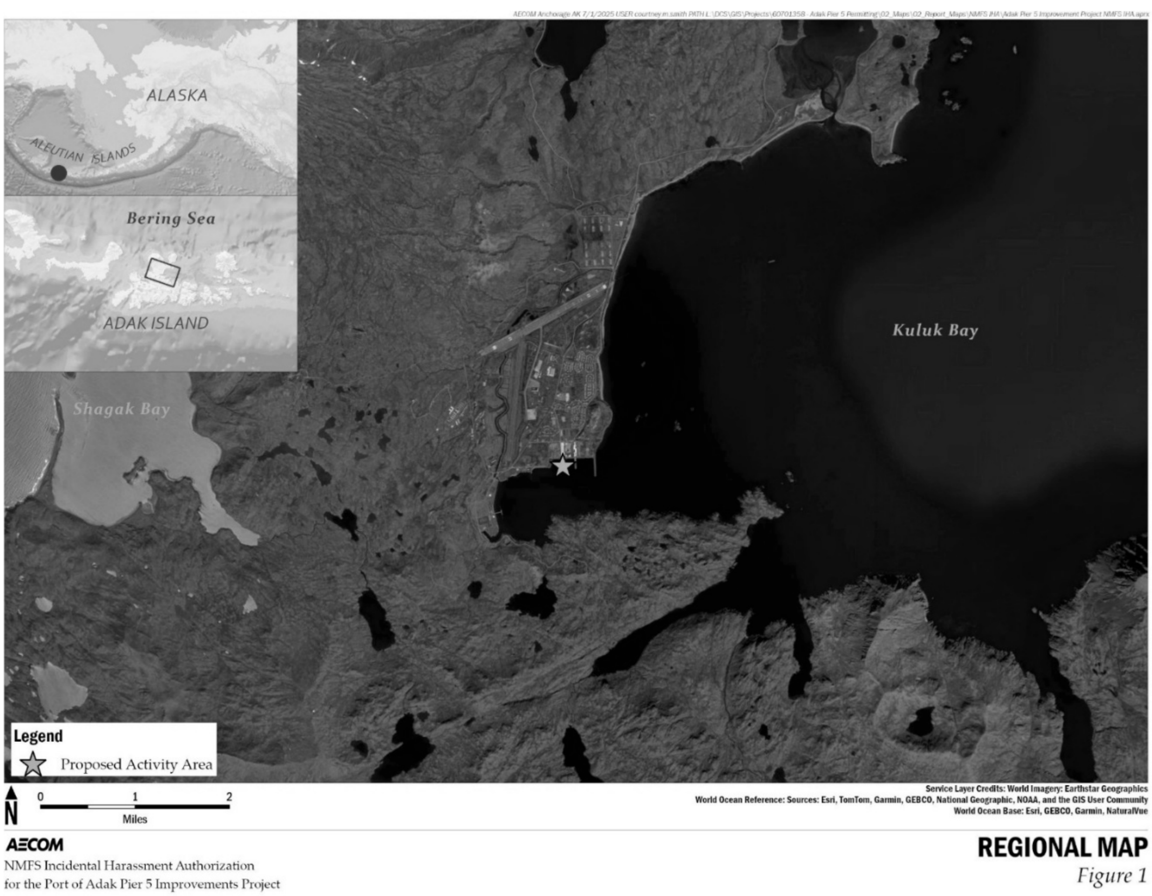

Figure 1 -- Project Location on Adak Island, Alaska

Detailed Description of the Specified Activity

The Port of Adak is owned by TAC and managed and operated by its wholly owned subsidiary Aleut Enterprise, LLC. TAC is one of the 13 regional Alaska Native corporations created by the Alaska Native Claims Settlement Act of 1971. U.S. forces built the Port of Adak and other facilities on Adak Island during World War II. The Naval Air Facility in Adak operationally closed in 1997, and in 2002 the U.S. Department of the Navy and U.S. Department of the Interior entered into a land exchange agreement with TAC that resulted in conveyance of 47,150 acres (190.8 square kilometers) of the former Adak Naval Complex property to TAC, including the Port of Adak.

Pier 5 was constructed by the U.S. Navy in 1980. It is a 730 ft (222.5 m) long concrete decked pier with precast concrete panels and concrete topping/wear surface. In 2005 and 2014, Pier 5 was evaluated and determined to be in good condition with significant remaining life, with the exception of the fender and piling system, which was in poor condition.

The current fender and piling system of Pier 5 are failing, with several portions having parted from the concrete deck. On the east side of the pier, 12 of 56 fender pile assemblies have parted from the dock, and on the west side of the pier, 8 of 56 fender pile assemblies have parted from the dock. The entire timber waler system of the fenders is severely dilapidated, and most of the timbers in the waler system are broken or decayed (especially on the east side of the pier). The fenders were further damaged when they were struck by barges coming to dock at Pier 5. In December 2011, there was a barge allision incident at the southwest corner of the pier that damaged two concrete support piles, and in March 2018, there was another barge allision incident at the west side of the pier (including near the previously damaged southwest corner). Numerous timber fender system components and piles were damaged during these incidents.

The Pier 5 Improvements Project would repair and modernize the fender and piling system to current industry and safety standards as well as upgrade lighting and utilities. The existing timber pile fender system, timber wale top rail, steel egress ladders, under-deck catwalk system, and abandoned pipelines and related infrastructure and utilities would be removed. The current above-water footprint of Pier 5 would not be altered as it is in good condition, but the in-water (benthic) footprint would be reduced.

Existing timber fender piles would be removed by gaining access to the tops of piles and pulling them out. Shallow fender piles would be extracted using a crane, when possible; however, a vibratory hammer would be used for pile extraction if necessary. A hydraulic chainsaw may be used to cut below the mud (sediment) line for piles that break off during vibratory removal. The hydraulic chainsaw would be used intermittently with a sound source level lower than vibratory pile removal, and is not expected to have adverse impacts on marine mammals. Under ideal conditions, extraction of piles would be accomplished quickly, at a rate of potentially 5 to 60 piles per day. For purposes of this analysis, TAC assumes all 385 timber piles would be removed with a vibratory hammer.

Two damaged prestressed concrete piles on the southwest end of Pier 5 would be repaired, and new concrete, pile caps, bullrail, and topping slab would be installed. These two concrete piles would be reinforced and would not be removed. Vibratory pile driving techniques would be used for installation of the fender piles. A modern high-energy absorbing fender system with rubber cylindrical fenders would be installed. The fender system would be designed around the mooring requirements of the 58 ft (17.7 m) commercial fishing vessel fleet. Inset egress ladders would be incorporated into the face of the fender assemblies, and mooring cleats and bollards would be recoated.

Installation of 86 steel support piles (18- and 30-inch [45.7 and 76.2 centimeters (cm)] fender and bearing) would include vibratory pile driving for initiation penetration, and completion with an impact hammer. No other forms of advancement assistance (such as jetting or overdrilling) are planned. The installation timeline would depend on site conditions and the required embed depth of the piles. For shorter fender piles (18 inches [45.7 cm]), potentially 1 or 15 piles may be installed per day. TAC would minimize the use of impact pile driving and use it only to seat the pile in its final position, or to penetrate material that is too dense for a vibratory hammer. The total number of piles to be installed are described in table 1.

Pile removal and installation activities would occur from floating barges and Pier 5. The piles would be installed from the floating barges. The barges are anticipated to be secured by multiple means with temporary anchors and the use of barge-mounted spuds. No dredging or trenching would be required. The pile removal and installation activities would also include installation of a new sewer (including upland replacement), potable water, firewater, and access control fencing on Pier 5. The sewer and water connection points have been coordinated with the City of Adak. All of the utilities would be routed above ground to coordinated upland locations. All of the work would be done in the vicinity of Pier 5 and would not extend past the southern side of Seawall Road. Use of barges and other vessels are not expected to result in marine mammal harassment.

For a total of up to 49 pile placement days, 86 piles would be installed for the project and each pile would take approximately 1 day to install. Removal of 385 timber piles with a maximum of 60 piles per day for the project, for a total of up to 77 pile removal days. Therefore, the estimated maximum duration for pile placement and removal activities would be up to 126 days. The number of piles to be removed per day depends on the condition of the piles and substrate. Furthermore, some of the fender piles are clumped together and more than one can be pulled at the same time. Pulling the piles will be determined by the contractor, and likely a combination of dead pull and vibratory pull.

Besides pile removal and installation activities, the only in-water work would be anode installation. Anodes would be welded to the new steel fender piles above the seafloor at approximately 15 to 22 ft (4.6 to 6.7 m) below sea level. Fender panels or foam fenders would be bolted to the piles close to the water level. Because this activity is not expected to appreciably increase in-water noise levels; it is not expected to result in harassment of marine mammals. Similarly, top-side work such as upgrade lighting and utilities and adding new concrete and pile caps to existing concrete piles is not expected to result in marine mammal harassment. Therefore, TAC did not request, and NMFS is not proposing to authorize, take from anode installation or above-water activities.

Table 1 -- Summary of Pier 5 Improvements Project Pile Removal and Installations

Pile Type and Size	Total Number of Piles	Minimum Number per Day	Maximum Number per Day	Impact Hammer Strikes per Pile[1,2]	Vibratory Hammer Duration Per Pile[2]	Estimated Number of Days[3]
Piles to be Installed						
30-inch Steel Fender Pile	6	1	3	600	30 to 45 Minutes	6
30-inch Steel Bearing Pile	1	1	1	1,200	30 to 45 Minutes	3
18-inch Steel Fender Pile	79	2	15	300	30 to 45 Minutes	6 to 40
Piles to be Removed						
12-inch Timber Pile[4]	385	5	60	NA	10 to 20 Minutes	7 to 77

[1] Estimated based on vibrating piles to a depth of 15 ft (4.6 m) below the mudline, then impact hammer driving to final tip elevation with 30 strikes per foot and a strike rate of one blow every 2 seconds.

[2] The total estimated time to install the fender piles is 2 to 3 hours. The actual time driving with the vibratory hammer will be less, approximately 30 to 45 minutes each. Installation of steel support (both fender and bearing) piles will likely be driven by first using vibratory driving to start the pile for the upper 10 to 20 ft (3 to 6.1 m) of embedment, and final driving will be accomplished using a diesel impact hammer.

[3] TAC estimates pile removal and installation activities could occur for up to 126 days, depending on the number of piles removed and installed per day.

[4] Timber piles will be extracted with a crane and/or vibratory hammer. For piles that cannot be pulled statically, a vibratory hammer may be used to vibrate the piles during extraction.

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

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all of this information, and we refer the reader to these descriptions, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website (*https://www.fisheries.noaa.gov/find-species)*.

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this activity, 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 proposed to be authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species or stocks and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' Alaska Marine Mammal Stock Assessments (*e.g.,* Young *et al.*, 2025). All values presented in table 2 are the most recent available at the time of publication, including from the draft 2024 SARs, and are available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*.

Table 2 -- Species Likely Impacted by the Specified Activities

Common Name	Scientific Name	Stock	ESA/MMPA Status; Strategic (Yes/No) [1]	Stock Abundance (CV, N_{min}, Most Recent Abundance Survey) [2]	Potential Biological Removal	Total Annual Mortality/Serious Injury [3]
Order Artiodactyla – Infraorder Cetacea – Mysticeti (Baleen Whales)						
Family Balaenopteridae						
Humpback Whale	*Megaptera novaeangliae*	Hawai'i	-, -, N E, D, Y	11,278 (0.56, 7,265, 2002-2020)	127	27.09
		Mexico – North Pacific	T, D, Y	N/A (N/A, N/A, 2006) [4]	UND	0.57
		Western North Pacific		1,084, (0.088, 1,007, 2004-2006)	3.4	5.82
Minke Whale	*Balaenoptera acutorostrata*	Alaska	-, -, N	N/A (N/A, N/A, N/A) [5]	N/A	0
Odontoceti (Toothed Whales, Dolphins, and Porpoises)						
Family Delphinidae (Dolphins)						
Killer Whale	*Orcinus orca*	Eastern North Pacific Alaska Resident	-, -, N	1,920 (N/A, 1,920, 2005-2019)	19	1.3
		Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea Transient	-, -, N	587 (N/A, 587, 2012)	5.9	0.8
Order Carnivora – Pinnipedia (Seals and Sea Lions)						
Family Otariidae (Eared Seals and Sea Lions)						

Steller Sea Lion	*Eumetopias jubatus*	Western	E, D, Y	49,837 (N/A, 73,211, 2021-2022)	439	267
Family Phocidae (Earless Seals)						
Harbor Seal	*Phoca vitulina*	Aleutian Islands	-, -, N	5,588 (N/A, 5,366, 2018)	97	90

[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.nmfs.noaa.gov/pr/sars/*. 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, vessel strike, Native subsistence mortality). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range.

[4] Abundance estimates are based upon data collected more than 8 years ago and therefore current estimates are considered unknown.

[5] Reliable population estimates are not available for this stock. Please see Friday *et al.* (2013) and Zerbini *et al.* (2006) for additional information on numbers for minke whales in Alaska.

As indicated above, all five species (with eight managed stocks) in table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. All species of marine mammals that could potentially occur in the proposed project area are included in table 3-1 of the IHA application. While blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), Eastern North Pacific and Western North Pacific gray whale (*Eschrichtius robustus*), North Pacific right whale (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), Baird's beaked whale (*Berardius bairdii*), Cuvier's beaked whale (*Ziphius cavirostris*), Sato's beaked whale (*Berardius minimus*), Stejneger's beaked whale (*Mesoplodon stejnegeri*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Northern fur seal (*Callorhinus ursinus*), Northern elephant seal (*Mirounga angustirostris*), and ribbon seal (*Histriophoca fasciata*) could occur in the area, the temporal and/or spatial occurrence of these species is such that take is not expected to occur. These species all have extremely low abundance and most are observed in areas outside of the project area due to it being nearshore and its inlet geography; therefore, they are not discussed further beyond the explanation provided here.

In addition, northern sea otter (*Enhydra lutris kenyoni*) may be found in the central Aleutian Islands. However, this species is managed by the U.S. Fish and Wildlife Service and is not considered further in this document.

Humpback Whale

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

America, which are listed as endangered, Mexico, which is listed as threatened, and Hawai‘i, which is not listed.

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

The Hawai‘i stock consists of one demographically independent population (DIP) – Hawai‘i – Southeast Alaska / Northern British Columbia DIP and one unit – Hawai‘i – North Pacific unit, which may or may not be composed of multiple DIPs (Wade *et al.*, 2021). The DIP and unit are managed as a single stock at this time, due to the lack of data available to separately assess them and lack of compelling conservation benefit to managing them separately (NMFS, 2023; NMFS, 2019; NMFS, 2022b). The DIP is delineated based on two strong lines of evidence: genetics and movement data (Wade *et al*., 2021). Whales in the Hawai‘i – Southeast Alaska/Northern British Columbia DIP winter off Hawai‘i and largely summer in Southeast Alaska and Northern British Columbia (Wade *et al*., 2021). The group of whales that migrate from Russia, western

Alaska (Bering Sea and Aleutian Islands), and central Alaska (Gulf of Alaska excluding Southeast Alaska) to Hawai‘i have been delineated as the Hawai‘i – North Pacific unit (Wade *et al*., 2021). There are a small number of whales that migrate between Hawai‘i and southern British Columbia/Washington, but current data and analyses do not provide a clear understanding of which unit these whales belong to (Wade *et al*., 2021; Caretta *et al.*, 2023; Young *et al.*, 2023).

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

The Western North Pacific stock consists of two units – the Philippines/Okinawa – North Pacific unit and the Marianas/Ogasawara – North Pacific unit. The units are managed as a single stock at this time, due to a lack of data. Recognition of these units is based on movements and genetic data (Oleson *et al*., 2022). Whales in the Philippines/Okinawa – North Pacific unit winter near the Philippines and in the Ryukyu Archipelago and migrate to summer feeding areas primarily off the Russian mainland (Oleson *et al*., 2022). Whales that winter off the Mariana Archipelago, Ogasawara, and other areas not yet identified and then migrate to summer feeding areas off the Commander Islands, and to the Bering Sea and Aleutian Islands comprise the Marianas/Ogasawara - North Pacific unit.

Humpback whales that occur in the project area are predominantly members of the Hawai’i stock, which corresponds to the Hawai‘i DPS (91 percent probability in the Aleutian Islands), and is not listed under the ESA. However, members of the Mexico

North Pacific stock, which include the Mexico DPS and is listed as threatened under the ESA, have a small potential to occur in the project location (7 percent probability in the Aleutian Islands), and the Western North Pacific stock, which corresponds to the Western North Pacific DPS and is listed as endangered under the ESA, have an even smaller potential to occur in the project location (2 percent probability in the Aleutian Islands).

Humpback whales migrate to the North Pacific Ocean, including the Aleutian Islands, to feed after months of fasting in equatorial breeding grounds. Humpback whales generally travel alone or in small groups that persist for only a few hours. Groups may stay together for longer in the summer in order to feed cooperatively. The Alaska Department of Fish and Game reports that humpback whales occur in the Aleutian Islands in the spring, summer, and fall during their migration. Humpback whales are regularly observed around Adak Island during the summer and early fall when prey availability is highest. They are typically seen in small groups or as solitary individuals. Local reports indicate that humpback whales are occasionally seen in Kuluk Bay near the Port of Adak.

Minke Whale

Minke whales occur in polar, temperate, and tropical waters worldwide in a range extending from the ice edge in the Arctic during the summer to near the equator during winter. However, they are known to prefer temperate to boreal waters due to the abundance of prey (Guerrero, 2008b). When comparing distribution and abundance in the years 2002, 2008, and 2010, it was found that that minke whales were scattered throughout all oceanographic domains: coastal, middle shelf, and outer shelf/slope (Muto *et al*., 2021). The minke whale mostly migrates seasonally and can travel long distances; although, some minke whale individuals and stocks have resident home ranges and are not highly migratory (Guerrero, 2008b). The Alaska stock of minke whales are migratory and are common in the waters of the Bering Sea, Gulf of Alaska, and Southeast Alaska in the spring and summer (NMFS, 2023c).

The distribution of minke whales vary according to age, sex, and reproductive status. Older mature males are commonly found in small social groups around the ice edge of polar regions during the summer feeding season. Comparatively, adult females will migrate farther into the higher latitudes but generally remain in coastal waters. Immature minke whales tend to be solitary and stay in lower latitudes during the summer (Guerrero, 2008b). Although the minke whale tends to be solitary or in groups of 2 to 3 individuals, they can congregate into larger groups containing up to 400 individuals at the higher latitude foraging areas (Clark, 2008a; Guerrero 2008b; NOAA, 2021). During surveys in Alaska, minke whales are predominately observed alone (Wade *et al*., 2003; Waite, 2003). Breeding season typically occurs from December to March, but in some regions minke whales breed year-round. When migrating north in spring and summer, they will travel along in coastal waters, whereas in fall and winter, they move farther offshore (NMFS, 2023c). There are no known observations of minke whales in the project area.

Killer Whale

Killer whales occur in every ocean in the world and are the most widely distributed of all cetaceans. Along the west coast of North America, killer whales occur along the entire Alaska coast (Braham and Dahlheim, 1982). This proposed IHA considers only the Eastern North Pacific Alaska Resident stock (Alaska Resident stock), and the Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock because all other killer whale stocks occur outside the geographic area under consideration (Muto *et al.*, 2021; Young *et al*. 2023).

There are three distinct ecotypes, or forms, of killer whales recognized: Resident, Transient, and Offshore. The three ecotypes differ morphologically, ecologically, behaviorally, and genetically. Spatial distribution has been shown to vary among the different ecotypes, with resident and, to a lesser extent, transient killer whales more commonly observed along the continental shelf, and offshore killer whales more commonly observed in pelagic waters (Rice *et al.*, 2021).

When comparing movement, residents tend to have more predictable movements and the smallest home ranges and they return annually, whereas transients are less predictable due to their larger home ranges and quick transits through local areas. Offshore ecotypes have the largest home ranges that are generally farther offshore compared to the other two ecotypes (Zimmerman and Small, 2008). Resident killer whales live in large, stable groups ranging normally from 5 to 50 individuals and up to 100 or more. They feed only on fish, especially Pacific salmon. Transient killer whales, on the other hand, hunt marine mammals, like pinnipeds and porpoises, in smaller groups of 10 individuals or less (Forney and Wade, 2006).

Killer whales have been observed in the Aleutian Islands and into the Bering Sea year-round, most commonly during the summer Chinook salmon run (May through July) when the project would occur. However, local reports indicate that killer whales are infrequently seen transiting through the area near Adak Island.

Steller Sea Lion

Steller sea lions in the project area are anticipated to be from the Western stock, which includes all Steller sea lions originating from rookeries west of Cape Suckling (144° West longitude). The centers of abundance and distribution for Western DPS Steller sea lions are located in the Gulf of Alaska and Aleutian Islands. At sea, Steller sea lions commonly occur near the 656-ft (200-m) depth contour but have been found from nearshore to well beyond the continental shelf (Kajimura and Loughlin, 1988). Steller sea lions move offshore to pelagic waters for feeding excursions.

There are major (*i.e.*, haulouts supporting greater than 200 individuals) Steller sea lion haulouts and rookeries throughout the Aleutian Islands and along the southern end of southwest Alaska. The rookery, Lake Point, is located at the tip of the Yakak Peninsula on southern Adak, on the opposite side of the island and approximately 35.4 miles (57 kilometers [km]) from Pier 5. The three major haulouts are Cape Yakak on Adak (near Lake Point on the Yakak Peninsula, about 36.7 miles (59 km) from Pier 5 and on the opposite side of the island) and Ragged Point on Kagalaska (on the side of the island facing away from the project site and about 27.3 miles [44 km] away). Five other haulouts in the area, include Argonne Point, Cape Kagigikak, Crone Island, Cape Moffet, and Head Rock on Adak Island, and Kagalaska on Kagalaska Island, have been lesser used in recent years (Sweeney *et al.*, 2023). These sites are used year-round, with increased activity during the breeding season (mid-May through mid-July). Steller sea lions are often seen foraging near fish processing facilities, marine outfalls, and natural prey aggregations, especially during pollock and Atka mackerel seasons. Steller sea lions are occasionally seen foraging during small, seasonal (mid-June through September), steady runs of coho salmon (*Oncorhnchus kisutch*), pink salmon (*Oncorhynchus gorbuscha*), and Dolly Varden (*Salvelinus malma*) at the mouth of creeks and streams at the west end of Sweeper Cover (approximately 0.65 miles west of Pier 5).

Harbor Seal

Harbor seals inhabit coastal and estuarine waters off Alaska. They haul out on rocks, reefs, beaches, and drifting glacial ice. They are generally non-migratory, with local movements associated with such factors as tides, weather, season, food availability, and reproduction (Muto *et al.*, 2021). They are opportunistic feeders and often adjust their distribution to take advantage of locally and seasonally abundant prey (Womble *et al.*, 2010; Allen and Angliss, 2015). Although they tend to be solitary when in the water, they can form groups of about 30 or less individuals of both sexes and all ages when hauling out. Harbor seals haul out to rest periodically, give birth or nurse.

Harbor seals in the project area are recognized as part of the Aleutian Island stock, occurring along the entire Aleutian island chain from Attu Island to Ugamak Island. Pupping season in the Aleutian Islands occurs between mid-June to mid-July (Sease, 1992). Harbor seals are regularly observed year-round around Adak Island, particularly in Clam Lagoon. Clam Lagoon is a shallow, protected body of water on the northern coast of Adak Island. Clam Lagoon, which is about 6.2 miles (10 km) north of the Port of Adak, is the closest known haulout to the project area. A 2014 study tagged 15 harbor seals in Clam Lagoon and tracked their dive behavior, haul-out patterns, and movement, which determined that the area is a key habitat for the species (NMFS 2017). There have been local anectodal observations of the daily occurrence of harbor seals in the project area (Matthew Holsinger personal communication with Andrew Fisher on May 29, 2025).

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.*). Baleen whale hearing range is based on hearing measurements through auditory evoked potential (AEP) tests. NMFS is aware that the National Marine Mammal Foundation successfully collected preliminary hearing data on minke whales in Norway (Houser *et al.* 2024). However, results from both field seasons have yet to be published and therefore those data are not yet considered in this analysis. 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. In October 2024, NMFS published its 2024 Updated Technical Guidance, which includes updated thresholds and weighting functions to inform auditory injury (AUD INJ) estimates and replaces the 2018 Technical Guidance referenced above. This 2024 Updated Technical Guidance represents the best available science. Marine mammal hearing groups and their associated hearing ranges are provided in table 3.

Table 3 -- Marine Mammal Hearing Groups (NMFS, 2024)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
High-frequency (HF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
Very High-frequency (VHF) cetaceans (true porpoises, *Kogia*, river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger*, and *L. australis*)	200 Hz to 165 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	40 Hz to 90 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 68 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 composite audiogram, previous analysis in NMFS (2018), and/or data from Southall *et al.*(2007, 2019). Additionally, animals are able to detect very loud sounds above and below that "generalized" hearing range.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section provides a discussion of the ways in which components of the specified activity may impact marine mammals and their habitat. The **Estimated Take of Marine Mammals** section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The **Negligible Impact Analysis and Determination** section considers the content of this section, the **Estimated Take of Marine Mammals** section, and the **Proposed Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and whether those impacts are reasonably expected to, or reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

NMFS has summarized a brief technical description of the physics of sound and relevant measurement metrics (*i.e.*, root mean square [RMS], Peak, and sound exposure level [SEL]) (NMFS, 2024), available online at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.* We refer readers to this document for definitions of the measurement terms and metrics used herein.

There are a variety of types and degrees of effects on marine mammals, prey species, and habitats that could result from the project. Below is a brief description of the sound sources the projects would generate, the general impacts of these activities, and an analysis of the anticipated impacts on marine mammals from the projects, with consideration of the proposed mitigation measures.

Description of Sound Sources

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

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

Potential Effects of Underwater Sound on Marine Mammals

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 TAC's specified activities. In general, animals exposed to natural or anthropogenic sound may experience behavioral, physiological, and/or physical effects, ranging in magnitude from none to severe (Southall *et al.*, 2007). Generally, exposure to pile driving and removal noise has the potential to result in behavioral reactions (*e.g.*, avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior) and, in limited cases, auditory threshold shifts. Exposure to anthropogenic noise can also lead to non-observable physiological responses such as an increase in stress hormones. Additional noise in a marine mammal's habitat can mask acoustic cues used by marine mammals to carry out daily functions such as communication and predator and prey detection. The effects of pile driving and removal 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.

Hearing Threshold Shifts

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, 2024), 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).

Auditory Injury — NMFS (2024) defines AUD INJ as damage to the inner ear that can result in tissue destruction, such as loss of cochlear neuron synapses or auditory neuropathy (Houser, 2021; Finneran, 2024). AUD INJ may or may not result in a permanent threshold shift (PTS). PTS is defined 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, 2024). PTS generally affects only a limited frequency range, and animals with PTS have some level of hearing loss at the relevant frequencies; typically, animals with PTS or other AUD INJ are not functionally deaf (Au and Hastings, 2008; Finneran, 2016). Available data from humans and other terrestrial mammals indicate that a 40-dB threshold shift approximates AUD INJ onset (Ward *et al.*, 1958; Ward *et al.*, 1959; Ward, 1960; Kryter *et al.*, 1966; Miller, 1974; Henderson *et al.*, 2008). However, a variety of terrestrial and marine mammal studies (see Ward *et al.*, 1958; Ward *et al.*, 1959; Ward, 1960; Miller *et al.*, 1963; Kryter *et al.*, 1966; Finneran *et al.*, 2007; Kastelein *et al.*, 2013) indicate that threshold shifts of up to 40 to 50 dB (measured a few minutes after exposure) may be induced without resulting in PTS. PTS levels for marine mammals are estimates; with the exception of a single study unintentionally inducing PTS in a harbor seal (*Phoca vitulina*) (Kastak *et al.*, 2008), no empirical data measure PTS in marine mammals largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing AUD INJ are not typically pursued or authorized (NMFS, 2024). NMFS has set the PTS onset as an initial threshold shift of 40 dB.

However, after sound exposure ceases or between successive sound exposures, the potential for recovery from hearing loss exists. Thus, because a threshold shift is measured a few minutes after noise exposure does not mean that those initial shifts are persistent (*i.e.*, no recovery). When initial threshold shifts fully recover back to baseline hearing levels, these are considered temporary threshold shift (TTS). PTS indicates there is no full recovery back to baseline hearing levels; however, it does not mean there is no recovery. Rather, PTS indicates incomplete recovery of hearing. Recovery depends on the initial threshold shift amount, the frequency at which the shift occurred, the temporal pattern of exposure (*e.g*., exposure duration; continuous vs. intermittent exposure), and the physiological mechanisms underlying the shift (*e.g.*, mechanical vs. metabolic). Since recovery is complicated, our current AUD INJ onset criteria do not account for the potential for recovery.

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

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

Currently, TTS data only exist for four species of cetaceans (bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*) and five species of pinnipeds exposed to a limited number of sound sources (*i.e.*, mostly tones and octave-band noise) in laboratory settings (Finneran, 2015). TTS was not observed in trained spotted (*Phoca largha*) and ringed (*Pusa hispida*) seals exposed to impulsive noise at levels matching previous predictions of TTS onset (Reichmuth *et al.*, 2016). In general, harbor seals and harbor porpoises have a lower TTS onset than other measured pinniped or cetacean species (Finneran, 2015). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species. No data are available on noise-induced hearing loss for mysticetes. For summaries of data on TTS in marine mammals or for further discussion of TTS onset thresholds, please see Southall *et al.* (2007), Finneran and Jenkins (2012), Finneran (2015), and table 5 in NMFS (2018).

Activities for this project include impact and vibratory pile driving as well as vibratory pile removal activities. 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 area and not remaining for extended periods of time, the potential for threshold shift declines.

Behavioral Effects —Exposure to noise can also behaviorally disturb marine mammals to a level that rises to the definition of harassment under the MMPA. Generally speaking, NMFS considers a behavioral disturbance that rises to the level of harassment under the MMPA a non-minor response. In other words, not every response qualifies as a behavioral disturbance, and for responses that do, those of higher level or longer duration have the potential to affect foraging, reproduction, or survival. Behavioral disturbance may include subtle changes (*e.g.*, minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses may include changing durations of surfacing and dives, changing direction and/or speed; reducing/increasing vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); eliciting a visible startle response or aggressive behavior (such as tail/fin slapping or jaw clapping); and avoidance of areas where sound sources are located. In addition, pinnipeds may increase their haul-out time, possibly to avoid in-water disturbance (Thorson and Reyff, 2006).

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.*, 2004; Southall *et al.*, 2007, 2019; Weilgart, 2007; Archer *et al.*, 2010). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.*, 2012), and can vary depending on characteristics associated with the sound source (*e.g.*, whether it is moving or stationary, number of sources, distance from the source). 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. Please see appendices B and C of Southall *et al.* (2007) and Gomez *et al.* (2016) for reviews of studies involving marine mammal behavioral responses to sound.

Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.*, Lusseau and Bejder, 2007; Weilgart, 2007; National Research Council [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 SPL within the range of calculated exposures (142-193 dB referenced to 1 micropascal [re 1 μPa]), have been shown to change their behavior by modifying diving activity and avoidance of the sound source (Götz and Janik, 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). An evaluation of whether foraging disruptions would be likely to incur fitness consequences considers temporal and spatial scale of the activity in the context of the available foraging habitat and, in more severe cases may necessitate consideration of information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal. 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 here, particularly since prey would likely still be available in the environment in most cases following the cessation of acoustic exposure.

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; Kastelein *et al.*, 2006; Kastelein *et al.*, 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 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; Blackwell *et al.*, 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 North Pacific DPS/stock of gray whales and Cuvier's/goose-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 1 day and not recurring on subsequent days is not considered particularly severe unless it could directly affect reproduction or survival (Southall *et al.*, 2007). Note that there is a difference between multi-day substantive behavioral reactions and multi-day anthropogenic activities. For example, just because an activity lasts for multiple days does not necessarily mean that individual animals are either exposed to activity-related stressors for multiple days or, further, exposed in a manner resulting in sustained multi-day substantive behavioral responses.

To assess the strength of behavioral changes and responses to external sounds and SPLs associated with changes in behavior, Southall *et al.* (2007) developed and utilized a severity scale, which is a 10-point scale ranging from no effect (labeled 0), effects not likely to influence vital rates (low; labeled from one to three), effects that could affect vital rates (moderate; labeled from 4 to 6), to effects that were thought likely to influence vital rates (high; labeled from 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 six (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 shown 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; 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.

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 with heads above the waterline 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 (*i.e.,* 8 m and 36 to 58 m for phocid pinnipeds, 2 m and 12 to 18 m for otariid pinnipeds). Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Therefore, we do not believe that authorization of additional incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further.

Potential Effects on Marine Mammal Habitat

TAC's proposed pile removal and installation activities could have localized, temporary impacts on marine mammal habitat, including prey, by increasing in-water SPLs, and slightly decreasing water quality from increased turbidity. Increased noise levels may affect acoustic habitat (see *Masking* discussion above) and adversely affect marine mammal prey in the vicinity of the project area (see discussion below). Elevated levels of underwater noise would ensonify the project area where both fishes and marine mammals occur and could affect foraging success. Additionally, marine mammals may avoid the area during pile removal and installation activities; 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.

Temporary and localized reduction in water quality would occur as a result of in-water pile removal and installation activities. Most of this effect would occur during the removal and installation of piles, when bottom sediments are disturbed, and may temporarily increase suspended sediment in the project area. During pile extraction, sediment attached to the pile moves vertically through the water column causing a sediment plume. However, since currents are so strong in the area, following the completion of sediment-disturbing activities, suspended sediment in the water column should dissipate and quickly return to background levels across all construction scenarios.

Turbidity in the water column can reduce dissolved oxygen levels and irritate the gills of prey fish in the proposed project areas. Studies of the effects of turbid water on fish (marine mammal prey) suggest that concentrations of suspended sediment can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton, 1993). However, turbidity plumes associated with the projects would be temporary and localized, and fish in the proposed project areas would be able to move away from and avoid the areas where plumes may occur. Overall, the water quality in the immediate area that is likely impacted by the proposed pile removal and installation activities is relatively small compared to the available marine mammal habitat.

The proposed pile removal and installation activities would also remove an estimated 385 timber creosote-treated piles which would potentially improve water quality. Given those piles would be replaced by an estimated 86 piles; the total net reduction would be an estimated 299 piles, which would permanently decrease the in-water footprint of Pier 5 and increase the area (by approximately 128.32 square ft [11.9 square m]) of the seafloor without manmade structures that is available as marine mammal habitat in the Port of Adak.

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

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

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

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

The most likely impact to fishes from pile driving activities at the project area would be temporary behavioral avoidance of the area. The duration of fish avoidance of this area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution, and behavior is anticipated.

Pile removal and installation 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. 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 action 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 of Marine Mammals

This section provides an estimate of the number of incidental takes proposed for authorization through the 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 be by Level B harassment, as use of the acoustic sources (*i.e.*, impact and vibratory pile driving and removal) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for AUD INJ (Level A harassment) to result for mysticetes (low-frequency), odontocetes (high-frequency), phocids, and otariids. The proposed mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable. As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the proposed take numbers are estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur AUD INJ of some degree (equated to Level A harassment).

Level B Harassment – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al.*, 2007; Southall *et al.*, 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 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 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. TAC's proposed activity includes the use of continuous (vibratory pile driving and removal) and impulsive (impact pile driving) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1 μPa is/are applicable.

Level A Harassment – NMFS' "2024 Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing" (Version 3.0, Technical Guidance, 2024) identifies and updates underwater and in-air dual criteria to assess AUD INJ (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). TAC's proposed activity includes the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving and removal) sound sources.

NMFS AUD INJ thresholds are provided in table 4. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2024 Updated Technical Guidance, which may be accessed at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance-other-acoustic-tools*.

Table 4 -- Thresholds Identifying the Onset of Auditory Injury

	Auditory Injury Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-Impulsive
Low-Frequency (LF) Cetaceans	*Cell 1* $L_{pk,flat}$: 222 dB $L_{E,LF,24h}$: 183 dB	*Cell 2* $L_{E,LF,24h}$: 197 dB
High-Frequency (HF) Cetaceans	*Cell 3* $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 193 dB	*Cell 4* $L_{E,MF,24h}$: 201 dB
Very High-Frequency (VHF) Cetaceans	*Cell 5* $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 159 dB	*Cell 6* $L_{E,HF,24h}$: 181 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{pk,flat}$: 223 dB $L_{E,PW,24h}$: 183 dB	*Cell 8* $L_{E,PW,24h}$: 195 dB
Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{pk,flat}$: 230 dB $L_{E,OW,24h}$: 185 dB	*Cell 10* $L_{E,OW,24h}$: 199 dB

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating AUD INJ onset. If a non-impulsive sound has the potential of exceeding the peak SPL thresholds associated with impulsive sounds, these thresholds are recommended for consideration.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 µPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of 1µPa^{2}s. 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 165 kHz). The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, HF, and VHF 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 acoustic thresholds will be exceeded.

Ensonified Area

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

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

The project includes vibratory pile installation and removal as well as impact pile driving. Vibratory pile drivers will be the primary method of steel pile installation. Vibratory pile driving have relatively lower sound levels than impact pile driving and are not expected to cause AUD INJ to marine mammals. Source levels for these activities are based on reviews of measurements of the same or similar types and dimensions of piles available in the literature. Source levels for each pile size and activity are presented in table 5. Source levels for vibratory installation and removal of piles of the same diameter are assumed to be the same.

Table 5 -- Estimates of Mean Underwater Sound Levels (at 10 meters) Generated During Vibratory and Impact Pile Installation and Vibratory Pile Removal)

Continuous Sound Sources	dB peak	dB RMS	dB SEL	Reference
Vibratory Pile Driving				
30-inch Steel Piles	NA	166	NA	PR1 2023 Calculations
≤ 24-inch Steel Piles	NA	163	NA	PR1 2023 Calculations

12 to 16-inch Timber Piles	NA	162	NA	Caltrans, 2020
Impact Pile Driving				
30-inch Steel Piles	210	190	177	Caltrans, 2015
14 to 18-inch Steel Piles	200	185	175	Caltrans, 2020
12 to 14-inch Timber Piles	180	170	160	Caltrans, 2020

Note: dB peak = peak sound level; RMS = root mean square; SEL = sound exposure level.

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:

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

TL = transmission loss in dB

B = transmission loss coefficient

$R1$ = the distance of the modeled SPL from the driven pile, and

$R2$ = the distance from the driven pile of the initial measurement

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source depends on various factors, most notably the water bathymetry and the presence or absence of reflective or absorptive conditions, including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source (20*log[range]). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source (10*log[range]). A practical spreading value of 15 is often used in coastal waters, such as those found in the Pier 5 Improvements Project area. In these environments, sound waves repeatedly reflect off the surface and bottom, reflecting an expected propagation environment between spherical and cylindrical spreading-loss conditions. Therefore, the default coefficient of 15 is used to calculate distances to the Level A harassment and Level B harassment isopleths.

Assuming practicable spreading and other assumptions regarding the source characteristics and operational logistics (*e.g.*, source level, number of strikes per pile, number of piles per day), TAC calculated distances to the Level A harassment and Level B harassment isopleths and associated ensonified areas. Because an ensonified area associated with Level A harassment is more technically challenging to predict due to the need to account for a duration component, NMFS developed an optional User Spreadsheet tool to assist applicants in assessing the potential for Level A harassment without the need for complex modeling (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance-other-acoustic-tools*). This relatively simple tool can be used to calculate a Level A harassment isopleth distance for use in conjunction with marine mammal density or occurrence data to predict the amount of take that may occur incidental to an activity. The resulting isopleth does not account for animal movement and represents the distance at which an individual would have to remain for the entire duration of pile driving or removal within a 24-hour period. As the amount of time considered in the calculation becomes longer, the likelihood of an individual accumulating noise energy above threshold at that distance becomes less realistic. However, individuals may approach a source more closely than the calculated distance in which case the amount of time needed to elicit the onset of AUD INJ decreases. While the risk of AUD INJ is low overall due to expected avoidance behavior, the User Spreadsheet offers a practical alternative for estimating isopleth distances when more sophisticated modeling methods are unavailable or are impractical. Table 6 provides the inputs into the User Spreadsheet tool for estimating distances to Level A harassment isopleths.

Table 6 -- User Spreadsheet Inputs

	Vibratory				Impact		
	30-inch Steel Fender Piles	30-inch Steel Bearing Piles	18-inch Steel Fender Piles	12-inch Timber Piles	30-inch Steel Fender Piles	30-inch Steel Bearing Piles	18-inch Steel Fender Piles
	Installation or Removal	Installation	Installation	Removal	Installation	Installation	Installation
Spreadsheet Tab Used	A.1) Vibratory Pile Driving	A.1) Vibratory Pile Driving	A.1) Vibratory Pile Driving	A.1) Vibratory Pile Driving	E.1) Impact Pile Driving	E.1) Impact Pile Driving	E.1) Impact Pile Driving
Source Level (SPL)	166 RMS	166 RMS	163 RMS	162 RMS	177 SEL	177 SEL	175 SEL
Transmission Loss Coefficient	15	15	15	15	15	15	15
Weighting Factor Adjustment (kHz)	2.5	2.5	2.5	2.5	2	2	2
Activity Duration per Day (Minutes)	135	45	675	1,200	NA	NA	NA
Number of Strikes per Pile	-	-	-	-	600	1,200	300
Number of Piles per Day	3	1	15	60	3	1	15
Distance of Sound Pressure Level Measurement	10	10	10	10	10	10	10

Using the practical spreading model and assumptions identified in table 5 and 6, TAC calculated, and NMFS has carried forward into this analysis, the distances to the Level A harassment and Level B harassment thresholds for marine mammals (table 7).

Table 7 -- Level A Harassment and Level B Harassment Isopleths from Vibratory and Impact Pile Driving

Pile Type	Level A Harassment Isopleths (m)					Level B Harassment Isopleth (m)
	LF	HF	VHF[1]	PW	OW	

Vibratory Pile Driving						
30-inch Steel Fender Piles	34.1	13.1	NA	43.9	14.8	11,659
30-inch Steel Bearing Piles	16.4	6.3	NA	21.1	7.1	11,659
18-inch Steel Fender Piles	62.9	24.2	NA	81	27.3	7,356
12-inch Timber Piles	79.2	30.4	NA	102	34.3	6,310
Impact Pile Driving						
30-inch Steel Fender Piles	586.1	74.8	NA	520.7	194.1	1,000
30-inch Steel Bearing Piles	447.3	57.1	NA	397.4	148.1	1,000
18-inch Steel Fender Piles	794.3	101.3	NA	705.6	263	464

[1] No takes of VHF species (*e.g.,* harbor porpoises) have been requested by TAC and no take is being authorized by NMFS.

While the modeled ensonified area for the Level B harassment isopleth for vibratory pile driving is 6,310 to 11,659 m depending on the size and type of pile, the Level B harassment isopleth is actually smaller as it is attenuated by land on three sides by the boundaries of Sweeper Cove, and on the other side is partially attenuated by the earthen fill and rock revetment breakwater that separates Sweeper Cove and Kuluk Bay. The remaining area at the southeast end of the isopleth is attenuated by land at 10,105 ft (3,080 m) at the farthest point. The radial distance to the underwater noise thresholds for vibratory pile driving would reach the shoreline opposite Pier 5 and then stop.

Marine Mammal Occurrence and Take Estimation

In this section we provide information about the occurrence of marine mammals, including density or other relevant information which will inform the take calculations. We describe how the information provided is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and proposed for authorization.

As described above, estimated density for marine mammal species (humpback whale, minke whale, killer whale, Steller sea lion, and harbor seal) within the project area were not available to directly inform the take estimates. TAC conducted a literature review to determine specific occurrence of marine mammals for Sweeper Cove and/or

Kuluk Bay, but most documents were too broad for the specific project area. Two individuals (including a biologist for the U.S. Fish and Wildlife Service's Alaska Maritime Wildlife Refuge) who have lived on Adak Island for about 30 years provided details on marine mammal species potential occurrence and sightings near the project area to TAC via personal communication. The group size and predictable occurrence of marine mammal species in the project area were also compiled from reviews of scientific literature, previous IHA applications and monitoring reports for similar construction activities in Alaska, as well as information from local biologists. NMFS recognizes that while anecdotal data provide some insight into the potential number of marine mammals present within the action area, the data may have some biases based on when personnel were observing for marine mammals (*e.g.*, during favorable weather) and these efforts were sparse. Additionally, there have been no project-specific, or systematic surveys within Sweeper Cove. Moreover, there is the potential for unusual events where more marine mammals may be encountered (*e.g.*, strong salmon runs in Sweeper Cove). Therefore, TAC has requested slightly higher number of takes than the scant data available may provide to ensure that enough take has been authorized to conduct the project as needed.

Average group sizes used to inform estimated takes by Level B harassment for all species with prior observations near the project area are primarily based on those data. The estimated group size and predictable occurrence of marine mammal species in the Port of Adak is shown in table 8.

Table 8 -- Estimated Average Group Size and Frequency of Occurrence of Marine Mammal Species in the Port of Adak

Species	Estimated Average Group Size or Occurrence	Frequency of Occurrence in the Project Area	Reference
Humpback Whale – Hawai'i Stock	2	Yearly	Matthew Holsinger, Tom Spittler, and Lisa Spittler

			Personal Communication with Andrew Fisher, 2025
Humpback Whale – Mexico-North Pacific Stock	2	Yearly	Matthew Holsinger, Tom Spittler, and Lisa Spittler Personal Communication with Andrew Fisher, 2025
Humpback Whale – Western North Pacific Stock	2	Yearly	Matthew Holsinger, Tom Spittler, and Lisa Spittler Personal Communication with Andrew Fisher, 2025
Minke Whale	2	Yearly	Guerrero, 2008b
Killer Whale – Eastern North Pacific Alaska Resident Stock	23	Yearly	Forney and Wade, 2006
Killer Whale – Gulf of Alaska, Aleutian Islands, and Bering Sea Transient Stock	8	Yearly	Forney and Wade, 2006
Steller Sea Lions	10	Monthly	Matthew Holsinger, Tom Spittler, and Lisa Spittler Personal Communication with Andrew Fisher, 2025
Harbor Seal	3	Daily	Matthew Holsinger, Tom Spittler, and Lisa Spittler Personal Communication with Andrew Fisher, 2025

Humpback whales, minke whales, and killer whales are uncommon within the project area. Therefore, TAC estimated that only one group of each species and stock may be exposed to noise above harassment thresholds during the effective period of the IHA. For these species, TAC requested authorization to take one group per year (per stock) by Level B harassment and one individual by Level A harassment. However, this approach overestimates the potential for take. Therefore, NMFS has reduced the amount of Level B harassment by the requested number of Level A harassment exposures.

Steller sea lions and harbor seals are common in the project area. For Steller sea lions, TAC estimated 10 Steller sea lions (table 8) could be present and potentially taken each month activities could occur (4 months). For harbor seals, TAC estimated three harbor seals per day (table 8) could be present and potentially taken each day the specified activities could occur (up to 126 days).

The resulting exposure estimates from these calculations are provided in table 8. NMFS acknowledges that the number of estimated exposures above higher threshold criteria, (*e.g.,* sound exposures exceeding Level A harassment criteria), also encompass the potential for less impactful effects (*e.g.*, Level B harassment). An individual exposure exceeding a Level A harassment criterion may not result in actual AUD INJ, yet the individual may have experienced Level B harassment. This outcome is accounted for in our authorization of potential higher-level takes and in our analysis.

Humpback Whale

The average group size for humpback whales for each stock estimated in the project area was two animals per group on a yearly occurrence. However, as described above, the available data is scant and humpbacks are occasionally observed near the project area.

For estimating take by Level B harassment where monitoring data confirmed the presence of the marine mammal species, NMFS concurred with TAC's proposed approach. TAC requested take by Level B harassment by predicting that one group of humpback whales would be sighted every year, which was based on the applicant predicting this species would occur within the project area. This was then multiplied by the average group size for humpback whales (two individuals), to achieve a yearly rate.

It is possible that humpback whales could enter the Level A harassment zone during pile driving activities and stay long enough to incur AUD INJ before TAC detects the animal and implements a shutdown. As such, TAC requested and NMFS proposed to authorize a small amount of take by Level A harassment of humpback whales. NMFS determined takes by Level A harassment with the assumption that one individual may be present in the Level A harassment zone.

Therefore, NMFS proposes to authorize a total of 6 takes by Level B harassment and three takes by Level A harassment of humpback whales. Based on the information on the occurrence of the three stocks in the waters off the coast of Alaska (in the Aleutian Islands), the percent probability of harassment occur to individuals of the Hawaii stock, Mexico North Pacific stock, and Western North Pacific stock is 91 percent, 7 percent, and 2 percent, respectively.

Minke Whale

The average group size for minke whales estimated in the project area was two animals per group on a yearly occurrence. TAC used an average group size of two individuals based on observations of minke whales around Adak Island, Alaska.

For estimating take by Level B harassment where monitoring data confirmed the presence of the marine mammal species, NMFS concurred with TAC's proposed approach. TAC estimates that one group of minke whales could occur within the ensonified area during the specified activities in a year. This was then multiplied by the average group size for minke whales (two individuals), to achieve a yearly rate.

It is possible that minke whales could enter the Level A harassment zone during pile driving activities and stay long enough to incur AUD INJ before TAC detects the animal and implements a shutdown. As such, TAC requested and NMFS proposed to authorize one take by Level A harassment of minke whales.

Therefore, TAC requested, and NMFS proposes to authorize, a total of two takes by Level B harassment and one take by Level A harassment for minke whales.

Killer Whale

The average group size for killer whales detected in the project area was 23 (Eastern North Pacific Alaska Resident stock) or 8 (Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock) animals per group on a yearly occurrence, depending on the stock.

For estimating take by Level B harassment where monitoring data confirmed the presence of the marine mammal species, NMFS concurred with TAC's proposed approach. TAC estimates that one group of killer whales from each stock would be sighted every year. This was then multiplied by the average group size for killer whales (23 or 8 individuals), to achieve a yearly rate.

TAC requested authorize a small amount of take by Level A harassment of killer whales. NMFS determined takes by Level A harassment is unlikely due to the small size of the Level A harassment zone, establishment of a shutdown zone, and the high visibility of this. NMFS is not proposing to authorize take by Level A harassment for both stocks of killer whales.

Therefore, NMFS proposed to authorize a total of 23 and 8 takes by Level B harassment for the Eastern North Pacific Alaska Resident stock and Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock, respectively.

Steller Sea Lion

The average group size for Steller sea lions estimated in the project area was 10 animals on a monthly occurrence. However, as described above, the data are scant and stochastic events such as a strong salmon run could result in more frequent occurrences.

For estimating take by Level B harassment where monitoring data confirmed the presence of the marine mammal species, NMFS concurred with TAC's proposed approach. TAC requested take by Level B harassment by predicting that one group of Steller sea lions would be sighted every month, which was based on the applicant predicting that this species would occur within the project area. This was then multiplied by the average group size for Steller sea lions (10 individuals), to achieve a monthly rate.

It is possible that Steller sea lions could enter the Level A harassment zone during pile driving activities and stay long enough to incur AUD INJ before TAC detects the animal and implements a shutdown. As such, TAC requested and NMFS proposed to authorize a small amount of take by Level A harassment of Steller sea lions. NMFS determined takes by Level A harassment with the assumption that 12 individuals may be present in the Level A harassment zone based on the potential that several small groups may remain near the mouth of streams foraging on salmon runs at the west end of Sweeper Cove.

Therefore, NMFS proposes to authorize a total of 40 takes by Level B harassment and 12 takes by Level A harassment for Steller sea lions.

Harbor Seal

The average group size for harbor seals estimated in the project area was three harbor seals per group on a daily occurrence.

For estimating take by Level B harassment where monitoring data confirmed the presence of the marine mammal species, NMFS concurred with TAC's proposed approach. TAC requested take by Level B harassment by predicting that one group of harbor seals would be sighted every day, which was based on the applicant predicting this species would more commonly occur within the project area. This was then multiplied by the average group size for harbor seals (three individuals), to achieve a daily rate.

It is possible that harbor seals could enter the Level A harassment zone during pile driving activities and stay long enough to incur AUD INJ before TAC detects the animal and implements a shutdown. As such, TAC requested and NMFS proposed to authorize a small amount of take by Level A harassment of harbor seals. NMFS determined takes by Level A harassment with the assumption that one individual may be present per day in the Level A harassment zone.

Therefore, NMFS proposes to authorize a total of 378 takes by Level B harassment and 126 takes by Level A harassment for harbor seals. Takes by Level A harassment for harbor seals are not requested nor are they proposed for authorization.

Table 9 -- Proposed Take by Stock and Harassment Type and as a Percentage of Stock Abundance

Species	Stock	Proposed Authorized Take		Proposed Take as a Percentage of Stock Abundance
		Level A Harassment	Level B Harassment	
Humpback Whale	Hawai'i	3	6	>1
	Mexico – North Pacific			*
	Western North Pacific			>1
Minke Whale	Alaska	1	2	*
Killer Whale	Eastern North Pacific Alaska Resident	0	23	1.2
	Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea Transient	0	8	1.4

Steller Sea Lion	Western	12	40	<1
Harbor Seal	Aleutian Islands	126	378	9

* Reliable abundance estimates for these stocks are currently unavailable.

[1] An individual exposure exceeding a Level A harassment criterion may not result in actual AUD INJ, yet the individual may have experienced Level B harassment. Therefore, the number of Level B harassment exposures documented in a monitoring report may exceed the number of Level B harassment takes authorized but may not exceed the sum of all take authorized.

The number of takes by Level A and Level B harassment were estimated based on Port of Adak personnel that live and work near Sweeper Cove. While their anecdotal data provides some level of certainty in the potential number of marine mammals present within the project area; the data may have some biases based on when personnel were observing marine mammals in the field. Additionally, there have been no project-specific, or systematic surveys within Sweeper Cove and Kuluk Bay to provide a solid baseline for the number of marine mammals that regularly use the area during the spring/summer/fall months. Therefore, to provide a conservative scenario for the number of marine mammals that may be encountered during the construction window (May through September), the takes by Level A harassment were added to the takes by Level B harassment. Furthermore, there is the potential for unusual events where more marine mammals may be encountered (*e.g.*, strong salmon runs in Sweeper Cover). Therefore, to account for the uncertainty and variability in the number of marine mammals that could be taken, the Level A and Level B harassment numbers are additive.

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, as well as subsistence uses. 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.

The mitigation requirements described in the following were proposed by TAC in its adequate and complete application or are the result of subsequent coordination between NMFS and TAC. TAC has agreed that all of the mitigation measures are practicable. NMFS has fully reviewed the specified activities and the mitigation measures to determine if the mitigation measures would result in the least practicable adverse impact on marine mammals and their habitat, as required by the MMPA, and has determined the proposed measures are appropriate. NMFS describes these below as proposed mitigation requirements, and has included them in the proposed IHA.

TAC must ensure that construction supervisors and crews, the monitoring team and relevant TAC staff are trained prior to the start of all pile driving activity, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood. New personnel joining during the project must be trained prior to commencing work.

Along with the IHA application, TAC provided a comprehensive Marine Mammal Monitoring and Mitigation Plan (4MP) for the Pier 5 Improvements Project, which included additional general mitigation measures, Protected Species Observer (PSO) requirements, PSO procedures, mitigation measures for impact pile installation (pipe piles), mitigation measures for vibratory pipe removal and installation, mitigation measures for wood treated pilings, mitigation measures for project-dedicated vessels, mitigation measures for vessel transit (North Pacific right whales, Steller sea lions, and their designated critical habitat), data collection, and reporting. Please see that document for more detailed information.

Mitigation for Marine Mammals and their Habitat

Visibility Conditions— Pile driving or removal would begin no sooner than 30 minutes after sunrise to allow for 30-minute pre-activity monitoring and would cease in time to allow for the 30-minutes post-activity monitoring period. Pile driving and removal may not begin or continue without sufficient daylight or weather conditions to observe marine mammals within the clearance or shutdown zones.

Bubble Curtains —Bubble curtains would be used during impact pile driving reduce in-water noise effects.

Clearance and Shutdown Zones — TAC proposed, and NMFS would require, the establishment of clearance and shutdown zones identified in table 10 for pile installation and removal activities. The purpose of "clearance" of a particular zone is to prevent potential instances of AUD INJ and more severe behavioral disturbance the maximum extent practicable by delaying the commencement of impact pile driving if marine mammals are detected within certain pre-defined distances from the pile being installed.

The purpose of a shutdown is to prevent a specific acute impact, such as AUD INJ or severe behavioral disturbance of sensitive species, by halting the activity. Additionally, to avoid unauthorized takes, TAC would be required to delay an activity or shut down in the event that a species for which take is not authorized or for which take has been reached is observed within or entering any designated harassment zone. After shutdown, an activity may be reinitiated once all clearance zones are clear of marine mammals for the minimum species-specific periods (15 minutes for odontocetes or pinnipeds and 30 minutes for mysticetes). Specified activities would also be delayed or shutdown if PSOs cannot visually observe the zones in table 10. In-water activities that do not include the specified activities but require heavy equipment would also shutdown if a marine mammal approaches within 10 m to avoid direct interaction. The shutdown zone for mysticetes (humpback whales and minke whales), phocids (harbor seals), and otariids (Steller sea lions) would be 200 m to simplify mitigation measures for PSOs across all species and specified activity types. Larger shutdown zones would not be practicable for these hearing groups/species as TAC would have to shutdown too often (which could extend the time needed to complete the specified activities that produce in-air and underwater sound) and it may be difficult to reliably detect (and implement mitigation measures by PSOs at those distances) smaller species such as harbor seals.

Table 10 -- Proposed Shutdown Zones

Activity	Pile Diameter and Type	Shutdown Zones (m)				
		LF	HF	VHF	PW	OW
Vibratory	30-inch Steel Fender	35	15	NA	45	15
Vibratory	30-inch Steel Bearing	20	10	NA	25	15
Vibratory	18-inch Steel Fender	65	25	NA	85	30

Vibratory	12-inch Timber	80	30	NA	100	35
Impact	30-inch Steel Fender	200	100	NA	200	200
Impact	30-inch Steel Bearing	200	100	NA	200	200
Impact	18-inch Steel Fender	200	100	NA	200	200

Soft Start —The use of soft-start procedures provide warning, 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 (at no more than half the operational power), with each strike followed by a 30-second waiting period, then two subsequent reduced-power-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 (and PSO visual monitoring has also stopped). Soft start is not required during vibratory pile driving and removal activities.

Based on our evaluation of the applicant's proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

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

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

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the activity; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and,
- Mitigation and monitoring effectiveness.

The monitoring and reporting requirements described in the following were proposed by TAC in its adequate and complete application and/or are the result of subsequent coordination between NMFS and TAC. TAC has agreed to the requirements.

NMFS describes these below as requirements and has included them in the proposed IHA.

Marine mammal monitoring must be conducted in accordance with the 4MP. Marine mammal monitoring during pile driving and removal activities must be conducted by NMFS-approved PSOs who have no other assigned tasks during monitoring periods. At least one PSO would have prior experience performing the duties of a PSO during pile removal and installation activities pursuant to a NMFS-issued Incidental Take Authorization. Visual monitoring would be conducted by at least two PSO positioned at suitable vantage points (*i.e.,* breakwater that separates Sweeper Cove from Kuluk Bay, Pier 5, Fuel Pier, or the bluff along the south side of Sweeper Cove opposite Pier 5). At least one PSO would have an unobstructed view of all water within the shutdown zone and would be stationed at or near the pier and/or breakwater. Remaining PSOs would be placed at one or more of the observer monitoring locations identified in the 4MP, in order to observe as much as the Level A and Level B harassment zone as possible. All PSOs would be required to use standard equipment such as reticle binoculars (7 by 50 or better), Big-Eye binoculars, spotting scopes (30 times), clinometers, and range finders. A contact list, field guide, instructional handbook, and maps would also be available to PSOs. Details regarding PSO qualifications and monitoring requirements can be found in the draft IHA available at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.*

Reporting

TAC will submit a draft marine mammal monitoring report to NMFS within 90 calendar days after the completion of pile driving activities, or 60 days prior to the requested issuance of any subsequent IHA for similar activities at the same location, whichever comes first. The information required to be collected and reported to NMFS is included in the draft IHA available at *https:// www.fisheries.noaa.gov/national/marine-*

mammal-protection/incidentaltake-authorizations-construction-activities. In summary, the report would include, but not be limited to, information regarding activities that occurred, marine mammal sighting data, and whether mitigative actions were taken or could not be taken. TAC would also be required to submit reports on any observed injured or dead marine mammals. If the death or injury was clearly caused by the specified activity, TAC 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 IHA. TAC would not resume its activities until notified by NMFS.

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, our analysis applies to all the species listed in table 2, 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.

Specified activities associated with the TAC's Pier 5 Improvements Project, as outlined previously, have the potential to disturb or displace as well as cause AUD INJ to marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment and Level A harassment, from underwater sounds generated by pile driving. Potential takes could occur if marine mammals are present in zones ensonified above the thresholds for Level B harassment or Level A harassment, identified above, while 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. The potential for harassment would be minimized through the implementation of planned mitigation measures (see **Proposed Mitigation** section).

Take by Level A harassment is proposed for five species (humpback whale, minke whale, killer whale, Steller sea lion, and harbor seal) as the shutdown zone is so large that it is possible that a humpback whale, minke whale, killer whale, Steller sea lion, or harbor seal could enter the Level A harassment zone and remain within the zone for a duration long enough to incur AUD INJ before being detected.

Any take by Level A harassment is expected to arise from, at most, a small degree of AUD INJ (*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 AUD INJ. TAC would also shut down pile driving activities if marine mammals enter the shutdown zones (table 10) further minimizing the likelihood and degree of AUD INJ that would be incurred. Given the small degree anticipated, any AUD INJ 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 AUD INJ, given sufficient notice through use of soft start.

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 pile removal and installation 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 area by marine mammals would be temporary in nature and that any marine mammals that avoid the project area during pile removal and installation activities would not be permanently displaced. Short-term avoidance of the project area 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.

As described in the **Description of Marine Mammal in the Area of Specified Activities** section, there are several haulouts in the Aleutian Islands. The ensonified area from pile driving activities that would occur during this project overlaps with the 23 miles (37 km) area around only haulouts in this lesser used category, including Argonne Point, Cape Moffet, Head Rock, and Kagalaska. The ensonified area overlaps ESA-designated critical habitat for Western DPS of Steller sea lion. Specifically, the Level B harassment ensonified area overlaps with the aquatic zones of designated major haulouts. The ensonified area Level B harassment zone related to implementation of the proposed project, described in the **Estimated Take of Marine Mammals** section, overlaps with the designated aquatic zone of the designated major haulouts. No terrestrial or in-air critical habitat of any major haulout overlaps with the project area. The effects from the pile driving activities would be insignificant and temporary to designated critical habitat for Steller sea lions.

The Pier 5 Improvements Project is also not expected to have significant adverse effects on affected marine mammals' habitats. The pile removal and installation activities would not modify existing marine mammal habitat for a significant amount of time. The activities may cause some fish to leave the area of disturbance, thus temporarily impacting marine mammals' foraging opportunities in a limited portion of the foraging range. We do not expect pile driving activities to have significant consequences to marine invertebrate populations. Given the short duration of the activities and the relatively small area of the habitat that may be affected, the impacts to marine mammal habitat, including fish and invertebrates, are not expected to cause significant or long-term negative consequences. Further, the new improvements to Pier 5 would be contained within the footprint of the existing pier so no permanent impacts to habitat are expected to occur.

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

- No serious injury, or mortality is anticipated or authorized;
- Level A harassment of four species proposed for authorization are expected to be of a small degree;
- 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 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 will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted previously, only take of small numbers of marine mammals may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is 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 are below one-third of the estimated stock abundance for all stocks (table 9). The number of animals that we expect to authorize to be taken from these stocks would be considered small relative to the relevant stocks' abundances even if each estimated taking occurred to a new individual, which is an unlikely scenario.

The most recent abundance estimate for the Mexico-North Pacific stock of humpback whale is likely unreliable as it is more than 8 years old. The most relevant estimate of this stock’s abundance in the Bering Sea and Aleutian Islands is 918 humpback whales (Wade, 2021), so the 2 proposed takes by Level B harassment and 1 proposed takes by Level A harassment, is small relative to the estimated abundance (0.3 percent), even if each proposed take occurred to a new individual.

A lack of an accepted stock abundance value for the Alaska stock of minke whale did not allow for the calculation of an expected percentage of the population that would be affected. The most relevant estimate of partial stock abundance is 1,233 minke whales in coastal waters of the Alaska Peninsula and Aleutian Islands (Zerbini *et al.*, 2006), so the 2 proposed takes by Level B harassment, and 1 proposed takes by Level A harassment, compared to the abundance estimate, shows that less than 1 percent of the stock would be expected to be impacted.

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

In order to issue an IHA, NMFS must find that the specified activity will not have an "unmitigable adverse impact" on the subsistence uses of the affected marine mammal species or stocks by Alaskan Natives. NMFS has defined "unmitigable adverse impact" in 50 CFR 216.103 as an impact resulting from the specified activity: (1) that is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by, (i) causing the marine mammals to abandon or avoid hunting areas, (ii) directly displacing subsistence users, or (iii) placing physical barriers between the marine mammals and the subsistence hunters; and (2) that cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

Alaskan Natives have hunted marine mammals in the Aleutian Islands of Alaska for subsistence uses for hundreds of years (ADF&G 1997). In 2008, residents of Adak harvested four harbor seals and eight Steller sea lions. Hunting for subsistence uses usually occurs in October and November and does not generally occur within the harbor area of Adak Island (ADF&G 2009). The Pier 5 Improvement Project is located in an already developed area where commercial and human activities occur. The proposed activities will not take place in or near a traditional Arctic subsistence hunting area and is not likely to impact subsistence activities or the availability of any marine mammal for subsistence uses. No plan of cooperation is required for this project.

Based on the description of the specified activity, NMFS has preliminarily determined that there will not be an unmitigable adverse impact on subsistence uses from TAC's proposed activities.

Endangered Species Act

Section 7(a)(2) of the 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, in this case with the Alaska Regional Office.

NMFS Office of Protected Resources (OPR) is proposing to authorize take of Mexico DPS of humpback whale, Western North Pacific DPS of humpback whale, and Western DPS of Steller sea lion which are listed under the ESA. NMFS OPR has requested initiation of section 7 consultation with the NMFS Alaska Regional Office for the issuance of this IHA. NMFS will conclude the ESA section 7 consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to TAC authorizing the take of marine mammals incidental to the Pier 5 Improvements Project at Adak Island, Alaska, 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/permit/incidental-take-authorizations-under-marine-mammal-protection-act*.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA. 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, 1-year renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the **Description of Proposed Activity** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activity** section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed renewal IHA effective date (recognizing that the renewal IHA expiration date cannot extend beyond 1 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); and,

(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: March 10, 2026.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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