0-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XC757]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Pile Driving and Removal to Improve the Auke Bay East Ferry Terminal

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 Alaska Department of Transportation and Public Facilities (ADOT&PF) for authorization to take marine mammals incidental to pile driving to improve the Auke Bay East Ferry Terminal in Juneau, 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 **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorization and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [*INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER*].

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

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

FOR FURTHER INFORMATION CONTACT: Craig Cockrell, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed 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 NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

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

Summary of Request

On September 13, 2022, NMFS received a request from ADOT&PF for an IHA to take marine mammals incidental to vibratory and impact pile driving to improve the Auke Bay East Ferry Terminal. Following NMFS' review of the application, ADOT&PF submitted a revised version on January 11, 2023. The application was deemed adequate and complete on February 14, 2023. The ADOT&PF's request is for the incidental take of small numbers of 11 species or stocks of marine mammals, in the form of Level B harassment for all and, for harbor seals and harbor porpoise, including take by Level A harassment. Neither ADOT&PF nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

ADOT&PF is proposing maintenance improvements to the existing Alaska Marine Highway System (AMHS) Auke Bay East Berth marine terminal. The activity includes removal of existing piles and the installation of both temporary and permanent piles of various sizes. Takes of marine mammals by Level A and Level B harassment would occur due to both impact and vibratory pile driving and removal. The project would occur in Auke Bay which is located in southeast Alaska in close proximity to the City of Juneau. Construction activities are expected to over a four month period in fall 2023. It is expected to take up to 61 days to complete the pile driving activities.

The Auke Bay Ferry Terminal is located along the north shore of Auke Bay and is a major hub of the Southeast and Gulf of Alaska routes of the AMHS. The purpose of the Project is to restore the service life of the AMHS Auke Bay East Berth ferry terminal, which was originally built in 1982. The dolphins have undergone several repair projects and are currently in need of full replacement to keep the facility safe and usable for the AMHS vessels that frequent the facility.

Dates and Duration

The proposed activities are expected to occur between October 1, 2023 and September 30, 2024. It is expected to take up to 61 non-consecutive days of in water work over a four month work window to complete the pile driving activities. Pile driving would be completed intermittently throughout the daylight hours. All pile driving is expected to be completed during one phase of construction.

Specific Geographic Region

Auke Bay is an estuary at the southern end of Lynn Canal, located approximately 18 kilometers (km) (11 miles (mi)) north-northwest of downtown Juneau. The bay is one of many that lead to a larger system of glacial fjords connecting various channels with the open ocean. Auke Bay is approximately 130 km (80.7 mi) inland from the Gulf of Alaska (Figure 1). Auke Bay contains several small islands and reefs within the 11 square kilometer (km^2) (4.25 square mile (mi^2)) embayment. While most of the bay is relatively shallow, reaching depths of 40 to 60 meters (m) (131 to 197 feet (ft)), depths of more than 100 m (328 ft) are found near Coghland Island (see Figure 1-2 in the IHA application). Pile installation and removal at the ferry terminal would occur in waters ranging in depth from less than 1 m (3.3 ft) near shore to approximately 11 m (35 ft).

Figure 1. Project Location in Southeast Alaska

Detailed Description of the Specified Activity

The ferry terminal improvements include the removal of 47 existing steel pipe piles. Once the existing piles are removed, up to 20 new steel pipe piles (30-inch (in) (76.2 centimeters (cm)) diameter; 10 plumb, 10 battered) woul be installed as berthing dolphins. Eight new steel pipe piles (24-in diameter (61 cm); 4 plumb, 4 battered) would be installed as float restraints. Four new steel pipe piles (18-in diameter (45.7 cm)) would be installed as gangway and platform support. The installation and removal of 32 temporary 24-in steel pipe piles would be completed to support permanent pile installation. Vibratory and impact hammers will be used for the installation and removal of all piles (Table 1). Removal of piles would be conducted using vibratory hammers. After new piles are set with a vibratory hammer, installed piles would be proofed with an impact hammer to verify the structural capacity of the pile embedment. The work would be completed at the existing Auke Bay Ferry Terminal in Juneau, Alaska. Work on the terminal would be completed within 1-year starting in October and completion in September.

Table 1 -- Number and Types of Piles to be Installed and Removed

Pile Diameter and Type	Number of Piles	Strikes per pile (Impact)	Duration per pile (minutes)	Piles per day (range)	Days of Activity
Pile Installation					
30 in Steel Plumb Piles (Permanent; Berthing Dolphins)	10	1,000	60	1.5 (1-2)	7
30 in Steel Batter Piles (Permanent; Berthing Dolphins)	10	1,000	60	1.5 (1-2)	7
24 in Steel Plumb Piles (Permanent; Float Restraint)	4	1,000	60	1.5 (1-2)	3
24 in Steel Batter Piles (Permanent; Float Restraint)	4	1,000	60	1.5 (1-2)	3
18 in Steel Plumb Piles	4	800	60	1.5 (1-2)	3

(Permanent; Gangway/Platform Support)					
24 in Steel Piles (Temporary)	32	500	30	3 (2-4)	11
Pile Removal					
18 in Steel Plumb Piles (Existing)	47	N/A	30	3 (2-4)	16
24 in Steel Piles (Temporary)	32	N/A	30	3 (2-4)	11
Total	143				61

Above-water construction would include replacement of the catwalk access gangway, refurbishment of the catwalks, lighting upgrades along dolphins and catwalk, removal and replacement of electrical components as needed to perform dolphin replacement work, and installation of cathodic protection anodes on all piles. This above-water work is not expected to result in any take. Noise generated above the water would not be transmitted into the water and, there are no major pinniped haulouts located near the project area, therefore airborne noise is therefore not considered further in this document.

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

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all of this information, and we refer the reader to these descriptions, incorporated here by reference, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-*

assessments) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website (*https://www.fisheries.noaa.gov/find-species)*.

Table 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' U.S. 2021 SARs, and NMFS has reviewed the most current information for all species, including those updated in the Draft 2022 SARs.

On January 24, 2023, NMFS published the draft 2022 SARs (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). The Alaska and Pacific Ocean SARs include proposed updates to the humpback whale and harbor porpoise stock structures. The new humpback whale stock structure, if finalized, would modify the MMPA-designated stocks to align

more closely with the ESA-designated DPSs. The new harbor porpoise stock structure, if finalized, would split the Southeast Alaska stock into three new stocks. Please refer to the draft 2022 Alaska (Young *et al.,* 2023) and Pacific Ocean SARs for additional information.

NMFS Office of Protected Resources, Permits and Conservation Division has generally considered peer-reviewed data in draft SARs (relative to data provided in the most recent final SARs), when available, as the best available science, and has done so in this rule for all species and stocks, with the exception of a new proposal to revise humpback whale stock structure. Given that the proposed changes to the humpback whale stock structure involve application of NMFS's Guidance for Assessing Marine Mammals Stocks and could be revised following consideration of public comments, it is more appropriate to conduct our analysis in this proposed IHA based on the status quo stock structure identified in the most recent final SARs (2021; Carretta *et al.*, 2022; Muto *et al.*, 2022).

All values presented in Table 2 are the most recent available at the time of publication (including from the draft 2022 SARs) and are available online at: *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 (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Family Balaenopteridae (rorquals)						
Humpback whale	*Megaptera novaeangliae*	Central North Pacific	-/-; Y	10,103 (0.3, 7,890, 2006)	3.4	4.46
Minke whale	*Balaenoptera acutorostrada*	Alaska	-/-; N	N/A (N/A, N/A, N/A)	UND	0

Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	*Orcinus orca*	Alaska Resident	-/-; N	1,920 (N/A, 1,920, 2019)	19	1.3
		West Coast Transient	-/-; N	349 (N/A, 349, 2018)	3.5	0.4
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	North Pacific	-/-; N	26,880 (N/A, N/A, 1990)	UND	0
Family Phocoenidae (porpoises)						
Harbor porpoise	*Phocoena phocoena*	Southern Southeast Alaska Inland Waters	-/-; Y	890 (0.37; 610; 2019)	6.1	7.4
Dall's porpoise	*Phocoenoides dalli*	Alaska	-/-; N	UND (UND, UND, 2015)	UND	37
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller sea lion	*Eumetopias jubatus*	Eastern DPS	-/-; N	43,201 (N/A, 43,201, 2017)	2,592	112
		Western DPS	E/D; Y	52,932 (N/A, 53,932, 2019)	318	254
California sea lion	*Zalophus californianus*	U.S.	-/-; N	257,606 (N/A, 233,515, 2014)	14,011	>321
Northern fur seal	*Callorhinus ursinus*	Eastern Pacific	-/-; Y	626,618 (0.2, 530,376, 2019)	11,403	373
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina*	Lynn Canal/Stephens Passage	-/-; N	13,388 (N/A, 11,867, 2016)	214	50
Northern Elephant Seal	*Mirounga angustirostris*	California	-/-; N	187,386 (N/A, 85,369, 2013)	5,122	13.7

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: *www.nmfs.noaa.gov/pr/sars/*. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.
3 - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

As indicated above, all 11 species (with 13 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 that could potentially occur in the proposed survey areas are included in Table 3-1 of the IHA application. The spatial and temporal occurrence of gray whales and fin whales in the area is such that take is not expected to occur. Sightings of gray whales and fin whales are uncommon in the inland waters of southeast Alaska. These species are typically seen closer to the open waters of the Gulf of Alaska. Additionally, the timing of the project (October – December) coincides with the period when these species are expected to be further south in their respective breeding areas. Take of gray whales and fin whales has not been requested nor is proposed to be authorized and these species are not considered further in this document. The take of Northern fur seals was not requested by the applicant, but further communication with the NMFS Alaska Regional Office resulted in their inclusion in species that inhabit the area as well as being at risk for take during the construction activities (Wright, S., pers. comm.).

Humpback Whale

Humpback whales in the project area are from the Central North Pacific stock but may be of the Hawaii or Mexico Distinct Population Segments (DPS). Humpback whales migrate to southeast Alaska in spring to feed after months of fasting in equatorial breeding grounds in Hawaii and Mexico. Humpback whales found in the project areas are predominantly members of the Hawaii DPS (98 percent probability in Southeast Alaska), which is not listed under the ESA. However, based on a comprehensive photo-

identification study, members of the Mexico DPS, which is listed as threatened, have a small potential to occur in the project location (2 percent probability in Southeast Alaska) (Wade, 2021). Peak abundance of humpback whales in southeast Alaska typically occurs during late summer to early fall. Most humpback whales begin returning to southern breeding grounds in fall or winter. However, due to temporal overlap between whales departing and returning, humpbacks can be found in Alaskan feeding grounds in every month of the year (Baker *et al.*, 1985; Straley, 1990; Wynne and Witteveen, 2009). It is also common for some humpback whales to overwinter in areas of southeast Alaska. It is thought that those humpbacks that remain in southeast Alaska do so in response to the availability of winter schools of fish, such as herring (Straley, 1990).

Southeast Alaska is considered a biologically important area for feeding humpback whales between March and May (Ellison *et al.* 2012). Most humpback whales migrate to other regions during winter to breed, but over-wintering (non-breeding) humpback whales have been noted and may be increasingly common (Straley, 1990). In Alaska, humpback whales filter feed on tiny crustaceans, plankton, and small fish such as walleye pollock, Pacific sand lance, herring, eulachon, and capelin (Witteveen *et al.,* 2012). It is common to observe groups of humpback whales cooperatively bubble feeding.

Use of Auke Bay by humpback whales is intermittent and irregular year-round. During winter, researchers have documented 1 to 19 individual humpback whales per month in waters close to the project area, including Lynn Canal (Moran *et al.*, 2018a; Straley *et al.*, 2018). Group sizes in southeast Alaska generally range from one to four individuals (Dahlheim *et al.*, 2009).

Minke Whale

Minke whales in Southeast Alaska are part of the Alaska stock (Muto *et al.,* 2022). Dedicated surveys for cetaceans in Southeast Alaska found that minke whales

were scattered throughout inland waters from Glacier Bay and Icy Strait to Clarence Strait, with small concentrations near the entrance of Glacier Bay. All sightings were of single minke whales, except for a single sighting of multiple minke whales. Surveys took place in spring, summer, and fall, and minke whales were present in low numbers in all seasons and years. No information appears to be available on the winter occurrence of minke whales in Southeast Alaska (Dahlheim *et al.,* 2009). Anecdotal observations suggest that minke whales do not enter Auke Bay but their occurrence in Southeast Alaska could result in their presences in the Project area.

Killer Whale

Killer whales have been observed in all the world's oceans, but the highest densities occur in colder and more productive waters found at high latitudes (NMFS 2016a). Killer whales occur along the entire Alaska coast, in British Columbia and Washington inland waterways, and along the outer coasts of Washington, Oregon, and California (NMFS, 2016a). There are three distinct ecotypes, or forms, of killer whales recognized: resident, transient, and offshore. The three ecotypes differ morphologically, ecologically, behaviorally, and genetically. Based on data regarding association patterns, acoustics, movements, and genetic differences, eight killer whale stocks are now recognized within the Pacific U.S. Exclusive Economic Zone. This application considers only the Eastern North Pacific Alaska Resident Stock (Alaska Resident Stock), Eastern North Pacific Northern Resident Stock (Northern Resident Stock), and West Coast Transient Stock, because all other stocks occur outside the geographic area under consideration (Muto *et al.,* 2022).

Transient killer whales hunt and feed primarily on marine mammals, while residents forage primarily on fish. Transient killer whales feed primarily on harbor seals, Dall's porpoises, harbor porpoises, and sea lions. Resident killer whale populations in the

eastern North Pacific feed mainly on salmonids, showing a strong preference for Chinook salmon (NMFS, 2016a).

No systematic studies of killer whales have been conducted in or around Auke Bay. Killer whales were observed infrequently (on 11 of 135 days) during monitoring nearby in Hoonah, 54 km west of Auke Bay, and most were recorded in deeper, offshore waters (Berger ABAM, 2016). Dalheim *et al.* (2009) observed transient killer whales within Lynn Canal, Icy Strait, Stephens Passage, Frederick Sound, and upper Chatham Strait. Transient killer whales tend to transit through Lynn Canal and occasionally enter Auke Bay to target local harbor seal, harbor porpoise, or Steller sea lion populations, but do not linger in the Project area (K. Savage, pers. comm.).

Pacific White-Side Dolphin

Pacific white-sided dolphins are a pelagic species inhabiting temperate waters of the North Pacific Ocean and along the coasts of California, Oregon, Washington, and Alaska (Muto *et al.* 2022). Despite their distribution mostly in deep, offshore waters, they may also be found over the continental shelf and in nearshore waters, including inland waters of Southeast Alaska (Ferrero and Walker, 1996). They prey on squid and small schooling fish such as capelin, sardines, and herring, are known to work in groups to herd schools of fish, and can dive underwater for up to 6 minutes to feed (Morton, 2006).

Scientific studies and data are lacking relative to the presence or abundance of Pacific white-sided dolphins in or near Auke Bay. When Pacific white-sided dolphins have been observed, sighting rates were highest in spring and decreased throughout summer and fall (Dahlheim *et al.,* 2009). Most observations of Pacific white-sided dolphins occur off the outer coast or in inland waterways near entrances to the open ocean. According to NOAA (Muto *et al.,* 2022), aerial surveys in 1997 sighted one group of 164 Pacific white-sided dolphins in the Dixon Entrance to the south of Auke Bay.

These observational data, combined with anecdotal information, indicate that there is a small potential for Pacific white-sided dolphins to occur in the Project area.

Harbor Porpoise

The Southeast Alaska stock of harbor porpoises ranges from Cape Suckling to the Canada border (Muto *et al.*, 2022). Harbor porpoises frequent primarily coastal waters in southeast Alaska (Dalheim *et al.*, 2009) and occur most frequently in waters less than 100 m (328 ft) deep (Hobbs and Waite, 2010). Harbor porpoises forage in waters less than 200 m (656 ft) deep on small pelagic schooling fish such as herring, cod, pollock, octopus, smelt, and bottom-dwelling fish, occasionally feeding on squid and crustaceans (Bjørge and Tolley 2009; Wynne *et al.*, 2011). Calving generally occurs from May to August, but can vary by region.

Although there have been no systematic studies or observations of harbor porpoises specific to Auke Bay, there is the potential for them to occur within the project area. Abundance data for harbor porpoises in southeast Alaska were collected during 18 seasonal surveys spanning 22 years, from 1991 to 2012. During that study, a total of 398 harbor porpoises were observed in the northern inland waters of southeast Alaska, including Lynn Canal (Dahlheim *et al.*, 2015). Recent monitoring from ADOT&PF from within Auke Bay observed a total of 28 animals over a 25 day period (ADOT&PF, 2021. NMFS also completed observations in Auke Bay where 62 groups of harbor porpoises were seen over a 60-hour period. The survey was conducted from March through June in 2021.

Dall's Porpoise

Dall's porpoises are found throughout the North Pacific, from southern Japan to southern California and north to the Bering Sea. All Dall's porpoises in Alaska are members of the Alaska stock, and those off California, Oregon, and Washington are part

of a separate stock. This species can be found in offshore, inshore, and nearshore habitat, but prefers waters more than 183 meters deep (Dahlheim *et al.,* 2009; Jefferson, 2009).

No systematic studies of Dall's porpoise abundance or distribution have occurred in Auke Bay; however, Dall's porpoises have been consistently observed in Lynn Canal, Stephens Passage, upper Chatham Strait, Frederick Sound, and Clarence Strait (Dalheim *et al.,* 2000). The species is generally found in waters in excess of 600 feet (183 meters) deep, which do not occur in Auke Bay. Despite generalized water depth preferences, Dall's porpoises may occur in shallower waters. Moran *et al.* (2018a) recently mapped Dall's porpoise distributions in bays, shallow water, and nearshore areas of Prince William Sound, habitats not typically utilized by this species. A lone Dall's porpoise was sighted in the Level B harassment zone during construction activities conducted by ADOT&PF at Auke Bay in 2021 (ADOT&PF, 2021). If Dall's porpoises occur in the Project area, they will likely be present in March or April, given strong seasonal patterns observed in nearby areas of Southeast Alaska (Dalheim *et al.,* 2009).

Steller Sea Lion

Steller sea lions are found throughout the northern Pacific Ocean, including coastal and inland waters from Russia (Kuril Islands and the Sea of Okhotsk), east to Alaska, and south to central California (Año Nuevo Island). Steller sea lions were listed as threatened range-wide under the ESA on November 26, 1990 (55 FR 49204, November 26, 1990); they were subsequently partitioned into the western and eastern DPSs (wDPS and eDPS, respectively) in 1997 (Allen and Angliss, 2010). The eDPS remained classified as threatened (62 FR 24345, May 5, 1997) until it was delisted in November 2013, while the wDPS (those individuals west of 144° W longitude or Cape Suckling, Alaska) was upgraded to endangered status following separation of the stocks, and it remains listed as endangered.

The majority of Steller sea lions that inhabit Southeast Alaska are part of the eDPS; however, branded individuals from the wDPS make regular movements across the 144° longitude boundary to the northern "mixing zone" haulouts and rookeries within southeast Alaska (Jemison *et al.,* 2013). While haulouts and rookeries in the northern portion of Southeast Alaska may be important areas for wDPS animals, there continues to be little evidence that their regular range extends to the southern haulouts and rookeries in Southeast Alaska (Jemison *et al.,* 2018). However, genetic data analyzed in Hastings *et al.* (2020) indicated that up to 1.4 percent of Steller sea lions near the Project area may be members of the wDPS, which NMFS recommends using in their 2020 guidance (NMFS, 2020).

Steller sea lions are opportunistic predators, feeding primarily on a wide variety of fishes and cephalopods, including Pacific herring (*Clupea pallasi*), walleye pollock (*Gadus chalogramma*), capelin (*Mallotus villosus*), Pacific sand lance (*Ammodytes hexapterus*), Pacific cod (*Gadus machrocephalus*), salmon (*Oncorhynchus spp.*), and squid (*Teuthida spp.*) (Jefferson *et al.*, 2008; Wynne *et al.*, 2011). Steller sea lions do not generally eat every day, but tend to forage every one to two days and return to haulouts to rest between foraging trips (Merrick and Loughlin, 1997; Rehberg *et al.*, 2009).

The action area is not located in or near designated critical habitat for the wDPS of Steller sea lions. In southeast Alaska, critical habitat for the wDPS includes a terrestrial zone, an aquatic zone, and an in-air zone that extends 3,000 ft (0.9 km) landward, seaward, and above, respectively, any designated major rookery and major haulout. Steller sea lions are common within the project area; however, systematic counts or surveys have not been completed. The species generally occurs in Auke Bay only during winter. In the marine mammal monitoring report for a project completed at the same facility by ADOT, 30 Steller sea lions were observed within the behavioral disturbance zone during pile driving or drilling (*i.e.*, documented as Level B harassment

take) (ADOT&PF, 2021). The Auke Bay boating community observes Steller sea lions transiting between Auke Bay and the Benjamin Island haulout regularly during winter and provides anecdotal reports of Steller sea lions utilizing Fritz Cove in winter months. Most individuals that frequent Auke Bay use the major haulout on Benjamin Island in Lynn Canal (approximately 34 mi (54.7 km) from the project location), but several other haulouts are located within 20 to 30 km (12 to 19 mi) of the project area.

California Sea Lion

California sea lions have been separated into five genetically distinct stocks, with the U.S. Stock also known as the Pacific Temperate Stock (Carretta *et al.,* 2022). Male California sea lions disperse widely from their breeding rookeries in southern California to forage as far north as Canada (Carretta *et al.,* 2022), with some individuals observed dispersing farther north.

The U.S. stock of California sea lions have a wide range, typically from the border of the United States and Mexico (NMFS, 2019c). During the winter males commonly migrate to feeding grounds off California, Oregon, Washington, British Columbia and recently Southeast Alaska. There is an active unusual mortality event declared for the U.S. stock of California sea lions but this is mostly limited to southern California. Females and pups on the other hand stay close to breeding colonies until the pups have weened. The furthest north females have been observed is off the coast of Washington and Oregon during warm water years (NMFS, 2019c). While California sea lions aren't common in Alaska, one was present on the docks in Statter Harbor within Auke Bay in 2017 (NOAA, 2017).

California sea lions feed primarily offshore in coastal waters. They are opportunistic predators and eat a variety of prey including squid, anchovies, mackerel, rockfish and sardines (NMFS, 2019c). California sea lion breeding areas are mostly in southern California and are not expected to spatially overlap with the project area.

Northern Fur Seal

Northern fur seals occur from southern California north to the Bering Sea and west to the Sea of Okhotsk and Honshu Island, Japan. During the summer breeding season, most of the worldwide population is found on the Pribilof Islands (St. Paul Island and St. George Island) in the southern Bering Sea, with the remaining animals on rookeries in Russia, on Bogoslof Island in the southern Bering Sea, on San Miguel Island off southern California, and on the Farallon Islands off central California (Muto *et al.* 2022). Northern fur seals feed on a variety of prey including, squid, walleye pollock (*Gadus chalcogrammus*), Pacific hearing (*Clupea pallasii*), and capelin (*Mallotus villosus*) (Gomez *et al.,* 2015). Breeding and important haulouts areas are not expected to spatially overlap with the project area.

Northern fur seals are rare in the Auke Bay in general, but one lone animal was sighted swimming in the Gastineau Channel in 2019. In 2021 three Northern fur seals were stranded near Juneau, one in Gastineau Channel, one onshore about two miles Northwest of the action area, and a third on the west side of Douglas Island. Early in 2023 another northern fur seal was stranded in Sitka harbor (Wright, S., pers. comm.).

Harbor Seal

Harbor seals range from Baja California north along the west coasts of California, Oregon, Washington, British Columbia, and Southeast Alaska; west through the Gulf of Alaska, Prince William Sound, and the Aleutian Islands; and north in the Bering Sea to Cape Newenham and the Pribilof Islands. Harbor seals occur year-round in the inside passages of southeast Alaska and are regularly sighted in Auke Bay. Harbor seals forage on fish and invertebrates (Orr *et al.,* 2004) including capelin, eulachon (*Thaleichthys pacificus*), cod, pollock, flatfish, shrimp, octopus, and squid (Wynne, 2012). They are opportunistic feeders that forage in marine, estuarine, and occasionally freshwater habitat, adjusting their foraging behavior to take advantage of prey that are locally and

seasonally abundant (Payne and Selzer, 1989). Research has demonstrated that harbor seals conduct both shallow and deep dives while foraging (Tollit *et al.,* 1997), depending on prey availability. Harbor seals usually give birth to a single pup between May and mid-July; birthing locations are dispersed over several haulout sites and not confined to major rookeries (Klinkhart *et al.,* 2008). Harbor seals haul out on rocks, reefs, beaches, and drifting glacial ice. They are non-migratory; their local movements are associated with tides, weather, season, food availability, and reproduction, as well as sex and age class (Swain *et al.,* 1996; Lowry *et al.,* 2001; Boveng *et al.,* 2012).

Harbor seals are commonly sighted in the waters of the inside passages throughout Southeast Alaska. They occur year-round within the Project area and are regularly sighted in Auke Bay, including Statter Harbor within Auke Bay. NOAA aerial survey data indicate that groups ranging from 10 to 52 seals could be present within the Project area during summer at haulouts on the western side of Coghlan Island, as well as on Battleship Island (E. Richmond, pers. comm.). Harbor seals were observed in all months of ADOT&PF's 2021 project in Auke Bay (AKDOT&PF, 2021). Harbor seals are known to be curious and may approach novel activity and could enter the Project area during pile installation and removal.

Northern Elephant Seal

Northern elephant seals breed and give birth in California (U.S.) and Baja California (Mexico), primarily on offshore islands, from December to March (Stewart *et al.* 1994). Spatial segregation in foraging areas between males and females is evident from satellite tag data (Le Beouf *et al.,* 2000). Males migrate to the Gulf of Alaska and western Aleutian Islands along the continental shelf to feed on benthic prey, while females migrate to pelagic areas in the Gulf of Alaska and the central North Pacific to feed on pelagic prey (Le Beouf *et al.,* 2000).

Auke Bay is an unlikely area for an occurrence, as northern elephant seals generally feed along the continental shelf break (Le Boeuf *et al.,* 2000) and are not expected to spend time in shallow areas. No sightings of elephant seals have been documented near Auke Bay; however, protected species observers (PSOs) a t a ADOT&PF project site in Ketchikan (460 kilometers south of Auke Bay) reported sightings of a northern elephant seal on multiple days (C. Gentemann, pers. comm., April 8, 2022). Additional sightings of northern elephant seals around the state concurrent with the Ketchikan sighting were reported in Seward, King Cove, and Kodiak (L. Davis, pers. comm., April 14, 2022). Breeding and important haulouts areas are not expected to spatially overlap with the project area.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, etc.). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.*

(2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

Table 3 -- Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite (*i.e.*, all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.*, 2007) and PW pinniped (approximation).	

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

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

Potential Effects of Specified Activities on Marine Mammals and their Habitat

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

adversely affect the species or stock through effects on annual rates of recruitment or survival.

Description of Sound Sources

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

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

In-water construction activities associated with the project would include impact pile driving, vibratory pile driving, and vibratory pile 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 (ANSI, 1986; NIOSH, 1998; ANSI, 2005; 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 raid 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 pile hammers would be used on this project: impact and vibratory. Impact hammers operate by repeatedly dropping 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).

The likely or possible impacts of ADOT&PF's proposed activity on marine mammals could involve both non-acoustic and acoustic stressors. Potential non-acoustic stressors could result from the physical presence of the equipment and personnel; however, any impacts to marine mammals are expected to primarily be acoustic in nature.

Auditory Effects

The introduction of anthropogenic noise into the aquatic environment from pile driving and removal is the primary means by which marine mammals may be harassed from ADOT&PF's specified activity. In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe (Southall *et al.,* 2007). Exposure to pile driving noise has the potential to result in auditory threshold shifts and behavioral reactions (*e.g.*, avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). Exposure to anthropogenic noise can also lead to non-observable physiological responses such 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 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. mom 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.,* 2004; Southall *et al.,* 2007). Here we discuss physical auditory effects (threshold shifts) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced threshold shift (TS) as a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). The amount of threshold shift is customarily expressed in dB. A TS can be permanent or temporary. As described in NMFS (2018), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.*, impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the

exposure (*i.e.*, spectral content), the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.*, how animal uses sound within the frequency band of the signal; *e.g.*, Kastelein *et al.,* 2014), and the overlap between the animal and the source (*e.g.*, spatial, temporal, and spectral).

Permanent Threshold Shift (PTS) - NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2018). Available data from humans and other terrestrial mammals indicate that a 40 dB threshold shift approximates PTS onset (see Ward *et al.,* 1958, 1959; Ward, 1960; Kryter *et al.,* 1966; Miller, 1974; Ahroon *et al.,* 1996; Henderson *et al.,* 2008). PTS levels for marine mammals are estimates, as with the exception of a single study unintentionally inducing PTS in a harbor seal (Kastak *et al.,* 2008), there are no empirical data measuring PTS in marine mammals largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing PTS are not typically pursued or authorized (NMFS, 2018).

Temporary Threshold Shift (TTS) - A temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). Based on data from cetacean TTS measurements (see Southall *et al.,* 2007), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Schlundt *et al.,* 2000; Finneran *et al.,* 2000, 2002). As described in Finneran (2015), marine mammal studies have shown the amount of TTS increases with cumulative sound exposure level (SELcum) in an accelerating fashion: At low exposures with lower SELcum, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher

higher SELcum, the growth curves become steeper and approach linear relationships with the noise SEL.

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

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).

Installing piles requires a combination of impact pile driving and vibratory pile driving. For the project, these activities would not occur at the same time and there would likely be pauses in activities producing the sound during each day. Given these pauses and that many marine mammals are likely moving through the action area and not remaining for extended periods of time, the potential for TS declines.

Behavioral Effects

Exposure to noise from pile driving and removal also has the potential to behaviorally disturb marine mammals. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.*, Lusseau and Bejder, 2007; Weilgart, 2007; NRC, 2005).

Disturbance may result in changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping); avoidance of areas where sound sources are located. 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.,* 2003; Southall *et al.,* 2007; Weilgart, 2007; Archer *et al.* 2010). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.,* 2012), and can vary depending on characteristics associated with the sound source (*e.g.*, whether it is moving or stationary, number of sources, distance from the source). 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. For a review of studies involving marine mammal behavioral responses to sound, see Southall *et al.,* 2007; Gomez *et al.,* 2016; and Southall *et al.,* 2021 reviews.

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). A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

The area likely impacted by the project is relatively small compared to the available habitat in the surrounding waters of Lynn Canal. Although Auke Bay is part of an identified Biologically Important Area for feeding humpback whales (Ferguson *et al.*,

2015), the timing of the BIA (March through November) only overlaps with the proposed timing of the in-water construction (October through January) for two months. Additionally, humpback foraging efforts within Auke Bay itself are intermittent and irregular across seasons.

In 2021, ADOT&PF documented observations of marine mammals during construction activities (*i.e.*, pile driving) at the Auke Bay Ferry Terminal (84 FR 56767, October 23, 2019). In the marine mammal monitoring report for that project (State of Alaska ,2021), 30 Steller sea lions were observed within the behavioral disturbance zone during pile driving or drilling (*i.e.*, documented as Level B harassment take). Twenty eight harbor seals were observed within the disturbance zone during pile driving activities. A lone Dall's porpoise was sighted in the Level B harassment zone during construction. During the construction activities six takes by Level B harassment of humpback whales occurred. No signs of disturbance were noted for any of these species that were present in the harassment zones. Given the similarities in activities and habitat and the fact the same species are involved, we expect similar behavioral responses of marine mammals to the specified activity. That is, disturbance, if any, is likely to be temporary and localized (*e.g.*, small area movements). Monitoring reports from other recent pile driving projects have observed similar behaviors.

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. Auke Bay is home to a busy ferry terminal as well as moorage for small private vessels that transit the area on a regular basis; therefore, background sound levels in the harbor are already elevated.

Airborne Acoustic Effects - Pinnipeds that occur near the project site could be exposed to airborne sounds associated with pile driving and removal that have the potential to cause behavioral harassment, depending on their distance from pile driving activities. Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

Airborne noise would primarily be an issue for pinnipeds that are swimming or hauled out near the project site within the range of noise levels exceeding the acoustic thresholds. 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 previously have been `taken' because of exposure

to underwater sound above the behavioral harassment thresholds, which are in all cases larger than those associated with airborne sound. Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Therefore, we do not believe that authorization of incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further here.

Marine Mammal Habitat Effects

ADOT&PF's construction activities could have localized, temporary impacts on marine mammal habitat by increasing in-water sound pressure levels and slightly decreasing water quality. Construction activities are of short duration and would likely have temporary impacts on marine mammal habitat through increases in underwater sound. 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). During pile driving, elevated levels of underwater noise would ensonify Auke Bay where both fish and mammals may occur and could affect foraging success.

In-water pile driving and pile removal would also cause short-term effects on water quality due to increased turbidity. Local currents are anticipated to disburse suspended sediments produced by project activities at moderate to rapid rates depending on tidal stage. ADOT&PF would employ standard construction best management practices, thereby reducing any impacts. Considering the nature and duration of the effects, combined with the measures to reduce turbidity, the impact from increased turbidity levels is expected to be discountable.

Pile installation and removal may temporarily increase turbidity resulting from suspended sediments. Any increases would be temporary, localized, and minimal. ADOT&PF must comply with state water quality standards during these operations by limiting the extent of turbidity to the immediate project area. In general, turbidity

associated with pile installation is localized to about a 25-foot radius around the pile (Everitt *et al.* 1980). Cetaceans are not expected to enter the harbor and be close enough to the project pile driving areas to experience effects of turbidity, and any pinnipeds would likely be transiting the area and could avoid localized areas of turbidity. Therefore, the impact from increased turbidity levels is expected to be discountable to marine mammals. Furthermore, pile driving and removal at the project site would not obstruct movements or migration of marine mammals.

Effects on Prey

Construction activities would produce continuous (*i.e.*, vibratory pile driving) and impulsive (*i.e.* impact driving) sounds. Fish react to sounds that are especially strong and/or intermittent low-frequency sounds. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. 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, although several are based on studies in support of large, multiyear bridge construction projects (*e.g.*, Scholik and Yan, 2001, 2002; Popper and Hastings, 2009). Sound pulses at received levels may cause noticeable changes in behavior (Pearson *et al.,* 1992; Skalski *et al.,* 1992). SPLs of sufficient strength have been known to cause injury to fish and fish mortality.

Impacts on marine mammal prey (*i.e.*, fish or invertebrates) of the immediate area due to the acoustic disturbance are possible. The duration of fish or invertebrate avoidance or other disruption of behavioral patterns in this area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution and behavior is anticipated. Further, significantly large areas of fish and marine mammal foraging habitat are available in the nearby vicinity in Lynn Canal.

The duration of the construction activities is relatively short, with pile driving and removal activities expected to take only 61 days. Each day, construction would occur for no more than 12 hours during the day and pile driving activities would be restricted to daylight hours. The most likely impact to fish from pile driving activities at the project area would be temporary behavioral avoidance of the area. In general, impacts to marine mammal prey species are expected to be minor and temporary due to the short timeframe for the project.

Construction activities, in the form of increased turbidity, have the potential to adversely affect fish in the project area. Increased turbidity is expected to occur in the immediate vicinity (on the order of 10 feet (3 meters) or less) of construction activities. However, suspended sediments and particulates are expected to dissipate quickly within a single tidal cycle. Given the limited area affected and high tidal dilution rates any effects on fish are expected to be minor or negligible. In addition, best management practices would be in effect, which would limit the extent of turbidity to the immediate project area.

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

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which would 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. Authorized takes would primarily be by Level B harassment, as use of the acoustic sources (*i.e.*, impact and vibratory pile driving) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for high frequency cetaceans and phocids because predicted auditory injury zones are larger than for other hearing groups. Auditory injury is unlikely to occur for other groups. 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 would be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that would be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Thresholds

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

Level B Harassment – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al.,* 2007, 2021, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (root mean square (RMS) SPL) of 120 dB (referenced to 1 micropascal (re 1 microPascal (µPa)) for continuous (*e.g.,* vibratory pile-driving) and above RMS SPL 160 dB re 1 µPa for non-explosive impulsive (*e.g.*, seismic airguns, impact pile driving) or intermittent (*e.g.*, scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication,

predators, prey) may result in changes in behavior patterns that would not otherwise occur.

ADOT&PF'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 are applicable.

Level A harassment – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). ADOT&PF's proposed activity includes the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving and removal) sources.

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

Table 4 -- Onset of Permanent Threshold Shift (PTS) (NMFS 2018)

	PTS Onset Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1* $L_{p,0\text{-pk,flat}}$: 219 dB $L_{E,p,\text{LF,24h}}$: 183 dB	*Cell 2* $L_{E,p,\text{LF,24h}}$: 199 dB
Mid-Frequency (MF) Cetaceans	*Cell 3* $L_{p,0\text{-pk,flat}}$: 230 dB $L_{E,p,\text{MF,24h}}$: 185 dB	*Cell 4* $L_{E,p,\text{MF,24h}}$: 198 dB
High-Frequency (HF) Cetaceans	*Cell 5* $L_{p,0\text{-pk,flat}}$: 202 dB $L_{E,p,\text{HF,24h}}$: 155 dB	*Cell 6* $L_{E,p,\text{HF,24h}}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{p,0\text{-pk.flat}}$: 218 dB $L_{E,p,\text{PW,24h}}$: 185 dB	*Cell 8* $L_{E,p,\text{PW,24h}}$: 201 dB

Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{p,0\text{-pk,flat}}$: 232 dB $L_{E,p,OW,24h}$: 203 dB	*Cell 10* $L_{E,p,OW,24h}$: 219 dB
* Dual metric thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds are recommended for consideration. Note: Peak sound pressure level ($L_{p,0\text{-pk}}$) has a reference value of 1 µPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of 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 160 kHz). The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The weighted cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these thresholds will be exceeded.		

Ensonified Area

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

The sound field in the project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.*, impact pile driving, vibratory pile driving and removal). The maximum (underwater) area ensonified above the thresholds for behavioral harassment referenced above is 11.49 km^2 (7.14 mi^2), and is governed by the topography of Auke Bay and the various islands located within and around the bay. The eastern part of Auke Bay is acoustically shadowed by Auke Cape. Coghlan Island, and Suedla Island, and would inhibit sound transmission from reaching the more open waters toward Spuhn Island (see Figure 6-2 in the IHA application). Additionally, vessel traffic and other commercial and industrial activities in the project area may contribute to elevated background noise levels which may mask sounds produced by the project.

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

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

where

TL = transmission loss in dB

B = transmission loss coefficient

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

R_2 = the distance from the driven pile of the initial measurement

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 is dependent on a variety of factors, most notably the water bathymetry and 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 under conditions, such as the project site, where water increases with depth as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions. Practical spreading loss is assumed here.

The intensity of pile driving sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. In order to calculate the distances to the Level A harassment and the Level B harassment sound thresholds for the methods and piles being used in this project, NMFS used acoustic monitoring data from other locations to develop proxy source levels for the various pile types, sizes and methods. The project includes vibratory and impact pile installation of steel pipe piles and vibratory removal of steel pipe piles. Source levels for each pile size and driving method are presented in Table 5. The source levels for vibratory and impact installation of all pile sizes are based on the averaged source level of the same type of pile reported by California Department of Transportation (Caltrans) in pile driving source level compendium documents (Caltrans, 2015 and 2020).

Table 5 -- Proxy Sound Source Levels for Pile Sizes and Driving Methods

Pile Size	Method	Proxy Source Level			Literature source
		dB RMS re 1µPa	dB SEL re 1µPa^{2}sec	dB peak re 1µPa	
30 in	Vibratory	159	N/A	N/A	Caltrans 2020
24 in	Vibratory	154	N/A	N/A	Caltrans 2020
18 in	Vibratory	158	N/A	N/A	Caltrans 2020
30 in	Impact	190	177	210	Caltrans 2015, 2020
24 in	Impact	190	177	203	Caltrans 2015, 2020
18 in	Impact	185	175	200	Caltrans 2015, 2020

The ensonified area associated with Level A harassment is more technically challenging to predict due to the need to account for a duration component. Therefore,

NMFS developed an optional User Spreadsheet tool to accompany the Technical Guidance that can be used to relatively simply predict an isopleth distance for use in conjunction with marine mammal density or occurrence to help predict potential takes. We note that because of some of the assumptions included in the methods underlying this optional tool, we anticipate that the resulting isopleth estimates are typically going to be overestimates of some degree, which may result in an overestimate of potential take by Level A harassment. However, this optional tool offers the best way to estimate isopleth distances when more sophisticated modeling methods are not available or practical. For stationary sources such as impact or vibratory pile driving and removal, the optional User Spreadsheet tool predicts the distance at which, if a marine mammal remained at that distance for the duration of the activity, it would be expected to incur PTS. Inputs used in the optional User Spreadsheet tool (Table 6), and the resulting estimated isopleths and the calculated Level B harassment isopleth (Table 7), are reported below. For source levels of each pile please refer to Table 5.

For impact installation of piles the harassment zones were calculated based on the number of piles to be installed per day. ADOT&PF provided a range of one to four piles per day for impact instillation for all pile sizes. This was done to account for more efficient days of pile installation as not to limit construction activity on those days. If more piles per day are installed it is likely to reduce the number of days impact installation would occur.

Table 6 -- User Spreadsheet Input Parameters Used for Calculating Level A Harassment Isopleths

Pile size and installation method	Spreadsheet tab used	Weighting factor adjustment (kHz)	Number of strikes per pile	Number of piles per day	Activity duration (minutes)
30 in vibratory installation	A.1 Vibratory pile driving	2.5	N/A	3	60
24 in vibratory installation	A.1 Vibratory pile driving	2.5	N/A	3	60

24 in vibratory installation (temporary)	A.1 Vibratory pile driving	2.5	N/A	3	30
24 in vibratory removal (temporary)	A.1 Vibratory pile driving	2.5	N/A	3	60
18 in vibratory installation	A.1 Vibratory pile driving	2.5	N/A	3	60
18 in vibratory removal (existing)	A.1 Vibratory pile driving	2.5	N/A	3	30
30 in impact installation	E.1 Impact pile driving	2	1,000	1-4	N/A
24 in impact installation	E.1 Impact pile driving	2	1,000	1-4	N/A
24 in impact installation	E.1 Impact pile driving	2	500	1-4	N/A
18 in impact installation	E.1 Impact pile driving	2	800	1-4	N/A

Table 7-- Calculated Level A and Level B Harassment Isopleths

Activity	Level A harassment zone (m)					Level B harassment zone (m)
	LF-cetaceans	MF-cetaceans	HF-cetaceans	Phocids	Otariids	
30 in vibratory installation	11	1	16	7	1	3,981
24 in vibratory installation	5	1	8	3	1	1,848
24 in vibratory installation (temporary)	4	1	5	2	1	
18 in vibratory installation	9	1	14	6	1	
24 in vibratory removal (temporary)	5	1	8	3	1	
18 in vibratory removal (existing)	9	1	14	6	1	
30 in impact installation (4 piles per day; 1,000 strikes per pile)	1,002	36	1,194	537	39	1,000

30 in impact installation (3 piles per day; 1,000 strikes per pile)	827	30	985	443	33	
30 in impact installation (2 piles per day; 1,000 strikes per pile)	632	23	752	338	25	
30 in impact installation (1 pile per day; 1,000 strikes per pile)	398	15	474	213	16	
24 in impact installation (4 piles per day; 1,000 strikes per pile)	1,002	36	1,194	537	39	1,000
24 in impact installation (3 piles per day; 1,000 strikes per pile)	827	30	985	443	33	
24 in impact installation (2 piles per day; 1,000 strikes per pile)	632	23	752	338	25	
24 in impact installation (1 pile per day; 1,000 strikes per pile)	398	15	474	213	16	
24 in impact installation (4 piles per day; 500 strikes per pile)	632	23	752	338	25	
24 in impact installation (3 piles per day; 500 strikes per pile)	521	19	621	279	21	
24 in impact installation (2 piles per day; 500 strikes per pile)	398	15	474	213	16	
24 in impact installation (1 pile per day; 500 strikes per pile)	251	9	299	134	10	
18 in impact installation (4 piles per day; 800 strikes per pile)	636	23	757	340	25	464
18 in impact installation (3 piles per day; 800 strikes per pile)	525	19	625	281	21	
18 in impact installation (2 piles per day; 800 strikes per pile)	401	15	477	215	16	
18 in impact installation (1 pile per day; 800 strikes per pile)	252	9	301	135	10	

Marine Mammal Occurrence and Take Estimation

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

When available, peer-reviewed scientific publications were used to estimate marine mammal abundance in the project area. Data from monitoring reports from previous projects on the Auke Bay Ferry Terminal were used as well as reports from other projects in Juneau, Alaska. However, scientific surveys and resulting data, such as population estimates, densities, and other quantitative information, are lacking for some marine mammal populations and most areas of southeast Alaska, including Auke Bay. Therefore, AKDOT&PF gathered qualitative information from discussions with knowledgeable local people in the Auke Bay area.

Here 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. Since reliable densities are not available, the applicant requests take based on the maximum number of animals that may occur in the harbor in a specified measure of time multiplied by the total duration of the activity.

Humpback Whale

Use of Auke Bay by humpback whales is intermittent and irregular year-round. During winter, researchers have documented 1 to 19 individual humpback whales per month in waters close to the project area, including Lynn Canal (Moran *et al.*, 2018a; Straley *et al.*, 2018). Group sizes in southeast Alaska generally range from one to four individuals (Dahlheim *et al.*, 2009). Based on this, we predict that two groups of two humpback whales could be exposed to Level B harassment during each day of the 61 days of work for a total of 244 animals. As described previously, 2.4 percent of the humpback whales in Southeast Alaska are members of the Mexico DPS, and therefore six animals would be Mexico DPS individuals and the remaining 238 animals would be Hawaii DPS individuals.

The largest Level A shutdown zone for humpback whales extends 1,002 meters from the noise source (Table 7), and would occur only on days when impact driving of four piles is expected. All construction work would be shut down prior to a humpback whale entering the Level A zone specific to the in-water activity underway at the time. No take by Level A harassment is proposed or requested for humpback whales.

Minke Whales

Dedicated surveys for cetaceans in southeast Alaska found that minke whales were scattered throughout inland waters from Glacier Bay and Icy Strait to Clarence Strait, with small concentrations near the entrance of Glacier Bay. All sightings were of single minke whales, except for a single sighting of multiple minke whales. Surveys took place in spring, summer, and fall, and minke whales were present in low numbers in all seasons and years (Dahlheim *et al.*, 2009). Although minke whales are rarely occur in the project area we are conservatively proposing to authorize take of one minke whale per month by Level B harassment.

The Level A harassment zones for minke whales are the same as for humpback whales, and the shutdown protocols would be the same as well. Therefore, given the low occurrence of minke whales combined with the mitigation, takes by Level A harassment have not been requested and are not proposed to be authorized.

Killer Whale

Killer whales are observed occasionally during summer throughout Lynn Canal, but their presence in Auke Bay is unlikely. As a precaution, because Level B harassment zones extend beyond Auke Bay, ADOT&PF requests take by Level B harassment for one killer whale resident pod and one transient pod. Groups from those pods are likely to be 14 animals and 44 animals, respectively (Dahlheim *et al.*, 2009). ADOT&PF would implement shutdown zones that encompass the largest Level A harassment zones for killer whales during all pile driving activities. Killer whales are generally conspicuous

and PSOs are expected to detect killer whales and implement a shutdown before the animals enter the Level A harassment zone. Therefore, takes by Level A harassment have not been requested and are not proposed to be authorized.

Pacific White-sided Dolphins

Based on occurrence data ADOT&PF requested a total of 92 takes by Level B harassment (the median group size observed in aerial surveys; range from 20 to 164 individuals) (Muto *et al.* 2022). NMFS concurs and has proposed authorization of Level B harassment of one group of Pacific white-sided dolphins to occur over the duration of the project. The largest Level A harassment zone for Pacific white-sided dolphins extends 36 m from the source during impact installation of 30-in piles (Table 7). Pacific white-sided dolphins are expected to be seen by PSOs before entering this zone and shutdown of activity would occur. No take by Level A harassment is proposed or anticipated.

Harbor Porpoise

Initially ADOT&PF requested a total of 122 takes of harbor porpoise over the course of the 61 day project. ADOT&PF estimated that 25 percent of those takes could be Level A exposures which would equate to 30 over the project duration. After further review of current and previous monitoring results, including unpublished data (Wright, S., pers. comm.), that showed higher numbers of harbor porpoises in the area, we recommended four animals per day equating to 244 takes of harbor porpoise by Level A and Level B harassment. NMFS predicts that up to 25 percent of the total exposures could result in take by Level A harassment for a total of 61. The remaining 183 takes would be by Level B harassment.

Harbor porpoises are known to be an inconspicuous species and are challenging for protected species observers (PSOs) to sight, making any approach to a specific area potentially difficult to detect. Because harbor porpoises move quickly and elusively, it is possible that they may enter the Level A harassment zone without detection. The largest

Level A harassment zone results from impact driving of 30-in piles, and extends 1,194 m from the source for high frequency cetaceans (Table 7). ADOT&PF would implement a shutdown zone for harbor porpoises that encompasses the largest Level A harassment zone (see **Proposed Mitigation** section) but given the sighting challenges for PSOs some take by Level A harassment is expected.

Dall's Porpoise

No systematic studies of Dall's porpoise abundance or distribution have occurred in Auke Bay; however, Dall's porpoises have been consistently observed in Lynn Canal, Stephens Passage, upper Chatham Strait, Frederick Sound, and Clarence Strait (Dalheim *et al.,* 2000). ADOT&PF initially requested take of one group of 20 animals per month in the project area for a total of 80 takes by Level B harassment. After reviewing ADOT&PF's monitoring results from Auke Bay one lone Dall's porpoise was sighted. Thus, we proposed a conservative estimate of two groups of five animals per month. This would result in a maximum of 30 takes by Level B harassment throughout the course of the project.

ADOT&PF would implement shutdown zones for porpoises that encompass the largest Level A harassment zones for each pile driving activity (see **Proposed Mitigation** section). The largest Level A harassment zone for Dall's porpoise extends 1,194 m from the source during impact installation of 30-in piles (Table 7). Given the more conspicuous rooster-tail generated by swimming Dall's porpoises, which makes them more noticeable than harbor porpoises, PSOs are expected to detect Dall's porpoises prior to them entering the Level A harassment zone (Jefferson 2009). Therefore, takes of Dall's porpoises by Level A harassment have not been requested and are not proposed to be authorized.

Steller Sea Lion

Based on recent monitoring reports for Auke Bay Ferry Terminal and Statter Harbor projects it is estimated that groups of up to 50 animals per day could be exposed to underwater noise. A total of 3,050 exposures to sound levels at or above the Level B harassment threshold could occur over the 61 days of construction. Given the 1.4 percent of Steller sea lions belong to the wDPS in Auke Bay, 43 total exposures are expected from the wDPS and the remaining 3,008 exposures of eDPS Steller sea lions.

The largest Level A harassment zone for otariid pinnipeds extends 39 m from the source (Table 7). ADOT&PF is planning to implement a larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **Proposed Mitigation** section), which is expected to eliminate the potential for take by Level A harassment of Steller sea lions. Therefore, no takes of Steller sea lions by Level A harassment were requested or are proposed to be authorized.

California sea lion

California sea lions rarely occur in the project area. In 2017, a lone California sea lion was spotted in the harbor. Recently, monitoring reports from similar construction projects did not observe any California sea lions in Auke Bay. Based on the sighting from 2017, ADOT&PF is estimating one animal per day of construction which would equate to 61 takes by Level B harassment.

Similar to Steller sea lions, the largest Level A harassment zone for otariid pinnipeds extends 39 m from the source (Table 7). ADOT&PF is planning to implement larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **Proposed Mitigation** section), which is expected to eliminate the potential for take by Level A harassment of California sea lions. Therefore, no takes of California sea lions by Level A harassment were requested or are proposed to be authorized.

Northern Fur Seal

Although take of Northern fur seal was not requested by ADOT&PF, the NMFS Alaska Regional Office recommended the inclusion of Northern fur seals in the take estimation. We estimate that five northern fur seals may be present in the action area per month which would result in 15 takes by Level B harassment over the course of the project.

The largest Level A harassment zone for otariid pinnipeds extends 39 m from the source (Table 7). ADOT&PF is planning to implement larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **Proposed Mitigation** section), which is expected to eliminate the potential for take by Level A harassment of Northern fur seals. Therefore, no takes of Northern fur seals by Level A harassment were requested or are proposed to be authorized.

Harbor Seal

Based on monitoring results of ADOT&PF's 2021 project in Auke Bay it is expected that 50 harbor seals per day could be taken during the 61 days of construction (AKDOT&PF, 2021). This would equate to 3,050 takes of harbor seals by Level B harassment during the duration of the project.

The largest Level A harassment zone for phocid pinnipeds results from impact pile driving of 30-in piles and extends 537 m from the source (Table 7). There are no haulouts located within the Level A harassment zone and although it is unlikely that harbor seals would enter this area without detection while pile driving activities are underway, it is possible that harbor seals may approach and enter the Level A harassment zone undetected. Two harbor seals are estimated to approach the site within 537 m of the source each day. Impact pile driving may occur on up to 34 days (Table 1). For this reason, we propose take by Level A harassment of two harbor seals daily on the 34 days of impact pile driving for a total of 68 takes by Level A harassment. The largest Level A harassment zone for phocid pinnipeds from vibratory pile driving extends 30 m from the

source (Table 7). ADOT&PF is planning to implement larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see Proposed Mitigation section), which is expected to eliminate the potential for Level A harassment of harbor seals from vibratory pile driving.

Northern Elephant Seal

Given the increase in population size and sightings throughout Southeast Alaska ADOT&PF requested one elephant seal take per week. The project is expected to take up to 16 weeks to complete which would equate to 16 takes by Level B harassment.

The largest Level A harassment zone for phocid pinnipeds extends 537 m from the source (Table 7). ADOT&PF is planning to implement larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **Proposed Mitigation** section), which is expected to eliminate the potential for take by Level A harassment of elephant seals. Therefore, no takes of elephant seals by Level A harassment were requested or are proposed to be authorized.

Table 8 -- Estimated Take by Level A and Level B Harassment, by Species and Stock

Common Name	Stock	Stock Abundance[a]	Level A	Level B	Total proposed take	Proposed take as percentage of stock
Humpback whale	Central North Pacific	10,103	0	244[b]	244	2.4
Minke whale	Alaska	N/A	0	4	4	N/A
Killer Whale	Alaska Resident	1,920	0	41	41	2.1
	West Coast Transient	349	0	14	14	4.0
Pacific white-sided dolphin	North Pacific	931,000	0	92	92	<0.01
Harbor porpoise	Southern Southeast	890	61	183	244	27.4

	Alaska Inland Waters					
Dall's porpoise	Alaska	83,400	0	30	30	0.03
Steller sea lion	Eastern U.S.	43,201	0	3,008	3,008	6.9
	Western U.S.	52,932	0	43	43	0.08
California sea lion	U.S.	257,606	0	61	61	0.02
Northern fur seal	Eastern Pacific	626,618	0	15	15	<0.01
Harbor seal	Lynn Canal/Stephens Passage	13,388	68	2,982	3,050	22.8
Northern Elephant Seal	California	187,386	0	16	16	<0.01

[a] Stock or DPS size is Nbest according to NMFS 2022 Draft Stock Assessment Reports.
[b] For ESA section 7 consultation purposes, 2.4 percent are designated to the Mexico DPS and the remaining are designated to the Hawaii DPS; therefore, we assigned 6 takes by Level B harassment to the Mexico DPS.

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. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, and their habitat (50 CFR 216.104(a)(11)).

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

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal

species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure would be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations.

In addition to the measures described later in this section, ADOT&PF would employ the following standard mitigation measures:

- At the start of each day, the Contractor(s) would hold a briefing with the Lead PSO to outline the activities planned for that day.
- If poor weather conditions restrict the PSO's ability to make observations within the Level A and B harassment zone of pile driving (*e.g.*, if there is excessive wind or fog), pile installation and removal would be halted.

The following measures would apply to ADOT&PF's mitigation requirements:

Implementation of Shutdown Zones for Level A Harassment - For all pile driving/removal activities, ADOT&PF would implement shutdowns within designated zones. The purpose of a shutdown zone is generally to define an area within which shutdown of activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Implementation of shutdowns would be used to avoid or minimize incidental Level A harassment exposures from vibratory and impact pile driving for all 11 species for which take may occur (see Table 8). ADOT&PF has voluntarily implemented a minimum shutdown zone of 30 m during all pile driving and removal activities (Table 9). Shutdown zones for impact pile driving activities are based on the Level A harassment zones and therefore vary by pile size, number of piles installed per day, and marine mammal hearing group (Table 9). Shutdown zones for

impact pile driving would be established each day for the greatest number of piles that are expected to be installed that day. The placement of PSOs during all pile driving activities (described in detail in the Monitoring and Reporting section) would ensure the full extent of shutdown zones are visible to PSOs.

Table 9 -- Shutdown Zones During Pile Installation and Removal

Activity	Piles per day*	Shutdown Zones (m)				
		LF cetaceans	MF cetaceans	HF cetaceans	Phocids	Otariids
All vibratory installation and removal		30				
30-in impact (1,000 strikes)	4	1,100	40	1,200	540	40
	3	830	30	990	450	
	2	640		760	340	30
	1	400		480	220	
24-in impact (1,000 strikes)	4	1,100	40	1,200	540	40
	3	830	30	990	450	
	2	640		760	340	30
	1	400		480	220	
24-in impact (500 strikes)	4	640	30	760	340	30
	3	530		630	280	
	2	400		480	220	
	1	260		300	140	
18-in impact (800 strikes)	4	640	30	760	340	30
	3	530		630	280	
	2	400		480	220	
	1	260		300	140	

*The applicant would chose the number of piles to be driven in any given day before work begins

Establishment of Monitoring Zones – ADOT&PF has identified monitoring zones correlated with the larger of the Level B harassment or Level A harassment zones. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project area outside the shutdown zone and thus prepare for a potential cease of activity should the animal enter the shutdown zone. PSOs would monitor the entire visible area to maintain the best sense

of where animals are moving relative to the zone boundaries defined in Tables 9 and 10. Placement of PSOs on the shorelines around Auke Bay allow PSOs to observe marine mammals within and near Auke Bay.

Table 10 -- Marine Mammal Monitoring Zone

Activity	Monitoring zone (m)
30-in vibratory installation	3,981
24-in and 18-in vibratory installation and removal	1,848
30-in and 24 in impact installation	1,200
18-in impact installation	760

Soft Start - The use of soft-start procedures are believed to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, contractors would be required to provide an initial set of strikes from the hammer at reduced energy, with each strike followed by a 30-second waiting period. This procedure would be conducted a total of three times before impact pile driving begins. 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. Soft start is not required during vibratory pile driving and removal activities.

Pre-Activity Monitoring - Prior to the start of daily in-water construction activity, or whenever a break in pile driving/removal of 30 minutes or longer occurs, PSOs would observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone would be considered cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zone, a soft-start cannot proceed until the animal has left the zone or has not been observed for 15 minutes. If the monitoring zone has been observed for 30 minutes and marine mammals are not present within the zone, soft-start procedures can commence and work can continue even if visibility becomes impaired within the monitoring zone.

When a marine mammal permitted for take by Level B harassment is present in the Level B harassment zone, activities may begin. No work may begin unless the entire shutdown zone is visible to the PSOs. If work ceases for more than 30 minutes, the pre-activity monitoring of both the monitoring zone and shutdown zone would commence.

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 would result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (e.g., presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (e.g., source characterization, propagation, ambient noise); (2) affected species (e.g., life history, dive patterns);

(3) co-occurrence of marine mammal species with the activity; or (4) biological or behavioral context of exposure (e.g., age, calving or feeding areas);

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

Visual Monitoring

Monitoring shall be conducted by NMFS-approved observers in accordance with the monitoring plan and section 5 of the IHA. Trained observers shall be placed from the best vantage point(s) practicable to monitor for marine mammals and implement shutdown or delay procedures when applicable through communication with the equipment operator. Observer training must be provided prior to project start, and shall include instruction on species identification (sufficient to distinguish the species in the project area), description and categorization of observed behaviors and interpretation of behaviors that may be construed as being reactions to the specified activity, proper completion of data forms, and other basic components of biological monitoring, including tracking of observed animals or groups of animals such that repeat sound exposures may be attributed to individuals (to the extent possible).

Monitoring would be conducted 30 minutes before, during, and 30 minutes after pile driving/removal activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven or removed. Pile

driving/removal activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

A minimum of two PSOs would be on duty during all impact installation and a minimum of three MMOs during vibratory installation/removal. Locations from which MMOs would be able to monitor for marine mammals are readily available from publicly accessible shoreside areas at the Auke Bay East Ferry Terminal and, if necessary, other public and private points along the Glacier and Douglas highways. Monitoring locations would be selected by the Contractor during pre-construction. PSOs would monitor for marine mammals entering the Level B harassment zones; the position(s) may vary based on construction activity and location of piles or equipment.

PSOs would scan the waters using binoculars, and/or spotting scopes, and would use a handheld range-finder device to verify the distance to each sighting from the project site. All PSOs would be trained in marine mammal identification and behaviors and are required to have no other project-related tasks while conducting monitoring. In addition, monitoring would be conducted by qualified observers, who would be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator via a radio. ADOT&PF would adhere to the following observer qualifications:

(i) Independent observers (*i.e.*, not construction personnel) are required;

(ii) One PSO would be designated as the lead PSO or monitoring coordinator and that observer must have prior experience working as an observer;

(iii) Other observers may substitute education (degree in biological science or related field) or training for experience; and

(iv) ADOT&PF must submit observer Curriculum Vitaes for approval by NMFS.

Additional standard observer qualifications include:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

Reporting

A draft marine mammal monitoring report would be submitted to NMFS within 90 days after the completion of pile driving and removal activities. It would include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report must include:

- Dates and times (begin and end) of all marine mammal monitoring.
- Construction activities occurring during each daily observation period, including the number and type of piles driven or removed and by what method (i.e., impact driving) and the total equipment duration for cutting for each pile or total number of strikes for each pile (impact driving).
- PSO locations during marine mammal monitoring.

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

If no comments are received from NMFS within 30 days, the draft final report would constitute the final report. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

Reporting Injured or Dead Marine Mammals

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury, serious injury or mortality, ADOT&PF would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinator. The report would include the following information:

- Description of the incident;
- Environmental conditions (*e.g.*, Beaufort sea state, visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with ADOT&PF to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. ADOT&PF would not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that ADOT&PF discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition as described in the next paragraph), ADOT&PF would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator. The report would include the same information identified in the paragraph

above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with ADOT&PF to determine whether modifications in the activities are appropriate.

In the event that ADOT&PF discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), ADOT&PF would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator, within 24 hours of the discovery. ADOT&PF would provide photographs, video footage (if available), or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.*, intensity, duration), the context of any impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989

preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the majority of our analysis applies to all the species listed in Table 8, given that many of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are described independently in the analysis below.

Pile driving and removal activities associated with the project as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level A harassment and Level B harassment from underwater sounds generated from pile driving and removal. Potential takes could occur if individuals of these species are present in zones ensonified above the thresholds for Level A or Level B harassment identified above when these activities are underway.

Take by Level A and Level B harassment would be due to potential behavioral disturbance, TTS, and PTS. No serious injury or mortality is anticipated or proposed for authorization given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. Take by Level A harassment is only anticipated for harbor porpoise and harbor seal. The potential for harassment is minimized through the construction method and the implementation of the planned mitigation measures (see **Proposed Mitigation** section).

Based on reports in the literature as well as monitoring from other similar activities, behavioral disturbance (*i.e.*, level B harassment) would likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff, 2006; HDR, Inc. 2012; Lerma, 2014; ABR, 2016). Most likely for pile driving, individuals would simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily only in association with impact pile driving. The pile driving activities analyzed here are similar to, or less impactful than, numerous other construction activities conducted in southeast Alaska, which have taken place with no observed severe responses of any individuals or known long-term adverse consequences. Level B harassment would be reduced to the level of least practicable adverse impact through use of mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area while the activity is occurring. While vibratory driving associated with the proposed project may produce sound at distances of many kilometers from the project site, thus overlapping with some likely less-disturbed habitat, the project site itself is located in a busy harbor and the majority of sound fields produced by the specified activities are close to the harbor. Animals disturbed by project sound would be expected avoid the area and use nearby higher-quality habitats.

In addition to the expected effects resulting from authorized Level B harassment, we anticipate that harbor porpoises and harbor seals may sustain some limited Level A harassment in the form of auditory injury. However, animals in these locations that experience PTS would likely only receive slight PTS, *i.e.* minor degradation of hearing capabilities within regions of hearing that align most completely with the energy produced by pile driving, *i.e.* the low-frequency region below 2 kHz, not severe hearing impairment or impairment in the regions of greatest hearing sensitivity. If hearing

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

The project also is not expected to have significant adverse effects on affected marine mammals' habitat. The project activities would not modify existing marine mammal habitat for a significant amount of time. The activities may cause some fish or invertebrates to leave the area of disturbance, thus temporarily impacting marine mammals' foraging opportunities in a limited portion of the foraging range; but, because of the short duration of the activities, the relatively small area of the habitat that may be affected, and the availability of nearby habitat of similar or higher value, the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences.

Nearly all inland waters of southeast Alaska, including Auke Bay, are included in the southeast Alaska humpback whale feeding BIA (Ferguson *et al.*, 2015), though humpback whale distribution in southeast Alaska varies by season and waterway (Dahlheim *et al.,* 2009). Humpback whales are present within Auke Bay intermittently and in low numbers. The area of the BIA that may be affected by the proposed project is small relative to the overall area of the BIA. The southeast Alaska humpback whale feeding BIA is active between March and November while the proposed project is scheduled to occur between November and March, resulting in only two months of overlap. Additionally, pile driving associated with the project is expected to take only 61 days, further reducing the temporal overlap with the BIA. Therefore, the proposed project is not expected to have significant adverse effects on the foraging of Alaska humpback

whale. No areas of specific biological importance (*e.g.*, ESA critical habitat, other BIAs, or other areas) for any other species are known to co-occur with the project area.

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

- No serious injury or mortality is anticipated or proposed for authorization;
- Any Level A harassment exposures (i.e., to harbor porpoises and harbor seals, only) are anticipated to result in slight PTS (i.e., of a few decibels), within the lower frequencies associated with pile driving;
- The anticipated incidents of Level B harassment would consist of, at worst, temporary modifications in behavior that would not result in fitness impacts to individuals;
- The area impacted by the specified activity is very small relative to the overall habitat ranges of all species, does not include ESA-designated critical habitat, and only temporally overlaps with the southeast Alaska humpback whale feeding BIA for two months of the planned six months of activity; and
- The proposed mitigation measures are expected to reduce the effects of the specified activity to the level of least practicable adverse impact.

In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities would have only minor, short-term effects on individuals. The specified activities are not expected to affect the reproduction or survival of any individual marine mammals and, therefore, would not result in impacts on rates of recruitment or survival for any species or stock.

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

Small Numbers

As noted 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.

Table 8 demonstrates the number of animals that could be exposed to received noise levels that could cause Level A and Level B harassment for the proposed work in Auke Bay. Our analysis shows that less than 28 percent of each affected stock could be taken by harassment. The numbers of animals proposed to be taken for these stocks would be considered small relative to the relevant stock's abundances, even if each estimated taking occurred to a new individual—an extremely unlikely scenario.

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 would 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.

The proposed project is not known to occur in an important subsistence hunting area. It is a developed area with regular marine vessel traffic. However, ADOT&PF plans to provide advanced public notice of construction activities to reduce construction impacts on local residents, ferry travelers, adjacent businesses, and other users of the Auke Bay ferry terminal and nearby areas. This would include notification to local Alaska Native tribes that may have members who hunt marine mammals for subsistence. Of the marine mammals considered in this IHA application, only harbor seals are known to be used for subsistence in the project area. If any tribes express concerns regarding project impacts to subsistence hunting of marine mammals, further communication between would take place, including provision of any project information, and clarification of any mitigation and minimization measures that may reduce potential impacts to marine mammals.

Based on the description of the specified activity, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the proposed mitigation and monitoring measures, NMFS has preliminarily

determined that there would not be an unmitigable adverse impact on subsistence uses from ADOT&PF's proposed activities.

Endangered Species Act

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

NMFS is proposing to authorize take of wDPS Steller sea lions and Mexico DPS humpback whales, which are listed under the ESA.

The Permits and Conservation Division has requested initiation of section 7 consultation with the Alaska Region for the issuance of this IHA. NMFS would conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to ADOT&PF for conducting pile installation and removal activities at the Auke Bay East ferry terminal between October 1, 2023 and September 30, 2024, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*.

Request for Public Comments

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

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

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

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

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

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

Dated: April 7, 2023.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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