



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XC959]

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; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Alaska Department of Transportation and Public Facilities (ADOT&PF) to incidentally harass, by Level A and Level B harassment, marine mammals during construction activities associated with a pile driving project for improvements to the Auke Bay East Ferry Terminal in Juneau, Alaska.

DATES: This Authorization is effective from October 1, 2024 through September 30, 2025.

ADDRESSES: 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/action/incidental-take-authorization-alaska-department-transportation-pile-driving-and-removal>. In case of problems accessing these documents, please call the contact listed above.

FOR FURTHER INFORMATION CONTACT: Craig Cockrell, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

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

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. NMFS published the proposed IHA on April 13,

2023 (88 FR 22411). 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 and, for harbor seals (*Phoca vitulina*) and harbor porpoise (*Phocoena phocoena*), 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 Activity

Overview

ADOT&PF is completing 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 and materials. A total of 143 piles will be either removed or installed. Takes of marine mammals by Level A and Level B harassment will occur due to both impact installation and vibratory pile installation and removal. The project will occur in Auke Bay, Alaska 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 nonconsecutive days to complete the in-water pile driving activities.

A detailed description of the planned construction project is provided in the Federal Register notice for the proposed IHA (88 FR 22411, April 13, 2023). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that Federal Register notice for the description of the specific activity.

Comments and Response

A notice of NMFS' proposal to issue an IHA to ADOT&PF was published in the Federal Register on April 13, 2023 (88 FR 22411). That notice described, in detail, ADOT&PF's activities, the marine mammal species that may be affected by the

activities, and the anticipated effects on marine mammals. In that notice, we requested public input on the request for authorization described therein, our analyses, the proposed authorization, and any other aspect of the notice of proposed IHA, and requested that interested persons submit relevant information, suggestions, and comments. This proposed notice was available for a 30-day public comment period.

NMFS received one comment from the general public. This comment was not related to the activity described in the notice and is not discussed further.

Changes from Proposed IHA to Final IHA

Several changes have been made to the Final IHA. These changes are summarized below and also identified, and expanded upon as necessary, in the associated sections of the notice below. In the Proposed IHA the extent of the Level B harassment zone for vibratory installation and removal of 24 in. steel piles was inadvertently combined with 18 in. steel pipe piles. Table 6 has been modified to include the correct size of the Level B harassment zone size for the vibratory installation and removal of 24 in. steel piles. The Level A and Level B harassment zones for 18 in. steel pipe piles were not calculated correctly in the Proposed IHA. Table 6 has been updated, and Level A and Level B harassment zones for vibratory installation and removal of the existing 18 in. steel pipe piles have been corrected.

As a result of our consultation under Section 7 of the ESA with the NMFS Alaska Regional Office, NMFS has revised the source levels for vibratory driving of 24 in. and 30 inch steel piles. In the Proposed IHA, 159 and 154 dB RMS re 1 μ Pa were the selected source values for 30 in. and 24 in. steel pipe pile driving, respectively (Caltrans 2020). During the comment period for the Proposed IHA, NMFS determined that measured values from a previous project in Auke Bay and other sites with similar geology were more appropriate than the proposed values. Based on this information NMFS has revised our analysis to use source proxy values of 168.8 from Denes *et al.* (2016) and 163 dB

RMS re $1\mu\text{Pa}$ (NMFS 2023 analysis¹) for vibratory driving of 30 in. and 24 in. steel pipe piles, respectively. Denes *et al.* (2016) measured a spreading loss coefficient (TL) of 16.4 for 30 in. piles, which NMFS has applied in the harassment zone calculations. These values increase the size of the harassment zones, shutdown zones, and monitoring zones for this project (table 6, 8, and 9). Due to the larger estimated harassment zones, NMFS has increased the level of take by Level B harassment for some marine mammal species (table 7). No increase in Level A take occurred based on this new analysis because the ADOT&PF has agreed to implement shut down zones larger than the expected Level A harassment zones. The larger shutdown and monitoring zones do not require any changes to the other subsequent mitigation, monitoring, or reporting measures from Proposed IHA, and thus there have been no changes to the mitigation, monitoring, and reporting sections in this Notice.

Since the Federal Register notice of the proposed IHA was published (April 13, 2023, 88 FR 22411), NMFS published the final 2022 Alaska and Pacific Stock Assessment Reports (SARs), which describe revised stock structures under the MMPA for humpback whales and southeast Alaska harbor porpoise (Carretta *et al.*, 2023; Young *et al.*, 2023). In the notice of proposed IHA, we explained that although we typically consider updated peer-reviewed data provided in draft SARs to be the best available science, and use the information accordingly, we make exception for proposed revised stock structures. Upon finalization of these revised stock structures, we have made appropriate updates, including description of the potentially affected stocks (see table 1), attribution of take numbers to stock (see **Estimated Take**), and by updating our analyses to ensure the necessary determinations are made for the new stocks (see **Negligible Impact Analysis and Determination and Small Numbers**).

¹ Averaged values from Navy (2012, 2013) and Miner (2020).

There was also a clerical error in the calculation of the percentage of humpback whales from each respective DPS. The Proposed IHA used 2.4 percent as the estimated percentage of Mexico DPS humpback whales present in Southeast Alaska. This was revised to 2 percent in this notice and the numbers of take from each DPS were revised accordingly (see **Estimated Take**).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the IHA 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’ 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>).

All values presented in table 1 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 1 -- 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	<i>Megaptera novaeangliae</i>	Hawai‘i	-, -, N	11,278 (0.56,	127	27.09

				7,265, 2020)		
		Mexico-North Pacific	T, D, Y	918 (0.217, UNK, 2006)	UND	0.57
Minke whale	<i>Balaenoptera acutorostrada</i>	Alaska	-/-; N	N/A (N/A, N/A, N/A)	UND	0
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	<i>Orcinus orca</i>	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	<i>Lagenorhynchus obliquidens</i>	North Pacific	-/-; N	26,880 (N/A, N/A, 1990)	UND	0
Family Phocoenidae (porpoises)						
Harbor Porpoise	<i>Phocoena phocoena</i>	Northern Southeast Alaska Inland Waters	- , -, N	1,619 (0.26, 1,250, 2019)	13	5.6
Dall's porpoise	<i>Phocoenoides dalli</i>	Alaska	-/-; N	UND (UND, UND, 2015)	UND	37
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller sea lion	<i>Eumetopias jubatus</i>	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	<i>Zalophus californianus</i>	U.S.	-/-; N	257,606 (N/A, 233,515, 2014)	14,011	>321
Northern fur seal	<i>Callorhinus ursinus</i>	Eastern Pacific	-/-; Y	626,618 (0.2, 530,376, 2019)	11,403	373
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina</i>	Lynn Canal/Stephens Passage	-/-; N	13,388 (N/A,	214	50

				11,867, 2016)		
Northern Elephant Seal	<i>Mirounga angustirostris</i>	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.

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 2.

Table 2 -- 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, <i>Kogia</i> , river dolphins, Cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i>)	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>i.e.</i> , 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 <i>et al.</i> , 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

The effects of underwater noise from ADOT&PF's construction activities have the potential to result in behavioral harassment of marine mammals in the vicinity of the survey area. The notice of proposed IHA (88 FR 22411, April 13, 2023) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from ADOT&PF's on marine mammals and their habitat.

That information and analysis is incorporated by reference into this final IHA determination and is not repeated here; please refer to the notice of proposed IHA (88 FR 22411, April 13, 2023).

Estimated Take

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

Harassment is the only type of take expected to result from these activities. Authorized takes will 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 mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

As described in the proposed notice (88 FR 22411, April 13, 2023), no serious injury or mortality is anticipated or authorized for this activity. Below we describe how the take numbers are estimated. As noted in the **Changes from Proposed IHA to Final IHA** section some of the harassment and monitoring zones have changed as well as the estimated take number for some marine mammal species.

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

available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the take estimates.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals will be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur permanent threshold shift (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) sound pressure level (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 temporary threshold shifts (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 will not otherwise occur.

ADOT&PF’s activity includes the use of continuous (vibratory pile installation and removal) and impulsive (impact pile driving) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1 μ Pa 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 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 3 -- Onset of Permanent Threshold Shift (PTS) (NMFS 2018)

Hearing Group	PTS Onset Thresholds* (Received Level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{p,0-pk,flat}$: 219 dB $L_{E,p,LF,24h}$: 183 dB	<i>Cell 2</i> $L_{E,p,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{p,0-pk,flat}$: 230 dB $L_{E,p,MF,24h}$: 185 dB	<i>Cell 4</i> $L_{E,p,MF,24h}$: 198 dB

High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{p,0-pk,flat}$: 202 dB $L_{E,p,HF,24h}$: 155 dB	<i>Cell 6</i> $L_{E,p,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{p,0-pk,flat}$: 218 dB $L_{E,p,PW,24h}$: 185 dB	<i>Cell 8</i> $L_{E,p,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{p,0-pk,flat}$: 232 dB $L_{E,p,OW,24h}$: 203 dB	<i>Cell 10</i> $L_{E,p,OW,24h}$: 219 dB
<p>* 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.</p> <p>Note: Peak sound pressure level ($L_{p,0-pk}$) has a reference value of 1 μPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of 1 μPa²s. 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>i.e.</i>, 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>i.e.</i>, 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.</p>		

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 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 30.7 km² (11.9 mi²), and is governed by the topography of Auke Bay and the various islands located within and around the bay. This underwater area has increased from the proposed IHA due to the higher source level for 30 inch piles (168.8 dB RMS re 1 μ Pa) anticipated in Auke Bay. The eastern part of Auke Bay is acoustically shadowed by Auke Cape, Coghlan Island, and Suedla Island, and will 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:

$$TL = B * \text{Log}_{10} (R_1/R_2),$$

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 ($20 * \log_{10}[\text{range}]$). 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 ($10 * \log_{10}[\text{range}]$). 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 will lie between spherical and cylindrical spreading loss conditions.

Transmission loss can be measured in the field for specific sites and activities.

Since the proposed IHA was published, NMFS identified site-specific spreading loss data that are applicable to Auke Bay. Specifically, Denes *et al.* (2016) measured a spreading loss coefficient of 16.4 during the previous monitoring of vibratory installation of 30-in steel pipe piles in Auke Bay. This value is applicable for the current analysis, and we have therefore used $TL = 16.4$ for determining the harassment zones for vibratory installation of 30 inch steel pipe piles. For all other planned pile types and driving methods, there are no available site-specific TL measurements. NMFS has therefore used the default practical spreading model ($TL = 15$) in analysis of all other pile types for this project.

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 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 and vibratory removal of steel pipe piles. Proxy source levels for each pile size and driving method are presented in table 4. The source levels for vibratory and impact installation of all pile sizes are based on measured values from similar types of piles reported in the following sources: California Department of Transportation (Caltrans) in pile driving source level compendium documents (Caltrans, 2015 and 2020); Denes *et al.* (2016), and mean values for other regionally relevant reports compiled by NMFS (table 4).

Table 4 -- Proxy Sound Source Levels for Pile Sizes and Driving Methods

Pile Size	Method	Proxy Source Level			Literature source
		dB RMS re 1 μ Pa	dB SEL re 1 μ Pa ² sec	dB peak re 1 μ Pa	
30 in	Vibratory	168.8*	N/A	N/A	Denes <i>et al.</i> 2016

24 in	Vibratory	163*	N/A	N/A	NMFS 2023 analysis**
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

**Source levels for vibratory pile installation and removal from the proposed IHA for 30 in. and 24 in. piles were 159 dB RMS re 1 μ Pa and 154 dB RMS re 1 μ Pa respectively.*

*** Navy (2012, 2013) and Miner (2020); averaging methodology followed Navy (2015)*

The ensounded 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 will be expected to incur PTS. Inputs used in the optional User Spreadsheet tool (table 5), and the resulting estimated isopleths and the calculated Level B harassment isopleth (table 6), are reported below. For source levels of each pile please refer to table 4.

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 installation 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 will occur.

Table 5 -- 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 6-- Calculated Level A and Level B Harassment Isopleths

Activity	Level A harassment zone (m)	
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	LF-cetaceans	MF-cetaceans	HF-cetaceans	Phocids	Otariids	Level B harassment zone (m)
30 in vibratory installation	41 (11)	5 (1)	59 (16)	26 (7)	2 (1)	9,454*
24 in vibratory installation	19 (5)	2 (1)	29 (8)	12 (3)	1 (1)	7,356*
24 in vibratory installation (temporary)	12 (4)	1 (1)	18 (5)	7 (2)	1 (1)	
24 in vibratory removal (temporary)	19 (5)	2 (1)	29 (8)	12 (3)	1 (1)	
18 in vibratory installation	9	1	14	6	1	3,415*
18 in vibratory removal (existing)	6 (9)	1 (1)	8 (14)	3 (6)	1 (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	

**The Proposed IHA ((88 FR 22411, April 13, 2023) harassment zones for vibratory installation and removal for 30 in., 24 in., and 18 in. steel pipe piles were 3,981, 1,848, and 1,848 respectively.*

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 will inform the take calculations. As described above, since the proposed IHA, changes have been made to some of the harassment zones. These changes have resulted in changes to the amount of Level B harassment authorized for all species, with the exception of the four species that are rarely encountered (minke whales, California sea lions, Northern fur seals, and Northern elephant seals). The changes are described in the sections below and reflected in table 7.

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 authorized 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). In the Proposed IHA NMFS predicted 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. After revising the Level B harassment zones for 30 inch and 24 inch steel pipe piles, NMFS noted that the entrance to Fritz Cove is part of the new ensonified area during vibratory driving of 24-in and 30-in. piles. During winter, Fritz Cove is a known aggregation area for humpback whales. Thus, NMFS expects that an additional two groups of two could occur during pile driving activities for a total of 488 animals (Wright, S., pers. comm.). As described previously, 2 percent of the humpback whales in Southeast Alaska are members of the Mexico distinct population segment (DPS), and therefore 10 animals will be Mexico DPS individuals and the remaining 478 animals will be Hawaii DPS individuals.

The largest Level A shutdown zone for humpback whales extends 1,002 meters from the noise source (table 6), and will occur only on days when impact driving of four 30 in. or 24 in. piles are expected. All construction work will 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 was requested and none is authorized 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 rarely occur in the project area NMFS is authorizing take of one minke whale per month by Level B harassment for a total of four takes over the course of the project.

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

Killer Whale

Killer whales are observed occasionally during summer throughout Lynn Canal, but their presence in Auke Bay is unlikely. In the Proposed IHA NMFS expected one killer whale resident pod and one transient pod to be taken by Level B harassment. Since the expansion of the new Level B harassment zone for vibratory pile driving activities now extends out into the open waters of the Stephens Passage, NMFS is authorizing two killer whale resident pods and two transient pods to be taken by Level B harassment. Group sizes for resident and transient pods are likely to be 14 and 44 animals, respectively, which will result in 28 and 88 animals taken by level B harassment over the course of the project (Dahlheim *et al.*, 2009).

ADOT&PF will 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 protected species observers (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 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 proposed this take level by Level B harassment based on one group of Pacific white-sided dolphins to occur over the duration of the project. Similar to killer whales, NMFS is authorizing higher take levels of Pacific white-sided dolphins by Level B harassment due to the larger harassment zone. NMFS expects two groups of 92 to occur during construction activities resulting in a total of 184 takes by Level B harassment.

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 6). Pacific white-sided dolphins are expected to be seen by PSOs before entering this zone and shutdown of activity will occur. No take by Level A harassment is authorized 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 previous monitoring results, including unpublished data (Wright, S., pers. comm.), NMFS proposed authorization of four animals per day in the Proposed IHA, equating to 244 takes of harbor porpoise by Level A and Level B harassment.

Given the larger Level B harassment zone, NMFS now expects an additional 56 takes by Level B harassment. This was calculated by doubling the estimated abundance of this species for the 14 days of vibratory driving of 30 inch piles. NMFS determined that increasing the take in proportion to the increased area ensounded was not justified

because harbor porpoise tend to inhabit coastal shallow water and the new harassment zone does not encompass a substantial amount of new shoreline compared to the initial proposed harassment zone. The total number of takes by Level B harassment authorized is 300. NMFS has not increased the authorized takes by Level A harassment because the increases in Level A harassment zones expected during vibratory driving of 24-in and 30-in steel pipe piles are minimal and the applicant has agreed to increase the size of the shutdown zone for this species during these activities to encompass the increased Level A isopleths.

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 6). ADOT&PF will implement a shutdown zone for harbor porpoises that encompasses the largest Level A harassment zone (see **Mitigation** section) but given the sighting challenges for PSOs some take by Level A harassment is expected during impact pile driving.

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 in 2021, one lone Dall's porpoise was sighted. Thus, the Proposed IHA included a conservative estimate of two groups of five animals per month, giving a maximum of 30 takes by Level B harassment throughout the

course of the project. With the increase in the Level B harassment zones NMFS expects one additional group of 5 for a total of 35 takes by Level B harassment.

ADOT&PF will implement shutdown zones for porpoises that encompass the largest Level A harassment zones for each pile driving activity (see **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 6). 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 authorized.

Steller Sea Lion

Based on recent monitoring reports for Auke Bay Ferry Terminal and Statter Harbor projects (2021 and 2019) it is estimated that groups of up to 50 animals per day could be exposed to underwater noise. The Proposed IHA predicted 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. Steller sea lions have similar habitat usage pattern as humpback whales in Fritz Cove. Therefore, NMFS is increasing the number of takes to 6,100. Given the 1.4 percent of Steller sea lions belong to the western DPS (wDPS) in Auke Bay, 86 total exposures are expected from the wDPS and the remaining 6,015 exposures of eastern DPS Steller sea lions.

The largest Level A harassment zone for otariid pinnipeds extends 39 m from the source (table 6). ADOT&PF is planning to implement a larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **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 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 will equate to 61 takes by Level B harassment.

The largest Level A harassment zone for otariid pinnipeds extends 39 m from the source (table 6). ADOT&PF is planning to implement larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **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 authorized.

Northern Fur Seal

Although take of Northern fur seal was not requested by ADOT&PF, NMFS recommended the inclusion of Northern fur seals in the take estimation. We estimate that up to five northern fur seals may be present in the action area per month which may 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 6). ADOT&PF is planning to implement larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **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 authorized.

Harbor Seal

In the Proposed IHA, NMFS based take estimates on the monitoring results of ADOT&PF's 2021 project in Auke Bay. It was expected that 50 harbor seals per day

could be taken during the 61 days of construction (AKDOT&PF, 2021). NMFS proposed 3,050 takes of harbor seals by Level B harassment for the duration of the project. Similar to harbor porpoise, harbor seals typically inhabit coastal inland waters. Given the larger Level B harassment zones NMFS expects, an additional 447 takes by Level B harassment over the 14 day of vibratory installation of 30-in piles are estimated. NMFS is authorizing 3,752 takes by Level B harassment for the duration of the project. NMFS has not increased the authorized takes by Level A harassment because the increases in Level A harassment zones expected during vibratory driving of 24-in and 30-in steel pipe piles are minimal and the applicant has agreed to increase the size of the shutdown zones for this species during these activities to encompass the increased Level A isopleths.

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 6). There are no haulouts located within the Level A harassment zone and although it is unlikely, 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 6). ADOT&PF is planning to implement larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **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 will equate to 16 takes by Level B harassment.

The largest Level A harassment zone for phocid pinnipeds extends 537 m from the source (table 6). ADOT&PF is planning to implement larger shutdown zones than the Level A harassment zones during all pile installation and removal activities (see **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 authorized.

Table 7 -- Authorized Take by Level A and Level B Harassment, by Species and Stock

Common Name	Stock	Stock Abundance ^a	Proposed IHA	Final IHA Authorized Take			
			Total Proposed Take	Level A Harassment	Level B Harassment	Total take	Take as percentage of stock
Humpback whale	Hawai'i	11,278	238	0	476	476	4.2
	Mexico-North Pacific	918	6	0	10	10	1.1
Minke whale	Alaska	N/A	4	0	4	4	N/A
Killer Whale	Alaska Resident	1,920	41	0	82	82	4.3
	West Coast Transient	349	14	0	28	28	8.0
Pacific white-sided dolphin	North Pacific	931,000	92	0	184	184	0.02
Harbor porpoise	Northern Southeast Alaska	1,619	244	61	300	361	22.3
Dall's porpoise	Alaska	83,400	30	0	35	35	0.04
Steller sea lion	Eastern U.S.	43,201	3,008	0	6,015	6,015	13.9
	Western U.S.	52,932	43	0	86	86	0.16
California sea lion	U.S.	257,606	61	0	61	61	0.02
Northern fur seal	Eastern Pacific	626,618	15	0	15	15	<0.01

Harbor seal	Lynn Canal/Stephens Passage	13,388	3,050	68	3,752	3,820	28.5
Northern Elephant Seal	California	187,386	16	0	16	16	<0.01

^a Stock or DPS size is Nbest according to NMFS 2022 Final Stock Assessment Reports.

Mitigation Measures

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 will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

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

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

- At the start of each day, the Contractor(s) will 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 will be halted.

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

Implementation of Shutdown Zones for Level A Harassment - For all pile driving/removal activities, ADOT&PF will implement shutdowns within designated zones. The purpose of a shutdown zone is generally to define an area within which shutdown of activity will occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Implementation of shutdowns will 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 7). ADOT&PF has voluntarily implemented a minimum shutdown zone of 30 m during all pile driving and removal activities (table 8). 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 8). Shutdown zones for impact pile driving will 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) will ensure the full extent of shutdown zones are visible to PSOs.

Table 8 -- 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	N/A	75**	30	75**	30	30
30-in impact (1,000 strikes)	4	1,100	40	1,200	540	40
	3	830		30	990	
	2	640	30		760	340
	1	400		480	220	
24-in impact (1,000 strikes)	4	1,100	40	1,200	540	40
	3	830		30	990	
	2	640	30		760	340
	1	400		480	220	
24-in impact (500 strikes)	4	640	30	760	340	30
	3	530		30	630	
	2	400	30		480	220
	1	260		300	140	
18-in impact (800 strikes)	4	640	30	760	340	30
	3	530		30	630	
	2	400	30		480	220
	1	260		300	140	

**The applicant will chose the number of piles to be driven in any given day (and therefore the maximum associated shutdown zone to be implemented that day) before work begins. Shutdown zones may not change for a given day once implemented.*

***Zones that have increased from the Proposed IHA (88 FR 22411, April 13, 2023)*

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 will monitor the entire visible area to maintain the best sense of where animals are moving relative to the zone boundaries defined in tables 8 and 9.

Placement of PSOs on the shorelines around Auke Bay allow PSOs to observe marine mammals within and near Auke Bay.

Table 9 -- Marine Mammal Monitoring Zone

Activity	Monitoring zone (m)
30-in vibratory installation	9,454*

24-in 18-in vibratory installation and removal	7,356*
18-in vibratory installation and removal	3,415*
30-in and 24 in impact installation	1,200
18-in impact installation	760

*Zones that have increased from the Proposed IHA (88 FR 22411, April 13, 2023)

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 will 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 will be conducted a total of three times before impact pile driving begins. Soft start will 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 will observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone will 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 will commence.

Based on our evaluation of the applicant's mitigation measures, NMFS has determined that the 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.

Monitoring and Reporting

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

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

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the activity; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);

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

Visual Monitoring

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 will 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 will be on duty during all impact installation and a minimum of three PSOs during vibratory installation/removal. Locations from which PSOs will 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 will be selected by the Contractor during pre-construction. PSOs will 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 will scan the waters using binoculars, and/or spotting scopes, and will use a handheld range-finder device to verify the distance to each sighting from the project site. All PSOs will be trained in marine mammal identification and behaviors and are required to have no other project-related tasks while conducting monitoring. In addition, monitoring will be conducted by qualified observers, who will 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 will adhere to the following observer qualifications:

- (i) Independent observers (*i.e.*, not construction personnel) are required;
- (ii) One PSO will 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 Vitae 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 will be submitted to NMFS within 90 days after the completion of pile driving and removal activities. It will 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 will 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 will 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 will 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 will not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with ADOT&PF to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. ADOT&PF will 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 will 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 will include the same information identified in the paragraph above. Activities will be able to continue while NMFS reviews the circumstances of the

incident. NMFS will 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 will 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 will 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 7, 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 ensounded 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 will be due to potential behavioral disturbance, TTS, and PTS. No serious injury or mortality is anticipated or authorized 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 mitigation measures (see **Mitigation** section).

Based on reports in the literature as well as monitoring from other similar activities, behavioral disturbance (*i.e.*, Level B harassment) will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff, 2006; HDR, Inc. 2012; Lerma, 2014; ABR, 2016). Most likely for pile driving, individuals will simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily 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 will be reduced to the level of least practicable adverse impact through use of mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area while the activity is occurring. While vibratory driving associated with the 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 to 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 will 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, 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 will 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 will 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 will 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 considered Biological Important Areas (BIA) for feeding at some time of the year (Wild *et al.* 2023), and most are considered ephemeral, as humpback whale distribution in southeast Alaska varies by season and waterway (Dahlheim *et al.*, 2009). The BIA that overlaps closest to the project are active from April through October while the project is scheduled to occur between October and March, so overlap with during one month of the active BIA is expected. Additionally, pile driving associated with the project is expected to take only 61 days, further reducing the temporal overlap with the BIA. Therefore, the project is not expected to have significant adverse effects on the foraging of Alaska humpback whales. 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 determination that the impacts resulting from this activity are not expected to adversely affect any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- 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 will consist of, at worst, temporary modifications in behavior that will 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
- The 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 will 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, will 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 monitoring and mitigation measures, NMFS finds that the total marine mammal take from the activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted previously, only take of small numbers of marine mammals may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Table 7 demonstrates the number of animals that could be exposed to received noise levels that could cause Level A and Level B harassment for the work in Auke Bay. Our analysis shows that less than 28.5 percent of each affected stock could be taken by harassment. The numbers of animals to be taken for these stocks will 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 activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an “unmitigable adverse impact” on the subsistence uses of the affected marine mammal species or stocks by Alaskan Natives. NMFS has defined “unmitigable adverse impact” in 50 CFR 216.103 as an impact resulting from the specified activity: (1) That is likely to

reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

The project is not known to occur in an area important for subsistence hunting. 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 will 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 will 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 mitigation and monitoring measures, NMFS has determined that there will not be an unmitigable adverse impact on subsistence uses from ADOT&PF's activities.

Endangered Species Act

There are two marine mammal species (western DPS Steller sea lion and Mexico DPS humpback whale) with confirmed occurrence in the project area that is listed as endangered and threatened respectively under the ESA. The NMFS Alaska Regional Office Protected Resources Division issued a Biological Opinion on December 22, 2023

under section 7 of the ESA, on the issuance of an IHA to ADOT&PF under section 101(a)(5)(D) of the MMPA by the NMFS Permits and Conservation Division. The Biological Opinion concluded that this action is not likely to jeopardize the continued existence of western DPS Steller sea lions or Mexico DPS humpback whale, and is not likely to destroy or adversely modify western DPS Steller sea lion or Mexico DPS humpback whale critical habitats.

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 evaluate our action (*i.e.*, the issuance of an IHA) and alternatives with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NAO 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that will preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of this IHA qualifies to be categorically excluded from further NEPA review.

Authorization

NMFS has issued an IHA to ADOT&PF for the potential harassment of small numbers of 11 marine mammal species incidental to the construction project in Auke Bay, Alaska, that includes the previously explained mitigation, monitoring and reporting requirements. The issued IHA can be found at:

<https://www.fisheries.noaa.gov/action/incidental-take-authorization-alaska-department-transportation-pile-driving-and-removal>.

Dated: January 9, 2024.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

[FR Doc. 2024-00622 Filed: 1/12/2024 8:45 am; Publication Date: 1/16/2024]