



**BILLING CODE 3510-22-P**

**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**RTID 0648-XA171**

**Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Mukilteo Multimodal Construction Project in Washington State**

**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 Washington State Department of Transportation (WSDOT) for authorization to take marine mammals incidental to Mukilteo Multimodal Construction Project in Washington State. 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-year renewal that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

**DATES:** Comments and information must be received no later than [*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. Physical comments should be sent to 1315 East-West Highway, Silver Spring, MD 20910 and electronic comments should be sent to *ITP.guan@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. All comments received are a part of the public record and will generally be posted online at <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act> without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

**FOR FURTHER INFORMATION CONTACT:** Shane Guan, 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/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. 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 issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be 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 February 18, 2020, NMFS received a request from WSDOT for an IHA to take marine mammals incidental to Mukilteo Multimodal Project in Mukilteo, Washington. The application was deemed adequate and complete on April 13, 2020. WSDOT's request is for take of a small number of 11 species of marine mammals by Level B harassment and Level A harassment. Neither WSDOT nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

This proposed IHA would cover one year of a larger project for which WSDOT obtained prior IHAs (82 FR 44164; September 21, 2017; 83 FR 43849; August 28, 2018; 84 FR 39263; August 9, 2019). The larger four-year project involves relocating the Mukilteo Ferry Terminal approximately one-third of a mile east of the existing terminal. This is expected to be the fourth and final year of project activity. WSDOT complied

with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHAs and information regarding their monitoring results may be found in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section.

## **Description of Proposed Activity**

### *Overview*

The purpose of the Mukilteo Multimodal Project is to provide safe, reliable, and effective service and connection for general-purpose transportation, transit, high occupancy vehicles (HOV), pedestrians, and bicyclists traveling between Island County and the Seattle/Everett metropolitan area and beyond by constructing a new ferry terminal. The current Mukilteo Ferry Terminal has not had significant improvements for almost 30 years and needs key repairs. The existing facility is deficient in a number of aspects, such as safety, multimodal connectivity, capacity, and the ability to support the goals of local and regional long-range transportation and comprehensive plans. The project is intended to:

- Reduce conflicts, congestion, and safety concerns for pedestrians, bicyclists, and motorists by improving local traffic and safety at the terminal and the surrounding area that serves these transportation needs.
- Provide a terminal and supporting facilities with the infrastructure and operating characteristics needed to improve the safety, security, quality, reliability, efficiency, and effectiveness of multimodal transportation.
- Accommodate future demand projected for transit, HOV, pedestrian, bicycle, and general-purpose traffic.

The proposed Mukilteo Multimodal Project would involve in-water vibratory pile driving and vibratory pile removal. Details of the proposed construction project are provided below.

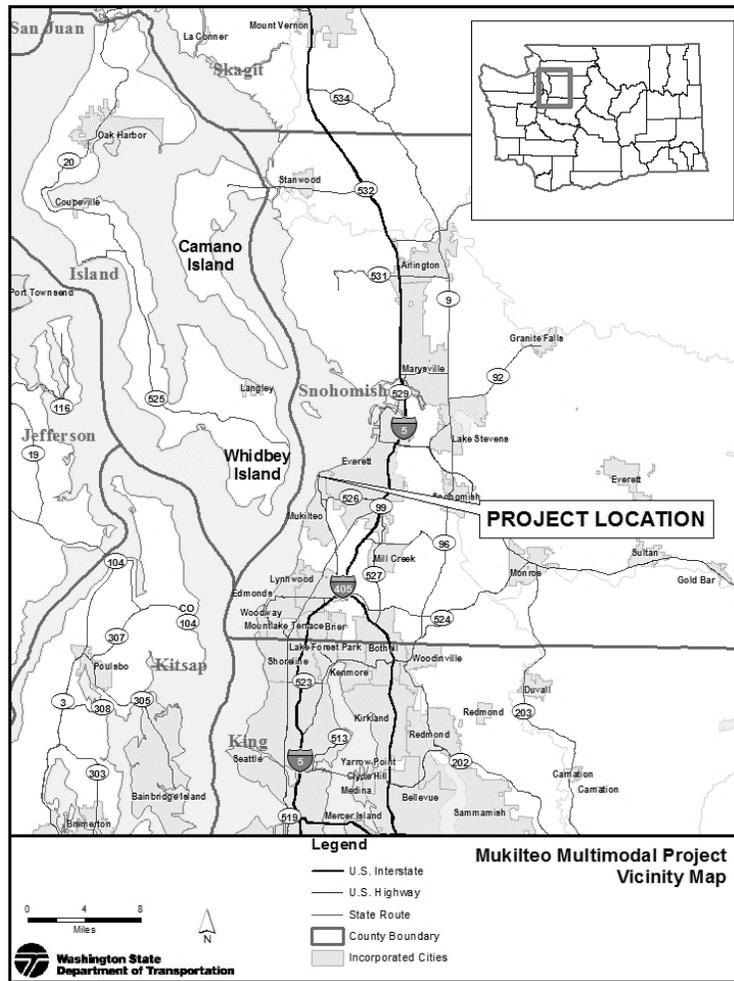
#### *Dates and Duration*

Due to NMFS and the U.S. Fish and Wildlife Service (USFWS) in-water work timing restrictions to protect Endangered Species Act (ESA)-listed salmonids, planned WSDOT in-water construction is limited each year to July 15 through February 15. For this project, in-water construction is planned to take place between August 1, 2020 and February 15, 2021. The total worst-case time for pile installation and removal is 54 days (Table 1).

#### *Specific Geographic Region*

The Mukilteo Ferry Terminal is located in the City of Mukilteo, Snohomish County, Washington. The terminal is located in Township 28 North, Range 4 East, Section 3, in Possession Sound. The new terminal will be approximately 1,700 ft (518 m) east of the existing terminal in Township 28N, Range 4E, Section 33 (Figure 1). Land use in the Mukilteo area is a mix of residential, commercial, industrial, and open space and/or undeveloped lands.

**Figure 1 -- Location of Mukilteo Ferry Terminal**



*Detailed Description of Specific Activity*

The proposed project has two activities involving noise production that may impact marine mammals: vibratory pile removal and vibratory pile driving.

(1) Temporary Pile Removal

Sixty-nine temporary 24 inch steel piles installed to support work platforms will be removed with a vibratory hammer.

(2) Floating Dolphin Piling

The floating dolphin will be moved from the current terminal to the new terminal. A combination of anchors (four) and piles (four) will be used to secure the dolphin anchor chains to the sea floor. Four 30 inch steel piles will be installed with a vibratory hammer.

(3) Existing Terminal Removal

The existing terminal will be removed once the new terminal is complete. The existing terminal comprises 8,120 ft<sup>2</sup> (754 m<sup>2</sup>) of overwater cover and contains approximately 290 12-inch diameter timber piles. All timber piles may be removed with a vibratory hammer, a clamshell, or pulled directly. Use of the vibratory hammer for timber pile removal is not the preferred method and it is likely that most piles will be removed via direct pull. However, for purposes of analysis we assume that all timber piles will be removed using the vibratory hammer.

Details of pile driving activities are provided below and are summarized in Table 1.

- Vibratory removal of 12-inch timber piles would take 15 minutes per pile, 10 piles per day, with 290 piles removed over 29 days.
- Vibratory removal of 24-inch steel pipe piles would take 15 minutes per pile, 3 piles removed per day, with 69 piles removed in 23 days.
- Vibratory driving of 30-inch steel pipe piles would take 30 minutes per pile, 2 piles per day, with 4 piles installed in 2 days.

Pile driving or removal will occur in different days. There is no concurrent pile driving or pile removing.

**Table 1 -- Summary of In-Water Pile Driving Durations**

<b>Method</b>	<b>Pile Size (inch)</b>	<b># piles</b>	<b>Minutes per pile</b>	<b>Piles per day</b>	<b>Days</b>
<b>Vibratory Removal</b>	12 (timber)	290	15	10	29
<b>Vibratory Removal</b>	24 (steel)	69	15	3	23
<b>Vibratory Drive</b>	30 (steel)	4	30	2	2
<b>Total</b>					<b>54</b>

### **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. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about these species (e.g., physical and behavioral descriptions) may be found on NMFS's 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 action, and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2019). 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's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS’s stock abundance estimates for all species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. All managed stocks in this region are assessed in NMFS’s U.S Pacific and Alaska SARs (*e.g.*, Carretta *et al.*, 2020; Muto *et al.*, 2020). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2018 SARs (Carretta *et al.*, 2019; Muto *et al.*, 2019) and draft 2019 SARs (available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports>).

**Table 2 -- Marine Mammals With Potential Presence Within the Proposed Project**

**Area**

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR	Annual M/SI <sup>3</sup>
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Gray whale	<i>Eschrichtius robustus</i>	Eastern North Pacific	N	26,960 (0.05, 25,849)	801	139
Family Balaenopteridae (rorquals)						
Humpback whale	<i>Megaptera novaeangliae</i>	California/Oregon/ Washington	Y	2,900 (0.05, 2,784)	16.7	unk
Minke whale	<i>Balaenoptera acutorostrata</i>	California/Oregon/ Washington	N	636 (0.72, 369)	3.5	1.3
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	<i>Orcinus orca</i>	Eastern North Pacific Southern Resident	Y	75 (NA, 75)	0	0
		West coast transient	N	243 (NA, 243)	2.4	0
Bottlenose dolphin	<i>Tursiops truncatus</i>	California/Oregon/ Washington offshore	N	1,924 (0.54, 1,255)	11	1.6
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Washington inland waters	N	11,233 (0.37, 8,308)	66	7.2
Dall’s porpoise	<i>P. dalli</i>	California/Oregon/ Washington	N	25,750 (0.45, 17,954)	172	0.3
Order Carnivora – Superfamily Pinnipedia						

Family Otariidae (eared seals and sea lions)						
California sea lion	<i>Zalophus californianus</i>	U.S.	N	257,606 (NA, 233,515)	14,011	321
Steller sea lion	<i>Eumetopias jubatus</i>	Eastern U.S.	N	43,201 (NA, 43,201)	2,592	113
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina</i>	Washington northern inland waters	N	11,036 <sup>4</sup>	NA	10.6
Northern elephant seal	<i>Mirounga angustirostris</i>	California breeding	N	179,000 (NA, 81,368)	4,882	8.8

<sup>1</sup>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.

<sup>2</sup>NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>. CV is coefficient of variation; N<sub>min</sub> is the minimum estimate of stock abundance.

<sup>3</sup>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).

<sup>4</sup>Harbor seal estimate is based on data that are greater than 8 years old, but this is the best available information for use here.

As indicated above, all 11 species (with 12 managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it, with the exception of the Southern Resident killer whale. Take of Southern Resident killer whale can be avoided by implementing strict monitoring and mitigation measures (see **Proposed Mitigation** and **Proposed Monitoring and Reporting** sections below).

In addition, the sea otter may be found in inland waters of Washington. However, this species is managed by the U.S. Fish and Wildlife Service and is not considered further in this document.

A detailed description of the marine mammals in the area of the activities is found in the notice of proposed IHA for WSDOT's Season 3 Mukilteo Multimodal construction project (83 FR 30421, June 28, 2018). This information remains valid, as there is no new information available, so we do not repeat it here but provide a summary table with marine mammal species and stock details (Table 2).

### *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. Current data indicate that 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) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. 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, <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. Eleven marine mammal species (seven cetacean and four pinniped (two otariid and two phocid) species) have the reasonable potential to co-occur with the proposed survey activities. Please refer to Table 2. Of the cetacean species that may be present, three are classified as low-frequency cetaceans (*i.e.*, all mysticete species), two are classified as mid-frequency cetaceans (*i.e.*, all delphinid species), and two are classified as high-frequency cetaceans (*i.e.*, porpoise species).

**Potential Effects of Specified Activities on Marine Mammals and their Habitat**

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

The WSDOT's Mukilteo Multimodal construction work using in-water pile driving and pile removal could adversely affect marine mammal species and stocks by exposing them to elevated noise levels in the vicinity of the activity area.

Exposure to high intensity sound for a sufficient duration may result in auditory effects such as a noise-induced threshold shift—an increase in the auditory threshold after exposure to noise (Finneran *et al.*, 2005). Factors that influence the amount of threshold shift include the amplitude, duration, frequency content, temporal pattern, and energy distribution of noise exposure. The magnitude of hearing threshold shift normally decreases over time following cessation of the noise exposure. The amount of threshold shift just after exposure is the initial threshold shift. If the threshold shift eventually returns to zero (*i.e.*, the threshold returns to the pre-exposure value), it is a temporary threshold shift (Southall *et al.*, 2007).

*Threshold Shift (noise-induced loss of hearing)*

When animals exhibit reduced hearing sensitivity (*i.e.*, sounds must be louder for an animal to detect them) following exposure to an intense sound or sound for long duration, it is referred to as a noise-induced threshold shift (TS). An animal can experience temporary threshold shift (TTS) or permanent threshold shift (PTS). TTS can last from minutes or hours to days (*i.e.*, there is complete recovery), can occur in specific frequency ranges (*i.e.*, an animal might only have a temporary loss of hearing sensitivity between the frequencies of 1 and 10 kilohertz (kHz)), and can be of varying amounts (for example, an animal's hearing sensitivity might be reduced initially by only 6 dB or reduced by 30 dB). PTS is permanent, but some recovery is possible. PTS can also occur in a specific frequency range and amount as mentioned above for TTS.

For marine mammals, published data are limited to the captive bottlenose dolphin, beluga, harbor porpoise, and Yangtze finless porpoise (Finneran *et al.*, 2000, 2002, 2003, 2005, 2007, 2010a, 2010b; Finneran and Schlundt, 2010; Lucke *et al.*, 2009; Mooney *et al.*, 2009a, 2009b; Popov *et al.*, 2011a, 2011b; Kastelein *et al.*, 2012a; Schlundt *et al.*, 2000; Nachtigall *et al.*, 2003, 2004). For pinnipeds in water, data are limited to measurements of TTS in harbor seals, an elephant seal, and California sea lions (Kastak *et al.*, 1999, 2005; Kastelein *et al.*, 2012b).

Lucke *et al.* (2009) found a TS of a harbor porpoise after exposing it to airgun noise with a received sound pressure level (SPL) at 200.2 dB (peak-to-peak) re: 1 micropascal ( $\mu\text{Pa}$ ), which corresponds to a sound exposure level of 164.5 dB re:  $1 \mu\text{Pa}^2 \text{ s}$  after integrating exposure. Because the airgun noise is a broadband impulse, one cannot directly determine the equivalent of root-mean-square (rms) SPL from the reported peak-to-peak SPLs. However, applying a conservative conversion factor of 16 dB for

broadband signals from seismic surveys (McCauley, *et al.*, 2000) to correct for the difference between peak-to-peak levels reported in Lucke *et al.* (2009) and rms SPLs, the rms SPL for TTS would be approximately 184 dB re: 1  $\mu$ Pa, and the received levels associated with PTS (Level A harassment) would be higher. Therefore, based on these studies, NMFS recognizes that TTS of harbor porpoises is lower than other cetacean species empirically tested (Finneran and Schlundt, 2010; Finneran *et al.*, 2002; Kastelein and Jennings, 2012).

Marine mammal hearing plays a critical role in communication with conspecifics, and interpretation of environmental cues for purposes such as predator avoidance and prey capture. 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 occurs during a time 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. Also, depending on the degree and frequency range, the effects of PTS on an animal could range in severity, although it is considered generally more serious because it is a permanent condition. Of note, 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 one can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

In addition, exposure to noise could cause masking at particular frequencies for marine mammals, which utilize sound for vital biological functions (Clark *et al.*, 2009). Acoustic masking is when other noises such as from human sources interfere with animal detection of acoustic signals such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired from maximizing their performance fitness in survival and reproduction.

Masking occurs at the frequency band that the animals utilize. Therefore, since noise generated from vibratory pile driving is mostly concentrated at low frequency ranges, it may have less effect on high frequency echolocation sounds by *odontocetes* (toothed whales). However, lower frequency man-made noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. It may also affect communication signals when they occur near the noise band and thus reduce the communication space of animals (*e.g.*, Clark *et al.*, 2009) and cause increased stress levels (*e.g.*, Foote *et al.*, 2004; Holt *et al.*, 2009).

Unlike TS, masking, which can occur over large temporal and spatial scales, can potentially affect the species at population, community, or even ecosystem levels, as well as individual levels. Masking affects both senders and receivers of the signals and could have long-term chronic effects on marine mammal species and populations. Recent science suggests that low frequency ambient sound levels have increased by as much as 20 dB (more than three times in terms of sound pressure level) in the world's ocean from pre-industrial periods, and most of these increases are from distant shipping (Hildebrand

2009). For WSDOT's Mukilteo Multimodal construction activities, noises from vibratory pile driving and pile removal contribute to the elevated ambient noise levels in the project area, thus increasing potential for or severity of masking. Baseline ambient noise levels in the vicinity of project area are high due to ongoing shipping, construction and other activities in the Puget Sound.

Finally, marine mammals' exposure to certain sounds could lead to behavioral disturbance (Richardson *et al.*, 1995), such as: 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 noise sources are located; and/or flight responses (*e.g.*, pinnipeds flushing into water from haulouts or rookeries).

The onset of behavioral disturbance from anthropogenic noise depends on both external factors (characteristics of noise sources and their paths) and the receiving animals (hearing, motivation, experience, demography) and is also difficult to predict (Southall *et al.*, 2007). Currently NMFS uses a received level of 160 dB re 1  $\mu$ Pa (rms) to predict the onset of behavioral harassment from intermittent noises (such as impact pile driving), and 120 dB re 1  $\mu$ Pa (rms) for continuous noises (such as vibratory pile driving). For the WSDOT's Mukilteo Multimodal construction activities, only continuous noise is considered for effects analysis because WSDOT plans to use vibratory pile driving and pile removal.

The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences

of behavioral modification could be biologically significant if the change affects growth, survival, and/or reproduction, which depends on the severity, duration, and context of the effects.

During the previous years of the project, WSDOT conducted the required marine mammal mitigation and monitoring and did not exceed the authorized levels of take. The marine mammal monitoring report for the 2019 Mukilteo Ferry Terminal construction activity shows that a total of 168 harbor seals, 105 California sea lions, 7 Steller sea lions, 12 harbor porpoises, and 1 northern elephant seal were observed within the Level A or Level B harassment zones. These numbers are well under the authorized take numbers issued in the 2019 IHA to WSDOT. In addition, no abnormal or drastic change of behavior of marine mammals was observed by the protected species observers (PSOs) during WSDOT's 2019 Mukilteo Ferry Terminal construction activity.

#### *Potential Effects on Marine Mammal Habitat*

The primary potential impacts to marine mammal habitat are associated with elevated sound levels produced by vibratory pile removal and pile driving in the area. However, other potential impacts to the surrounding habitat from physical disturbance are also possible.

With regard to fish as a prey source for cetaceans and pinnipeds, fish are known to hear and react to sounds and to use sound to communicate (Tavolga *et al.* 1981) and possibly avoid predators (Wilson and Dill 2002). Experiments have shown that fish can sense both the strength and direction of sound (Hawkins 1981). Primary factors determining whether a fish can sense a sound signal, and potentially react to it, are the

frequency of the signal and the strength of the signal in relation to the natural background noise level.

The level of sound at which a fish will react or alter its behavior is usually well above the detection level. Fish have been found to react to sounds when the sound level increased to about 20 dB above the detection level of 120 dB (Ona 1988); however, the response threshold can depend on the time of year and the fish's physiological condition (Engas *et al.*, 1993). In general, fish react more strongly to pulses of sound (such as noise from impact pile driving) rather than continuous signals (such as noise from vibratory pile driving) (Blaxter *et al.*, 1981), and a quicker alarm response is elicited when the sound signal intensity rises rapidly compared to sound rising more slowly to the same level.

During the coastal construction only a small fraction of the available habitat would be ensonified at any given time. Disturbance to fish species would be short-term and fish would return to their pre-disturbance behavior once the pile driving activity ceases. Thus, the proposed construction would have little, if any, impact on marine mammals' prey availability in the area where construction work is planned.

Finally, the time of the proposed construction activity would avoid the spawning season of the ESA-listed salmonid species.

### **Estimated Take**

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

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines “harassment” as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to vibratory pile driving and pile removal. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.*, shutting down pile driving or removal activities when a marine mammal is observed to approach the injury zone) – discussed in detail below in **Proposed Mitigation** section, Level A harassment is neither anticipated nor proposed to be authorized.

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

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) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of 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 estimate.

### *Acoustic Thresholds*

Using the best available science, NMFS has developed 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 for non-explosive sources – 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 (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1  $\mu$ Pa (rms) for continuous (*e.g.*, vibratory pile-driving, drilling) and above 160 dB re 1  $\mu$ Pa (rms) for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources.

WSDOT’s Mukilteo Ferry Terminal Year 4 construction project includes the use vibratory pile driving and pile removal, and therefore the 120 dB re 1  $\mu$ Pa (rms) is applicable.

Level A harassment for non-explosive sources - 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). WSDOT’s Mukilteo Ferry Terminal Year 4 construction project includes the use non-impulsive (vibratory pile driving) sources.

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

**Table 4 -- Thresholds Identifying the Onset of Permanent Threshold Shift**

Hearing Group	PTS Onset Acoustic Thresholds* (Received Level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$ : 219 dB $L_{E,LF,24h}$ : 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$ : 199 dB
	<i>Cell 3</i> $L_{pk,flat}$ : 230 dB $L_{E,MF,24h}$ : 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$ : 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$ : 202 dB $L_{E,HF,24h}$ : 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$ : 173 dB

<b>Phocid Pinnipeds (PW) (Underwater)</b>	<i>Cell 7</i> $L_{pk,flat}$ : 218 dB $L_{E,PW,24h}$ : 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$ : 201 dB
<b>Otariid Pinnipeds (OW) (Underwater)</b>	<i>Cell 9</i> $L_{pk,flat}$ : 232 dB $L_{E,OW,24h}$ : 203 dB	<i>Cell 10</i> $L_{E,OW,24h}$ : 219 dB
<p>* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.</p> <p><u>Note:</u> Peak sound pressure (<math>L_{pk}</math>) has a reference value of 1 <math>\mu</math>Pa, and cumulative sound exposure level (<math>L_E</math>) has a reference value of 1<math>\mu</math>Pa<sup>2</sup>s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with 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 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 acoustic thresholds will be exceeded.</p>		

### *Ensonified Area*

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

#### Source Levels

The project includes vibratory pile removal of 12-inch timber piles and 24-inch steel piles, and vibratory pile driving of 30-inch steel piles. Near source levels (defined as noise level at 10-m from the pile) of these pile driving and removal activities are all based on prior measurements conducted by WSDOT. A summary of the 10-m near source levels of the pile driving and removal activities is provided in Table 5, along with references.

**Table 5 -- Near Source Noise Levels at 10-m From the Pile for Various Pile Driving and Removal at Mukilteo Ferry Terminal Year 4 Project**

Activity/Pile Size	Source Level (dB RMS SPL at 10m)	Literature Source
Vibratory removal of 12-inch timber pile	153	WSDOT Port Townsend measurement (2011)
Vibratory removal of 24-inch steel pile	166	WSDOT Manette Bridge measurement (2010)
Vibratory driving of 30-inch steel pile	170	WSDOT Manette Bridge measurement (2010)

#### Level A Harassment Distances and Areas

Distances to Level A harassment thresholds were estimated using the NMFS User Spreadsheet. When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as vibratory pile driving and pile removal, NMFS User Spreadsheet predicts the distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would incur PTS.

A summary of the calculated Level A harassment distances and areas is presented in Table 6.

#### Level B Harassment Distances and Areas

Level B harassment distances from all pile driving and pile removal activities were based on in situ measurements conducted by WSDOT on the same or similar piles at Mukilteo Ferry Terminal in the early phases of this project. Specifically, the following measurement data were used.

WSDOT has conducted in situ measurements of the Level B harassment zones from vibratory removal of 12-inch diameter timber piles, and vibratory driving of 30-inch diameter steel piles at the Mukilteo Ferry Terminal. For removal of 12-inch timber piles, the measurement results show that underwater noise cannot be detected at a distance of 1.13 km/0.7 miles (Laughlin 2015). For driving of 30-inch steel piles, the sound source verification (SSV) results show that underwater noise cannot be detected at a distance of 7.9 km/4.9 miles (Laughlin 2017).

No far distance measurement for 24-inch piles has been conducted at the Mukilteo project site to establish the Level B harassment zone. For 24-inch piles, the practical spreading model results in a Level B harassment distance of 10 km/6.2 miles for the source level of 166 dB<sub>rms</sub> (root-mean-square decibel level). However, given that this source level is less than the 174 dB<sub>rms</sub> source level for the 30-inch piles, it is assumed that the size of Level B harassment zone for 24-inch pile removal will be the same as for the driving of 30-inch piles (7.9 km/4.9 miles).

The Level B harassment areas were estimated by WSDOT using geographic information system (GIS) tools to eliminate land masses and other obstacles that block sound propagation.

A summary of the measured Level B harassment distances (and assumed Level B harassment distance for 30-in steel piles) and associated areas, and modeled Level A harassment distances, is presented in Table 6.

**Table 6 -- Level A and Level B Harassment Distances and Areas**

Source	Level A harassment distance (m) / area (km <sup>2</sup> )					Level B harassment distance (m) / area (km <sup>2</sup> )
	LF Cetaceans	MF Cetaceans	HF Cetaceans	Phocids	Otariids	
Vibratory removal 12 inch timber pile	3.7 / 0.0	0.3 / 0.0	5.4 / 0.0	2.2 / 0.0	0.2 / 0.0	1,130 / 1.2
Vibratory removal 24 inch steel pile	12.1 / 0.0	1.1 / 0.0	18.0 / 0.0	7.4 / 0.0	0.5 / 0.0	7,900 / 66
Vibratory drive 30 inch steel pile	27.2 / 0.0	2.4 / 0.0	40.2 / 0.0	16.5 / 0.0	1.2 / 0.0	7,900 / 66

*Marine Mammal Occurrence*

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Marine mammal occurrence are based on the U.S. Navy Marine Species Density Database (U.S. Navy, 2019) and on WSDOT marine mammal monitoring efforts during prior years of construction work at Mukilteo Ferry Terminal. A summary of the marine mammal density is provided in Table 7.

**Table 7 -- Marine Mammal Density in the WSDOT Mukilteo Multimodal Project Area**

<b>Marine mammals</b>	<b>Density (animals/km<sup>2</sup>)</b>
Gray whale	0.0051
Humpback whale	0.00014
Minke whale	0.002
Killer whale (West Coast transient)	0.002373
Bottlenose dolphin	NA
Harbor porpoise	0.792
Dall's porpoise	0.047976
Harbor seal	2.21
Northern elephant seal	0.00001
California sea lion	0.1266
Steller sea lion	0.0368

### *Take Calculation and Estimation*

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

For most species, take numbers were calculated using the information aggregated in the Navy density database (U.S. Navy, 2019). Where a low to high range of densities is given for a species, the more conservative high density was used. In these cases, take numbers were calculated as:

$$\text{Total Take} = \text{marine mammal density} \times \text{ensonified area} \times \text{pile driving days}$$

For species with no density data (*e.g.*, bottlenose dolphin) or species with very low density but observations were made at the project location which may indicate more animals could be present (*e.g.*, humpback whale, West Coast transient killer whale, and northern elephant seal), adjustments were made to estimate the take numbers. Specific adjustments for calculating take numbers for these species are provided below.

- Northern elephant seal – During the Mukilteo project, individuals have been observed on 2 occasions. Observations have been of single individuals, not groups. It is assumed that one individual may be present in the Level B

harassment zone once a month during the in-water work window (7 months), or 7 incidents of take.

- Humpback whale - During the Mukilteo project, individuals have been observed on 2 occasions. Observations have been of single individuals, not groups. It is assumed that one individual may be present in the Level B harassment zone once a month during the in-water work window (7 months), or 7 incidents of take.
- West Coast transient killer whale - take is based on maximum group size observed during the project. Groups of 8 individuals have been observed on 2 occasions. It is assumed that one group of 8 animals may be present in the Level B harassment zone once a month during the in-water work window (7 months), or 56 incidents of take.
- Bottlenose dolphin – The bottlenose dolphin estimate is based on sightings data from Cascadia Research Collective. Between September 2017 and March 2018, a group of up to 7 individuals was sighted in South Puget Sound (EPS, 2018). It is assumed that this group is still present in the area. Given how rare bottlenose dolphins are in the area, it is unlikely they would be present on a daily basis. Instead it is assumed that one group size of 7 animals may be present in the Level B harassment zone once a month during the in-water work window (7 months), or 49 incidents of take.

A summary of estimated marine mammal takes is listed in Table 8.

**Table 8 -- Estimated Numbers of Marine Mammals That May be Exposed to Received Noise Levels That Cause Level B Harassment**

<b>Marine mammals</b>	<b>Estimated Level B harassment</b>	<b>Abundance</b>	<b>Percentage (%)</b>
Gray whale	9	26,906	0.03
Humpback whale	7	2,900	0.24
Minke whale	3	636	0.47
Killer whale (West Coast transient)	56	243	23.05
Bottlenose dolphin	49	1924	2.55
Harbor porpoise	1,360	11,233	12.11
Dall's porpoise	82	25,750	0.32
Harbor seal	3,794	11,036	1.97
Northern elephant seal	7	179,000	0.04
California sea lion	217	257,606	1.47
Steller sea lion	63	43,201	0.02

### **Proposed Mitigation**

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider 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, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

#### *Time Restriction*

Work would occur only during daylight hours, when visual monitoring of marine mammals can be conducted. In addition, all in-water construction will be limited to the period between August 1, 2020, and February 15, 2021.

#### *Establishing and Monitoring Level A, Level B Harassment Zones, and Exclusion Zones*

Before the commencement of in-water construction activities, which include vibratory pile driving and pile removal, WSDOT shall establish Level A harassment zones where received underwater SPLs or  $SEL_{cum}$  (cumulative sound exposure level) could cause PTS.

WSDOT shall also establish Level B harassment zones where received underwater SPLs are higher than  $120 \text{ dB}_{rms}$  re  $1 \mu\text{Pa}$  for continuous noise sources (vibratory pile driving and pile removal).

WSDOT shall establish a 50 m exclusion zone for all in-water pile driving for cetaceans except Southern Resident killer whale and a 20 m exclusion zone for all in-water pile driving for pinnipeds. These zones encompass all estimated Level A harassment zones.

WSDOT shall establish exclusion zones for Southern Resident killer whale and all marine mammals for which takes are not authorized at the Level B harassment distances. Specifically, for vibratory pile removal of 12-inch timber piles, a 1.13 km exclusion zone shall be established. For vibratory pile removal of 24-inch steel piles and vibratory pile driving of 30-inch steel piles, a 7.9 km exclusion zone shall be established.

A summary of exclusion zones is provided in Table 9.

**Table 9 -- Exclusion Zones (m) for Various Marine Mammals**

Activities	Cetaceans except SRKW*	Pinnipeds	SRKW
Vibratory pile removal, 12-inch timber pile	50	20	1,130
Vibratory pile removal, 24-inch steel pile or vibratory pile driving, 30-inch steel pile	50	20	7,900

\* SRKW = Southern Resident killer whale

NMFS-approved PSOs shall conduct an initial survey of the exclusion zones to ensure that no marine mammals are seen within the zones beginning 30 minutes before pile driving and pile removal of a pile segment begins. If marine mammals are found within the exclusion zone, pile driving of the segment would be delayed until they move out of the area. If a marine mammal is seen above water and then dives below, the contractor would wait 15 minutes. If no marine mammals are seen by the observer in that time it can be assumed that the animal has moved beyond the exclusion zone.

If pile driving of a segment ceases for 30 minutes or more and a marine mammal is sighted within the designated exclusion zone prior to commencement of pile driving,

the observer(s) must notify the pile driving operator (or other authorized individual) immediately and continue to monitor the exclusion zone. Operations may not resume until the marine mammal has exited the exclusion zone or 15 minutes have elapsed since the last sighting.

#### *Shutdown Measures*

WSDOT shall implement shutdown measures if a marine mammal is detected within or entering an exclusion zone listed in Table 9.

WSDOT shall also implement shutdown measures if southern resident killer whales are sighted within the vicinity of the project area and are approaching the Level B harassment zone during in-water construction activities.

If a killer whale approaches the Level B harassment zone during pile driving or removal, and it is unknown whether it is a Southern Resident killer whale or a transient killer whale, it shall be assumed to be a Southern Resident killer whale and WSDOT shall implement the shutdown measure.

If a Southern Resident killer whale or an unidentified killer whale enters the Level B harassment zone undetected, in-water pile driving or pile removal shall be suspended until the whale exits the Level B harassment zone, or 15 minutes have elapsed with no sighting of the animal, to avoid further Level B harassment.

Further, WSDOT shall implement shutdown measures if the number of authorized takes for any particular species reaches the limit under the IHA (if issued) and if such marine mammals are sighted within the vicinity of the project area and are approaching the Level B harassment zone during in-water construction activities.

#### *Coordination with Local Marine Mammal Research Network*

Prior to the start of pile driving for the day, the Orca Network and/or Center for Whale Research will be contacted by WSDOT to find out the location of the nearest marine mammal sightings. The Orca Sightings Network consists of a list of over 600 (and growing) residents, scientists, and government agency personnel in the U.S. and Canada. Sightings are called or emailed into the Orca Network and immediately distributed to other sighting networks including: the NMFS Northwest Fisheries Science Center, the Center for Whale Research, Cascadia Research, the Whale Museum Hotline and the British Columbia Sightings Network.

Sightings information collected by the Orca Network includes detection by hydrophone. The SeaSound Remote Sensing Network is a system of interconnected hydrophones installed in the marine environment of Haro Strait (west side of San Juan Island) to study orca communication, in-water noise, bottom fish ecology and local climatic conditions. A hydrophone at the Port Townsend Marine Science Center measures average in-water sound levels and automatically detects unusual sounds. These passive acoustic devices allow researchers to hear when different marine mammals come into the region. This acoustic network, combined with the volunteer (incidental) visual sighting network allows researchers to document presence and location of various marine mammal species.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, all of which are described above, NMFS has preliminarily determined that the proposed mitigation measures provide the means 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.

### **Proposed Monitoring and Reporting**

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

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

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

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

*Proposed Monitoring Measures*

WSDOT shall employ NMFS-approved PSOs to conduct marine mammal monitoring for its Mukilteo Multimodal Project. The PSOs will observe and collect data on marine mammals in and around the project area for 30 minutes before, during, and for 30 minutes after all pile removal and pile installation work. NMFS-approved PSOs shall meet the following requirements:

1. Independent observers (*i.e.*, not construction personnel) are required;
2. At least one observer must have prior experience working as an observer;
3. Other observers may substitute education (undergraduate degree in biological science or related field) or training for experience;
4. Where a team of three or more observers are required, one observer should be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as an observer; and
5. NMFS will require submission and approval of observer Curriculum vitae;

Monitoring of marine mammals around the construction site shall be conducted using high-quality binoculars (*e.g.*, Zeiss, 10 x 42 power). Due to the different sizes of Level B harassment distances from different pile sizes, several different ZOIs and different monitoring protocols corresponding to a specific pile size will be established.

- During 12-inch vibratory timber pile removal, two land-based PSOs will monitor from the lighthouse and the new ferry terminal observation deck.
- During 24- and 30-inch steel vibratory driving/removal, four land-based and one ferry-based PSO will monitor the zones.

Locations of the land-based PSOs and routes of monitoring vessels are shown in WSDOT's Marine Mammal Monitoring Plan, which is available online at <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>.

To verify the required monitoring distance, the exclusion zones and zones of influence will be determined by using a range finder or hand-held global positioning system device.

#### *Proposed Reporting Measures*

WSDOT is required to submit a draft report on all marine mammal monitoring conducted under the IHA (if issued) within ninety calendar days of the completion of the project. A final report shall be prepared and submitted within 30 days following resolution of comments on the draft report from NMFS.

The marine mammal report must contain the informational elements described in the Marine Mammal Monitoring Plan, dated February 18, 2020, including, but not limited to:

1. Dates and times (begin and end) of all marine mammal monitoring.
2. Construction activities occurring during each daily observation period, including how many and what type of piles were driven or removed.
3. Weather parameters and water conditions during each monitoring period (*e.g.*, wind speed, percent cover, visibility, sea state).
4. The number of marine mammals observed, by species, relative to the pile location and if pile driving or removal was occurring at time of sighting.
5. Age and sex class, if possible, of all marine mammals observed.
6. PSO locations during marine mammal monitoring.
7. Distances and bearings of each marine mammal observed to the pile being driven or removed for each sighting (if pile driving or removal was occurring at time of sighting).
8. Description of any marine mammal behavior patterns during observation, including direction of travel and estimated time spent within the Level B harassment zones while the source was active.
9. Number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zone, and estimates of number of marine mammals taken, by species (a correction factor may be applied to total take numbers, as appropriate).
10. Detailed information about any implementation of any mitigation triggered (*e.g.*, shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any.

11. Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals.
12. An extrapolation of the estimated takes by Level B harassment based on the number of observed exposures within the Level B harassment zone and the percentage of the Level B harassment zone that was not visible.
13. Submit all PSO datasheets and/or raw sighting data (in a separate file from the Final Report referenced immediately above).

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, WSDOT shall report the incident to the Office of Protected Resources (301-427-8401), NMFS and to the West Coast Region (WCR) regional stranding coordinator (1-866-767-6114) as soon as feasible. If the death or injury was clearly caused by the specified activity, WSDOT must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHA. WSDOT must not resume their activities until notified by NMFS.

The report must include the following information:

1. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
2. Species identification (if known) or description of the animal(s) involved;
3. Condition of the animal(s) (including carcass condition if the animal is dead);
4. Observed behaviors of the animal(s), if alive;

5. If available, photographs or video footage of the animal(s); and
6. General circumstances under which the animal was discovered.

### **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 responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), 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’s 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 environmental 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, this introductory discussion of our analyses applies to all the species listed in Table 9, given that the anticipated effects of WSDOT’s Mukilteo Multimodal Project activities involving pile driving and pile removal on marine

mammals are expected to be relatively similar in nature. There is no information about the nature or severity of the impacts, or the size, status, or structure of any species or stock that would lead to a different analysis by species for this activity, or else species-specific factors would be identified and analyzed.

Marine mammal takes that are anticipated and proposed to be authorized are expected to be limited to short-term Level B harassment (behavioral and TTS) only. Marine mammals present in the vicinity of the action area and taken by Level B harassment would most likely show overt brief disturbance (startle reaction) and avoidance of the area from elevated noise levels during pile driving and pile removal and the implosion noise. These behavioral distances are not expected to affect marine mammals' growth, survival, and reproduction due to the limited geographic area that would be affected in comparison to the much larger habitat for marine mammals in the Puget Sound. A few marine mammals could experience TTS if they occur within the Level B TTS ZOI. However, as discussed earlier in this document, TTS is a temporary loss of hearing sensitivity when exposed to loud sound, and the hearing threshold is expected to recover completely within minutes to hours. Therefore, it is not considered an injury.

Portions of the SRKW range is within the proposed action area. In addition, the entire Puget Sound is designated as the SRKW critical habitat under the ESA. However, WSDOT would be required to implement strict mitigation measures to suspend pile driving or pile removal activities when this stock is detected in the vicinity of the project area. We anticipate that take of SRKW would be avoided. There are no other known important areas for other marine mammals, such as feeding or pupping, areas.

The project also is not expected to have significant adverse effects on affected marine mammals' habitat, as analyzed in detail in the *Potential Effects on Marine Mammal Habitat* subsection. There is no other ESA designated critical habitat in the vicinity of the Mukilteo Multimodal Project area. The project activities would not permanently modify existing marine mammal habitat. The activities may kill some fish and cause other fish to leave the area temporarily, thus impacting marine mammals' foraging opportunities in a limited portion of the foraging range. However, because of the short duration of the activities and the relatively small area of the habitat that may be affected, the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences. Therefore, given the consideration of potential impacts to marine mammal prey species and their physical environment, WSDOT's proposed construction activity at the Mukilteo Ferry Terminal would not adversely affect marine mammal habitat.

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

- Injury – no marine mammal would be taken by Level A harassment in the form of either physical injury or PTS;
- Behavioral disturbance – 11 species/stocks of marine mammals would experience behavioral disturbance and TTS from the WSDOT's Mukilteo Ferry Terminal construction. However, as discussed earlier, the area to be affected is small and the

duration of the project is short. In addition, the nature of the take would involve mild behavioral modification; and

- Although portion of the SWKR critical habitat is within the project area, strict mitigation measures such as implementing shutdown measures and suspending pile driving are expected to avoid take of SRKW, and impacts to prey species and the habitat itself are expected to be minimal. No other important habitat for marine mammals exist in the vicinity of the project area.

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

### **Small Numbers**

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

The estimated takes are below 24 percent of the population for all marine mammals (Table 7).

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 will be taken relative to the population size of the affected species or stocks.

### **Unmitigable Adverse Impact Analysis and Determination**

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

### **Endangered Species Act**

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

The only species listed under the ESA with the potential to be present in the action area is the Mexico Distinct Population Segment (DPS) of humpback whales. The effects of this proposed Federal action were adequately analyzed in NMFS' Biological Opinion for the Mukilteo Multimodal Project, Snohomish, Washington, dated August 1,

2017, which concluded that issuance of an IHA would not jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify any designated critical habitat. NMFS WCR has confirmed the Incidental Take Statement (ITS) issued in 2017 is applicable for this IHA. That ITS authorizes the take of seven humpback whales from the Mexico DPS.

### **Proposed Authorization**

As a result of these preliminary determinations, NMFS proposes to issue an IHA to WSDOT for conducting Mukilteo Multimodal Project Year 4 construction in the State of Washington between August 1, 2020, through July 31, 2021, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>.

### **Request for Public Comments**

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for WSDOT's Mukilteo Multimodal construction project. We also request at this time 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, or nearly identical, activities as described in the **Description of Specific Activity** section of this notice is planned or (2)

the activities as described in the Specified Activities section of this notice would not be completed by the time the IHA expires and a Renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

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

- The request for renewal must include the following:

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

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

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

Dated: June 9, 2020.

Donna S. Wieting,  
Director, Office of Protected Resources,  
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