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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RTID 0648-XR048

Take of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the North Jetty Maintenance and Repairs Project, Coos Bay, Oregon

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

ACTION: Notice; Issuance of Incidental Harassment Authorizations.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued incidental harassment authorizations (IHAs) to the U.S. Army Corps of Engineers (USACE) to incidentally harass, by Level B harassment only, marine mammals during pile driving and removal activities over two years associated with the Coos Bay North Jetty maintenance and repairs project.

DATES: These Authorizations are effective from September 1, 2020 through August 31, 2021 (pile driving removal (Year 1)) and July 1, 2022 through June 30, 2023 (pile driving installation (Year 2)).

FOR FURTHER INFORMATION CONTACT: Stephanie Egger, 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. Under the MMPA, “take” is defined as meaning to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.

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 such 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 such 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 March 18, 2019, NMFS received a request from USACE for two IHAs to take marine mammals incidental to vibratory pile driving and removal associated with the North Jetty maintenance and repairs project, Coos Bay, Oregon over the course of two years with pile installation occurring during Year 1 and pile removal occurring during Year 2. The application was deemed adequate and complete on September 10, 2019. The USACE's request was for take of a small number of seven species of marine mammals by Level B harassment only. Neither USACE nor NMFS expects injury, serious injury or mortality to result from this activity and, therefore, IHAs are appropriate. The USACE, in coordination with the Oregon Department of Fish and Wildlife (ODFW) and NMFS' Northwest Region, plans to conduct pile driving and removal October 1st through February 15th and June 1st and July 31st to minimize effects to listed salmonids. Adherence to the in-water work window is part of USACE's Endangered Species Act (ESA) consultation under Standard Local Operating Procedures for Endangered Species (SLOPES) to administer actions authorized or carried out by the USACE in Oregon (SLOPES IV In-water Over-water Structures). The ODFW will make the final determination of the in-water work window.

Description of Planned Activity

Coos Bay is an approximately 55.28 km² estuary located in Coos County on the Oregon coast, approximately 200 miles south of the Columbia River. The USACE plans to repair critically damaged sections of the North Jetty, monitor erosion, and to maintain stable deep-draft navigation through the entrance into Coos Bay. Repair activities completed now will reduce the risk of jetty failure or a potential breach of the Coos Bay North Spit (CBNS). The USACE maintains this jetty system and navigational channels, and is planning on conducting major

repairs and rehabilitation of the North Jetty. The USACE plans to use vibratory pile driving/removal for the Material Off-loading Facility (MOF) portion of the project using 30-inch (in) steel piles and 24-in AZ sheet piles OR 12-in H piles.

The USACE currently anticipates that construction for North Jetty maintenance and repair project will occur over two years. The IHA application is requesting take that may occur from the pile driving activities in the first year (September 1, 2020 through August 31, 2021) and from pile removal activities in the second year of pile driving activities (July 1, 2022 through June 30, 2023). The USACE proposes to complete pile driving activities between October 1st through February 15th and June 1st through July 31st each year to protect salmonids. There would be an estimate of 7 days of noise expose during pile driving/removal for each type of pile (*i.e.*, and 30-in steel piles and 24-in AZ sheet piles OR 12-in H piles) for a total of 14 days of pile driving/removal activity each year. Pile driving/removal may occur up to 6 hours per day depending on the pile type.

The purpose of the planned action is to repair critically damaged sections of the North Jetty in order to maintain stable deep-draft navigation through the entrance into Coos Bay and to prevent breaching of the CBNS. The planned activities would include repair activities for three main jetty components: The jetty head, root, and trunk. Repair activities also require re-establishment and repair of the following three temporary construction features including the MOF, upland staging areas and road turn-outs to facilitate equipment and material delivery. Removal and site restoration for each of the temporary construction features is planned. The majority of planned jetty repairs will be completed within the existing authorized footprint of the jetty structure, returning specified sections to pre-erosional conditions. The MOF Staging Area is

where all pile driving and removal activities will occur. The type and amount of piles associated with the project are provided in Table 1.

Table 1--Pile Driving (Year 1) and Removal (Year 2) Associated with the MOF of the North Jetty Repairs and Maintenance Project. The Same Number of Piles Driven in Year 1 will be Removed in Year 2

Pile Type	Size	Total Number of Piles to be Driven (Year 1)	Total Number of Piles to be Removed (Year 2)	Maximum Number of Piles Driven per Day (Year 1)	Maximum Number of Piles Removed per Day (Year 2)	Driving Type
Steel Pipe Pile	30-inch	24	24	6	6	Vibratory
Steel H Pile	12-in	40	40	25	25	Vibratory
Steel AZ Sheet	24-in	100	100	25	25	Vibratory

A detailed description of the planned construction project is provided in **the Federal Register** notice for the proposed IHA (84 FR 56781; October 23, 2019). Since that time, no changes have been made to the planned construction activities. Therefore, a detailed description is not provided here. Please refer to that Federal Register notice for the description of the specific activity

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

Comments and Responses

A notice of NMFS’s proposal to issue IHAs to the USACE was published in the **Federal Register** on October 23, 2019 (84 FR 56781). That notice described, in detail, the USACE’s activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received a comment letter from the Marine Mammal Commission (Commission).

Comment: The Commission believes that NMFS underestimated the number of takes for harbor seals. The Commission states that if NMFS was going to continue to use a density to estimate take that a haul out correction factor should be applied. However, this still may not account for seals that used the Southern Slough (most southern haul out site of the project area). The Commission recommends that NMFS authorize at least 167 Level B harassment takes of harbor seals on each of the 14 days that the proposed activities could occur for both authorizations using counts rather than densities to estimate the numbers of takes.

Response: In the proposed IHA, NMFS used the harbor seal density of 11.1 animals/km² which was based on the max number observed of seals observed (167 harbor seals) in November 2018 on the Clam Island haul out. This max number may or may not account for seals that also use the Southern Slough haul out site as well, which is just at the southern border of the project area, as the seals can utilize the entire bay. For consistency in the method used to calculate take across all pinnipeds, and to account for additional harbor seals that may be using the Southern Slough haul out, NMFS recalculated the estimated take for harbor seals using the maximum number of seals that could occur on a given day (167 seals) and multiplied that by 14 days for a total take estimate of 2,338 harbor seals each year.

Comment: The Commission states that it is unclear whether the USACE would keep a running tally of the extrapolated takes to ensure the authorized takes are not exceeded. The Commission notes that they do not believe that keeping track of only the observed takes is sufficient when the Level B harassment zones extend to more than 11 km and recommends adjusting the takes based on the extent of the Level B harassment zone based on the sighting distance and number of PSOs monitoring at a given time. The Commission recommends that

NMFS ensure that the USACE keeps a running tally of the total takes for each species to comply with section 4(f) of the draft authorization (“If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed entering or within the Level B harassment zone (monitoring zone), pile driving and removal activities must shut down immediately using delay and shutdown procedures. Activities must not resume until the animal has been confirmed to have left the area or the 15 minute observation time period has elapsed.”). The Commission recommends that NMFS ensure that USACE keep a running tally of the total takes, both observed and extrapolated takes, for each species in the IHAs.

Response: We agree that USACE must ensure they do not exceed authorized takes. We have included in the authorization that Carnival must include 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 in the draft and final reports.

Comment: The Commission recommends that NMFS refrain from using the proposed renewal process for the USACE’s authorizations. The Commission stated that the renewal process should be used sparingly and selectively, by limiting its use only to those proposed incidental harassment authorizations that are expected to have the lowest levels of impacts to marine mammals and that require the least complex analyses.

The Commission also commented that the additional 15-day comment period for Renewals places a burden on reviewers who will need to review the original authorization and numerous supporting documents and then formulate comments very quickly. Therefore, the

Commission recommends and NMFS provides the Commission and other reviewers the full 30-day comment opportunity set forth in section 101(a)(5)(D)(iii) of the MMPA.

Response: We appreciate the Commission's input and direct the reader to our recent response to the same comment, which can be found at 84 FR 52464 (October 2, 2019), pg. 52466. If and when the USACE requests a Renewal, we will consider the Commission's comment further and address the concerns specific to this project.

Changes from the Proposed IHA to the Final IHA

Stock abundance updates to Table 2 (Marine Mammals Occurrence in the Project Area) were made for harbor porpoise, humpback whale, and blue whale as the 2019 draft Stock Assessment Reports published on November 27, 2019 (84 FR 65353). Minor corrections have been made to the estimated take table (see Table 8) and are described below. As described in the Comments and Responses section, Level B harassment takes were increased for harbor seals. To be more conservative, takes were slightly adjusted for California sea lions and Steller sea lions. Takes were increased from 1 to 3 California sea lions per day, and from 1 to 2 Steller sea lions per day. This increased the yearly total takes from 14 to 42 California sea lions and 14 to 28 for Steller sea lions. For Northern elephant seals, we reconsidered the method in which take was calculated and re-calculated takes using anecdotal information for Coos Bay. Northern elephant seals have not been observed in Coos Bay, rather nearby Cape Argo which is 6 km from the project area. For gray whales and harbor porpoise, NMFS recognizes that the densities only accounted for population growth up until 2019. NMFS adjusted this to account growth through 2022 as work for pile driving removal will begin in 2022. The estimated takes remain unchanged despite this correction.

Description of Marine Mammals in the Area of Specified Activities

Systematic marine mammal surveys in Coos Bay are limited; therefore, the USACE relied on two multi-day AECOM surveys of Coos Bay, Oregon Department of Fish and Wildlife (ODFW), and anecdotal reports to better understand marine mammal presence in Coos Bay and in support of the IHA application. Seven marine mammal species comprising seven stocks have the potential to occur within Coos Bay during the project.

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 with expected potential for occurrence around Coos Bay 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 (2016). 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 most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All values presented in Table 2 are the most recent available at the time of publication and are available in the NMFS’ draft 2019 SARs and final 2018 SARs for the U.S. Pacific and Alaska (e.g., Carretta *et al.*, 2018, 2019; Muto *et al.*, 2018) (<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports>).

Table 2--Marine Mammals Occurrence in the Project Area

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
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenopteridae (rorquals)						
Blue whale	<i>Balaenoptera m. musculus</i>	Eastern North Pacific Stock	E,D;Y	1,496 (0.44; 1,050; 2014)	1.23	1.84
Humpback whale	<i>Megaptera novaeangliae</i>	California/Oregon/Washington Stock	E,D;Y	2,900 (0.048 2,784; 2014)	16.7	42.1
Family Eschrichtiidae						
Gray whale	<i>Eschrichtius robustus</i>	Eastern North Pacific	N, N	26,960 (0.05, 25,849, 2016)	801	139
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer Whale	<i>Orcinus orca</i>	West Coast Transient	N, N	243 (-, 243, 2006) ⁴	2.4	0
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Northern CA/Southern OR	N, N	24,195 (0.40, 17,447, 2011)	349	≥0.2

				and 2016)		
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Northern elephant seal	<i>Mirounga angustirostris</i>	California breeding	N, N	179,000 (n/a, 81,368, 2010)	4,882	8.8
Steller sea lion	<i>Eumetopias jubatus</i>	Eastern U.S.	N, N	41,638 (-, 41,638, 2015)	2,498	108
California sea lion	<i>Zalophus californianus</i>	U.S.	N, N	257,606 (n/a, 233,515, 2014)	14,011	>320
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina</i>	Oregon/Washington Coast	N, N	24,732 (0.12, -, 1999) ⁵	unk	unk

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.

3 - These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

4- The minimum population estimate (NMIN) for the West Coast Transient stock of killer whales is derived from mark-recapture analysis for West Coast transient population whales from the inside waters of Alaska and British Columbia of 243 whales (95 percent probability interval = 180-339) in 2006 (DFO 2009), which includes animals found in Canadian waters.

5 Because the most recent abundance estimate is >8 years old (1999), there is no current estimate of abundance available for this stock. However, for purposes of this analysis, we apply the previous abundance estimate, corrected for animals missed in the water as described in Carretta *et al.* (2014) of 24,732.

All species that could potentially occur in the project area are included in Table 2.

Humpback whales and blue whales are not uncommon along the Oregon coast, however, they are unlikely to enter Coos Bay and be affected by construction noise. Given these considerations, the temporary duration of potential pile driving, and noise isopleths that would not extend beyond the river mouth, there is no reasonable expectation for planned activities to affect these species and they are not discussed further.

A detailed description of the of the species likely to be affected by the project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (84 FR 56781; October 23, 2019); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (<https://www.fisheries.noaa.gov/find-species>) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects from underwater noise from the USACE's pile driving and removal activities have the potential to result in Level B harassment only of marine mammals in the vicinity of the project area. The **Federal Register** notice for the proposed IHA (84 FR 56781; October 23, 2019) included a discussion of the effects of anthropogenic noise on marine mammals and their habitat, therefore that information is not repeated here; please refer to that **Federal Register** notice (84 FR 56781; October 23, 2019) for that information. No instances of serious injury or mortality are expected as a result of the planned activities.

Estimated Take

This section provides an estimate of the number of incidental takes authorized through these IHAs, which will inform both NMFS' consideration of "small numbers" and the negligible impact determinations.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine

mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Take of marine mammals incidental to USACE's pile driving and removal activities could occur by Level B harassment only, as pile driving has the potential to result in disruption of behavioral patterns for individual marine mammals. Based on the nature of the activity, Level A harassment is neither anticipated nor authorized. The planned mitigation and monitoring measures are expected to minimize the severity of such taking to the extent practicable. As described previously, no mortality is anticipated or 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 authorized take estimates for each IHA.

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 – 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 μ Pa (rms) for continuous (*e.g.*, vibratory pile-driving, drilling) and above 160 dB re 1 μ Pa (rms) for non-explosive impulsive (*e.g.*, impact pile driving seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. The USACE's planned activities include the use of continuous, non-impulsive (vibratory pile driving) therefore, the 120 dB re 1 μ Pa (rms) is 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. The technical guidance identifies the received levels, or thresholds, above which individual marine mammals are predicted to experience changes in their hearing sensitivity for all underwater anthropogenic

sound sources, and reflects the best available science on the potential for noise to affect auditory sensitivity by:

- Dividing sound sources into two groups (*i.e.*, impulsive and non-impulsive) based on their potential to affect hearing sensitivity;
- Choosing metrics that best address the impacts of noise on hearing sensitivity, *i.e.*, sound pressure level (peak SPL) and sound exposure level (SEL) (also accounts for duration of exposure); and
- Dividing marine mammals into hearing groups and developing auditory weighting functions based on the science supporting that not all marine mammals hear and use sound in the same manner.

These thresholds were developed by compiling and synthesizing the best available science, and are provided in Table 3 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-technicalguidance>.

Table 3--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
Mid-Frequency (MF) Cetaceans	<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

Phocid Pinnipeds (PW) (Underwater)	<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
Otariid Pinnipeds (OW) (Underwater)	<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>Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1 μPa²s. 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.

Sound Propagation

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

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

B = transmission loss coefficient (assumed to be 15)

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

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

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 ($20 \cdot \log(\text{range})$). 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 ($10 \cdot \log(\text{range})$). As is common practice in coastal waters, here we assume practical spreading loss (4.5 dB reduction in sound level for each doubling of distance). Practical spreading is a compromise that is often used under conditions where water depth increases as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions.

Sound Source Levels

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. There are source level measurements available for certain pile types and sizes from the similar environments recorded from underwater pile driving projects (CALTRANS 2015, WSDOT 2010) that were used to determine reasonable sound source levels likely result from the USACE's pile driving and removal activities (Table 4).

Table 4--Predicted Sound Source Levels for both Installation and Removal of Piles

Pile Type	Sound Source Level at 10 meters
12-inch steel H-pile ¹	150 dB _{RMS}
24-inch AZ steel sheet ¹	160 dB _{RMS}
30-inch steel pipe pile ²	164 dB _{RMS}
¹ Average typical sound pressure levels referenced from Caltrans (2015) and were either measured or standardized to 10 m from the pile ² Average sound pressure levels measured at the Vashon Ferry Terminal (WSDOT, 2010)	

Level A Harassment

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 from vibratory pile driving), NMFS User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would incur PTS. Inputs used in the User Spreadsheet (Table 5), and the resulting isopleths are reported below (Table 6). **Table 5--NMFS Technical Guidance (2018) User Spreadsheet Input to Calculate PTS Isopleths for Vibratory Pile Driving**

USER SPREADSHEET INPUT –Vibratory Pile Driving Spreadsheet Tab A.1 Vibratory Pile Driving Used.			
	12-in H piles (install/removal)	24-in sheet piles (install/removal)	30-in piles (install/remove)
Source Level (RMS SPL)	150	160	164
Weighting Factor Adjustment (kHz)	2.5	2.5	2.5
Number of piles within 24-hr period	25	25	6

Duration to drive a single pile (min)	10	10	60
Propagation (xLogR)	15	15	15
Distance of source level measurement (meters) ⁺	10	10	10

Table 6--NMFS Technical Guidance (2018) User Spreadsheet Outputs to Calculate Level A Harassment PTS Isoleths

USER SPREADSHEET OUTPUT		PTS isopleths (meters)				
Activity	Sound Source Level at 10 m	Level A harassment				
		Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid	Otariid
Vibratory Pile Driving/Removal						
12-in H pile steel installation/removal	150 dB SPL	3.3	0.3	4.8	2.0	0.1
24-in sheet pile installation/removal	160 dB SPL	15.2	1.3	22.4	9.2	0.6
30-in pile installation/removal	164 dB SPL	35.7	3.2	52.8	21.7	1.5

Level B Harassment

Utilizing the practical spreading loss model, USACE determined underwater noise will fall below the behavioral effects threshold of 120 dB rms for marine mammals at the distances shown in Table 7 for vibratory pile driving/removal. Table 7 below provides all Level B harassment radial distances (m) and their corresponding areas (km²) during the USACE’s planned activities. It is undetermined whether sheet piles, H-piles, or a combination of the two will be used for MOF construction; therefore, the USACE estimated potential take based on the larger disturbance zone for Level B harassment (*i.e.*, for sheet pile - 9.1 km²) for the 12-inch H pile Level B harassment zone.

Table 7--Radial Distances (meters) to Relevant Behavioral Isoleths and Associated Ensonified Areas (square kilometers (km²)) Using the Practical Spreading Model

Activity	Received Level at 10 m	Level B Harassment Zone (m)*	Level B Harassment Zone (km ²)
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Vibratory Pile Driving/Removal			
12-inch H piles installation/removal	150 dB SPL	1,000	9.1 (actual calculated zone is 2)
24-inch sheet pile installation/removal	160 dB SPL	4,642	9.1
30-inch pile installation/removal	164 dB SPL	8,577	11.5

Marine Mammal Occurrence and Take Calculation and Estimation

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. Potential exposures to vibratory pile driving/removal for each acoustic threshold were estimated using group size estimates and local observational data to create a density estimate. As previously stated, take by Level B harassment only will be considered for this action. Distances to Level A harassment thresholds are relatively small and mitigation is expected to avoid Level A harassment from these activities.

Harbor Seals

Over the last several decades, intermittent and independent surveys of harbor seal haul outs in Coos Bay have been conducted. The most recent aerial survey of haulouts occurred in 2014 by ODFW. Those surveys were conducted during a time when the highest number of animals would be expected to haul out (*i.e.*, the latter portion of the pupping season (May and June) and at low tide). In 2014, 333 seals were observed at Coos Bay haulouts in June (Wright, pers comm., August 27, 2019).

AECOM conducted surveys vessel-based surveys in May/June 2017 and November 2018 from the Highway 101 Bridge to the seaward entrance to the Coos Bay estuary. In 2017, during the line transect surveys, there were an estimated 374 harbor seals counted in 19 groups with a relative density of 6.2 harbor seals/km. In 2018, because of the low number of harbor seals sightings during the line transect effort, reliable statistical estimates of species density could not

be accurately calculated. However, for comparison with the May 2017 data, the number of seals observed/km yielded a sighting rate of 0.12 harbor seals/km.

AECOM also conducted three days of aerial (drone) flyovers at the Clam Island and Pigeon Point haulouts to capture aerial imagery during November and December 2018 to determine a fall/winter estimate for harbor seals. This aerial field effort observed a maximum of 167 harbor seals hauled out at Clam Island and 41 harbor seals hauled out at Pigeon Point on any one day. Based on these counts, an estimate of relative density was determined for the study area and ranged from 8.5 - 11.1 harbor seals/km².

The estimated take for each IHA was calculated using the maximum number of harbor seals (167) multiplied by the number of days per activity (*e.g.*, 7 days of vibratory pile driving/removal per pile type for a total of 14 days of pile driving/removal activity each year). Therefore, a total of 2,338 instances of take by Level B harassment are planned for harbor seals in both Year 1 for installation and in Year 2 for removal (Table 8). Because the Level A harassment zones are relatively small (21.7 m at the largest for pile driving/removal of 30-in piles), and activities will occur over a small number of days, we believe the Protected Species Observer (PSO) will be able to effectively monitor the Level A harassment zones and we do not anticipate take by Level A harassment of harbor seals.

California sea lions and Steller sea lions

No data are available to calculate density estimates California sea lion and Steller sea lions; therefore, USACE considers likely occurrences in estimating take for California sea lions and Steller sea lions. As described in the *Description of Marine Mammals* section, no haul outs for California sea lions and Steller sea lions exist within Coos Bay where harassment from exposure to pile driving could occur, however, these species do haul out on the beaches adjacent

to the entrance to Coos Bay. These animals forage individually and seasonal use of Coos Bay have been observed, primarily in the spring and summer when prey are present. The estimate for daily California sea lion and Steller sea lions abundance ($n = 1$) was based on recent marine mammal surveys in Coos Bay (AECOM 2017). It is unclear, but possible that two California sea lions may have been seen in one day.

Therefore, to be conservative, we estimate three California sea lions and one Steller sea lion may be present each day of pile driving. We multiplied three California sea lions and one Steller sea lions by the number of days per activity (*e.g.*, 7 days of vibratory pile driving/removal per pile type for a total of 14 days of pile driving/removal activity each year). Therefore, a total of 42 and 28 instances of take by Level B harassment are planned for California sea lions and Steller sea lions respectively in both Year 1 for installation and in Year 2 for removal (Table 8). Because the Level A harassment zones are relatively small (Less than 2 m at the largest for pile driving/removal of 30-in piles), and activities will occur over a small number of days, we believe the PSO will be able to effectively monitor the Level A harassment zones and we do not anticipate take by Level A harassment of California sea lions or Steller sea lions.

Northern elephant seals

Northern elephant seals have not been observed in Coos Bay, but at Cape Argo, a predominant haul out 6 km from Coos Bay jetties. It is unlikely Northern elephant seals will be in Coos Bay, but to be conservative, we estimate one Northern elephant seal may be present each day of pile driving. We multiplied one Northern elephant seal by the number of days per activity (*e.g.*, 7 days of vibratory pile driving/removal per pile type for a total of 14 days of pile driving/removal activity each year). Therefore, a total of 14 instances of take by Level B harassment are planned for Northern elephant seals in both Year 1 for installation and in Year 2

for removal (Table 8). Because the Level A harassment zones are relatively small (21.7-m isopleth at the largest for pile driving/removal of 30-in piles), and activities will occur over a small number of days, we believe the PSO will be able to effectively monitor the Level A harassment zones and we do not anticipate take by Level A harassment of Northern elephant seals.

Killer whales

It is not possible to calculate density for killer whales in Coos Bay as they are not present in great abundance; therefore, USACE estimates take based on likely occurrence and considers group size. During migration, the species typically travels singly or as a mother and calf pair. This species has been reported in Coos Bay only a few times in the last decade. The typical group size for transient killer whales is two to four, consisting of a mother and her offspring (Orca Network 2018). Males and young females also may form small groups of around three for hunting purposes (Orca Network 2018). Previous sightings in Coos Bay documented a group of five transient killer whales in May 2007 (as reported by the Seattle Times) and a pair of killer whales were observed during the 2017 May surveys. USACE assumes that a group of two killer whales come into Coos Bay and could enter a Level B harassment zone for one day in each year of pile driving/removal activities. Therefore, a total of two instances of take by Level B harassment are planned for killer whales in both Year 1 for installation and in Year 2 for removal (Table 8). Because the Level A harassment zones are relatively small (Less than a 4-m isopleth at the largest for pile driving/removal of 30-in piles), and activities will occur over a small number of days, we believe the PSO will be able to effectively monitor the Level A harassment zones and we do not anticipate take by Level A harassment of killer whales.

Harbor Porpoise

It is not possible to calculate density for harbor porpoise in Coos Bay as they are not present in great abundance; therefore, USACE estimates take based on likely occurrence and considers group size. Harbor porpoise are most often seen singly, in pairs, or in groups of up to 10, although there are reports of aggregations of up to 200 harbor porpoises. No harbor porpoises were detected during recent marine mammal surveys within the Coos Bay estuary (AECOM 2017, 2018). However, harbor porpoises were counted during aerial surveys of marine mammals off the coasts of California, Oregon, and Washington. The maximum estimated count of harbor porpoises within approximately 1,700 km² of Coos Bay (n = 24 in January 2011) was the basis for estimated abundance (Adams *et al.*, 2014). USACE applied a 4 percent annual population growth rate (NMFS 2013a) to approximate the relative abundance of harbor porpoises through 2022 (*i.e.*, n = 37). Lastly, an estimated density of harbor porpoise was calculated across approximately 1,700 km² as a basis for determining the number of animals that could be present in Level B harassment zones during vibratory pile driving activities. This calculated density is 0.021 harbor porpoise/km². The estimated take was calculated using this density (0.021 animals/km²) multiplied by the area ensonified above the threshold (9.1 km² for sheet piles and 11.5 km² for 30-in piles) multiplied by the number of days per activity (*e.g.*, 7 days of vibratory pile driving/removal per pile type for a total of 14 days of pile driving/removal activity each year). Therefore, a total of four instances of take by Level B harassment are planned for harbor porpoise in both Year 1 for installation and in Year 2 for removal (Table 8). Because the Level A harassment zones are relatively small (a 52.8-m isopleth at the largest for pile driving/removal of 30-in piles), and activities will occur over a small number of days, we believe the PSO will be able to effectively monitor the Level A harassment zones and we do not anticipate take by Level A harassment of harbor porpoise.

Gray whales

It is not possible to calculate density for gray whales in Coos Bay as they are not present in great abundance; therefore, USACE estimates take based on likely occurrence and considers group size. Gray whales are frequently observed traveling alone or in small, unstable groups, although large aggregations may be seen in feeding and breeding grounds. The maximum estimated count of gray whales within approximately 1,700 km² of Coos Bay (n = 10) was the basis for estimated abundance (Adams *et al.*, 2014). USACE then applied a 6 percent population growth rate (NOAA 2014b) to derive the current estimated abundance to approximate the relative abundance of gray whales through 2022 (*i.e.*, n = 20). Lastly, an estimated density of gray whales was calculated across approximately 1,700 km² as a basis for determining the number of animals that could be present in Level B harassment zones during vibratory pile driving/removal activities. This calculated density is 0.0118 gray whales/km². The estimated take was calculated using this density (0.0118 animals/km²) multiplied by the area ensounded above the threshold (9.1 km² for sheet piles and 11.5 km² for 30-in piles) multiplied by the number of days per activity (*e.g.*, 7 days of vibratory pile driving/removal per pile type, for a total of 14 days of pile driving/removal activity each year). Therefore, a total of two instances of take by Level B harassment are planned for gray whales in both Year 1 for installation and in Year 2 for removal (Table 8). Because the Level A harassment zones are relatively small (a 35.7-m isopleth at the largest for pile driving/removal of 30-in piles), and activities will occur over a small number of days, we believe the PSO will be able to effectively monitor the Level A harassment zones and we do not anticipate take by Level A harassment of gray whales.

For both year 1 and year 2, Table 8 below summarizes the authorized take for all the species described above as a percentage of stock abundance.

Table 8--Authorized Take by Level B Harassment and as a Percentage of Stock Abundance

Marine Mammal	Level B Harassment AZ sheets (or H-plies)	Level B Harassment 30-inch piles	Level B Harassment AZ sheets (or H-plies)	Level B Harassment 30-inch piles	Total Take by Level B Harassment (percent by stock)	Total Take by Level B Harassment (percent by stock)
	YR-1 Installation	YR-1 Installation	YR-2 Removal	YR-2 Removal	YR-1 Installation	YR-2 Removal
Harbor seal (<i>Phoca vitulina</i>)	1,169	1,169	1,169	1,169	2,338 (less than 4 percent)	2,338 (less than 4 percent)
Northern Elephant seal (<i>Mirounga angustirostris</i>)	7	7	7	7	14 (less than 1 percent)	14 (less than 1 percent)
Steller sea lion (<i>Eumetopias jubatus</i>)	14	14	14	14	28 (less than 1 percent)	28 (less than 1 percent)
California sea lion (<i>Zalophus californianus</i>)	21	21	21	21	42 (less than 1 percent)	42 (less than 1 percent)
Gray whale (<i>Eschrichtius robustus</i>)	1	1	1	1	2 (less than 1 percent)	2 (less than 1 percent)
Killer whale (<i>Orcinus orca</i>)	2		2		2 (less than 1 percent)	2 (less than 1 percent)
Harbor porpoise (<i>Phocoena phocoena</i>)	2	2	2	2	4 (less than 1 percent)	4 (less than 1 percent)

Planned 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 such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such 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 such 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.

The following mitigation measures are included in the planned IHAs:

Timing Restrictions

All work will be conducted during daylight hours. If poor environmental conditions restrict visibility full visibility of the shutdown zone, pile installation would be delayed.

Shutdown Zone for in-water Heavy Machinery Work

For in-water heavy machinery work other than pile driving, if a marine mammal comes within 10 m of such operations, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions.

Shutdown Zones

For all pile driving/removal activities, the USACE will establish shutdown zones for a marine mammal species that is greater than its corresponding Level A harassment zone. To be conservative, the USACE is plans to implement one cetacean shutdown zone (55 m) and one pinniped shutdown zone (25 m) during any pile driving/removal activity (*i.e.*, during sheet piles, H-piles, and 30-in steel pile installation and removal) (Table 9) which exceeds the maximum calculated PTS isopleths as described in Table 6. The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area).

Table 9--Pile Driving Shutdown Zones during Project Activities

Activity	Shutdown Zones (radial distance in m, area in km ² *)				
	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid	Otariid
In-Water Construction Activities					
Heavy machinery work (other than pile driving)	10 (0.00015)	10 (0.00015)	10 (0.00015)	10 (0.00015)	10 (0.00015)
Vibratory Pile Driving/Removal					
12-in H pile steel installation/removal	55 (0.00475)	55 (0.00475)	55 (0.00475)	25 (0.00098)	25 (0.00098)
24-in sheet pile installation/removal	55 (0.00475)	55 (0.00475)	55 (0.00475)	25 (0.00098)	25 (0.00098)
30-in pile installation/removal	55 (0.00475)	55 (0.00475)	55 (0.00475)	25 (0.00098)	25 (0.00098)

*Note: km² were divided by two to account for land.

Non-authorized Take Prohibited

If a species enters or approaches the Level B harassment zone and that species is either not authorized for take or its authorized takes are met, pile driving and removal activities must shut down immediately using delay and shutdown procedures. Activities must not resume until the animal has been confirmed to have left the area or an observation time period of 15 minutes has elapsed for pinnipeds and small cetaceans and 30 minutes for large whales.

Based on our evaluation of the USACE's planned measures, NMFS has determined that the planned mitigation measures provide the means 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 in the planned 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); and
- Mitigation and monitoring effectiveness.

Pre-Activity Monitoring

Prior to the start of daily in-water construction activity, or whenever a break in pile driving of 30 min or longer occurs, PSOs will observe the shutdown and monitoring zones for a period of 30 min. The shutdown zone will be cleared when a marine mammal has not been observed within the zone for that 30-min period. If a marine mammal is observed within the shutdown zone, pile driving activities will not begin until the animal has left the shutdown zone or has not been observed for 15 min. If the Level B Harassment Monitoring Zone has been observed for 30 min and no marine mammals (for which take has not been authorized) are present within the zone, work can continue even if visibility becomes impaired within the Monitoring Zone. When a marine mammal permitted for Level B harassment take has been

permitted is present in the Monitoring zone, piling activities may begin and Level B harassment take will be recorded.

Monitoring Zones

The USACE will establish and observe monitoring zones for Level B harassment as presented in Table 7. The monitoring zones for this project are areas where SPLs are equal to or exceed 120 dB rms (for vibratory pile driving/removal). These zones provide utility for monitoring conducted for mitigation purposes (*i.e.*, shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of the Level B harassment zones enables observers to be aware of and communicate the presence of marine mammals in the project area, and thus prepare for potential shutdowns of activity. The USACE will also be gathering information to help better understand the impacts of their planned activities on species and their behavioral responses.

Visual Monitoring

Monitoring would be conducted 30 minutes before, during, and 30 minutes after all pile driving/removal activities. In addition, PSO 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/removed. Pile driving/removal activities include the time to install, 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 thirty minutes.

Monitoring will be conducted by PSOs from on land and boat. The number of PSOs will vary from one to three, depending on the type of pile driving, method of pile driving and size of pile, all of which determines the size of the harassment zones. Monitoring locations will be selected to provide an unobstructed view of all water within the shutdown zone and as much of

the Level B harassment zone as possible for pile driving activities. During vibratory driving or removal of AZ-sheets or H-piles, two PSOs will be present. One PSO will be located on the shoreline adjacent to the MOF site or on the barge used for driving piles. The other PSO will be boat-based and detect animals in the water, along with monitoring the three haulout sites in the Level B harassment zone (*i.e.*, Pigeon Point, Clam Island/North Spit, and South Slough). During vibratory driving and removal of steel pipe piles (30-in), three PSOs will be present. As indicated above, one PSO will be on the shoreline or barge adjacent to the MOF site. A second PSO will be stationed near the South Slough haul out site, and the third PSO will be boat-based and make observations while actively monitoring at and between the two remaining haulout sites (*i.e.*, Pigeon Point and Clam Island).

In addition, PSOs will work in shifts lasting no longer than 4 hours with at least a 1-hour break between shifts, and will not perform duties as a PSO for more than 12 hours in a 24- hour period (to reduce PSO fatigue).

Monitoring of pile driving shall be conducted by qualified, NMFS-approved PSOs, who shall have no other assigned tasks during monitoring periods. The USACE shall adhere to the following conditions when selecting PSOs:

- Independent PSOs shall be used (*i.e.*, not construction personnel);
- At least one PSO must have prior experience working as a marine mammal observer during construction activities;
- Other PSOs may substitute education (degree in biological science or related field) or training for experience;

- Where a team of three or more PSOs are required, a lead observer or monitoring coordinator shall be designated. The lead observer must have prior experience working as a marine mammal observer during construction; and
- The USACE shall submit PSO CVs for approval by NMFS for all observers prior to monitoring. The USACE shall ensure that the PSOs have the following additional qualifications:
 - Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
 - Experience and ability to conduct field observations and collect data according to assigned protocols;
 - Experience or training in the field identification of marine mammals, including the identification of behaviors;
 - Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
 - Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior;
 - 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; and
 - Sufficient training, orientation, or experience with the construction operations to provide for personal safety during observations.

Reporting of injured or dead marine mammals

In the unanticipated event that the planned activity clearly causes the take of a marine mammal in a manner prohibited by the IHA, such as serious injury, or mortality, the USACE must immediately cease the specified activities and report the incident to the NMFS Office of Protected Resources and the West Coast Region Stranding Coordinator. The report must include the following information:

- Time and date of the incident;
- Description of the incident;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations and active sound source use 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).

Activities must not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with USACE to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The USACE may not resume their activities until notified by NMFS.

In the event the USACE discovers an injured or dead marine mammal, and the lead observer 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), the USACE must immediately report the incident to the Office of Protected Resources, NMFS, and the West Coast Region

Stranding Coordinator, NMFS. The report must include the same information as the bullets described above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with the USACE to determine whether additional mitigation measures or modifications to the activities are appropriate.

In the event that the USACE discovers an injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the specified activities (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the USACE must report the incident to the Office of Protected Resources, NMFS, and the West Coast Region Stranding Coordinator, NMFS, within 24 hours of the discovery.

Final report

The USACE shall submit a draft report to NMFS no later than 90 days following the end of construction activities or 60 days prior to the issuance of any subsequent IHA for the project. PSO datasheets/raw sightings data would be required to be submitted with the reports. The USACE shall provide a final report within 30 days following resolution of NMFS' comments on the draft report. Reports shall contain, at minimum, the following:

- Date and time that monitored activity begins and ends for each day conducted (monitoring period);
- Construction activities occurring during each daily observation period, including how many and what type of piles driven;
- Deviation from initial proposal in pile numbers, pile types, average driving times, etc.;

- Weather parameters in each monitoring period (*e.g.*, wind speed, percent cloud cover, visibility);
- Water conditions in each monitoring period (*e.g.*, sea state, tide state);
- For each marine mammal sighting:
 - Species, numbers, and, if possible, sex and age class of marine mammals;
 - Number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zones, and estimates of number of marine mammals taken, by species (a correction factor may be applied to total take numbers, as appropriate);
 - Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
 - Type of construction activity that was taking place at the time of sighting;
 - Location and distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
 - If shutdown was implemented, behavioral reactions noted and if they occurred before or after shutdown.
- Description of implementation of mitigation measures within each monitoring period (*e.g.*, shutdown or delay);
- Other human activity in the area within each monitoring period;
- A summary of the following:
 - Total number of individuals of each species detected within the Level B Harassment Zone, and estimated as taken if correction factor appropriate.

Level B harassment takes must be extrapolated based upon the number of observed takes and the percentage of the Level B Harassment Zone that was not visible;

- Total number of individuals of each species detected within the Level A Harassment Zone and the average amount of time that they remained in that zone; and
- Daily average number of individuals of each species (differentiated by month as appropriate) detected within the Level B Harassment Zone, and estimated as taken, if appropriate.

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, the majority of our analyses applies to all the species listed in Table 8, given that many of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. For harbor seals, because there is thought to be a potential resident population and potential repeat takes of individuals, we provide a supplemental analysis independent of the other species for which we propose to authorize take. Also, because the both the number and nature of the estimated takes anticipated to occur are identical in years 1 and 2, the analysis below applies to each of the IHAs.

The USACE did not request, and NMFS is not authorizing, take in the form of injury, serious injury, or mortality. The nature of the work precludes the likelihood of serious injury or mortality, and the mitigation is expected to ensure that no Level A harassment occurs. For all species and stocks, any take would occur within a limited, confined area of any given stock's home range (Coos Bay). Take would be limited to Level B harassment only. Exposure to noise resulting in Level B harassment for all species is expected to be temporary and minor due to the general lack of use of Coos Bay by cetaceans and pinnipeds, as explained above. In general, cetacean and non-harbor seal pinnipeds are infrequent visitors with only occasional sightings within Coos Bay. Cetaceans such as transient killer whales may wander into Coos Bay; however, any behavioral harassment occurring during the project is highly unlikely to impact the health or fitness of any individuals, much less effect annual rates of recruitment or survival, given any exposure would be very brief with any harassment potential from the project decreasing to zero once the animals leave the bay. There are no habitat areas of particular

importance for cetaceans (*e.g.*, biologically important area, critical habitat, primary foraging or calving habitat) within Coos Bay. Further, the amount of take authorized for any given stock is very small when compared to stock abundance, demonstrating that a very small percentage of the stock would be affected at all by the specified activity. Finally, while pile driving could occur year-round, pile driving would be intermittent (not occurring every day) and primarily limited to the MOF site, a very small portion of Coos Bay.

For harbor seals, the impact of harassment on the stock as a whole is negligible given the stocks very large size (70,151 seals). However, we are aware that it is likely a resident population of harbor seals resides year round within Coos Bay. While this has not been scientifically investigated through research strategies such as tagging/mark-recapture techniques, anecdotal evidence suggests some seals call Coos Bay home year-round, as suggested through AECOM's winter surveys. The exact home range of this potential resident population is unknown but harbor seals, in general, tend to have limited home range sizes. Therefore, we can presume that some harbor seals will be repeatedly taken. Repeated, sequential exposure to pile driving noise over a longer duration could result in more severe impacts to individuals that could affect a population; however, the limited number of non-consecutive pile driving days for this project means that these types of impacts are not anticipated. Further, these animals are already exposed, and likely somewhat habituated, to industrial noises such as USACE maintenance dredging, commercial shipping and fishing vessel traffic (Coos Bay contains a major port), and coastal development.

In summary, although this potential small resident population is likely to be taken repeatedly, the impacts of that take are negligible to the stock because the number of repeated days of exposure is small (14 or fewer) and non-consecutive, the affected individuals represent a

very small subset of the stock that is already exposed to regular higher levels of anthropogenic stressors, injurious noise levels are not authorized, and the pile driving/removal would not take place during the pupping season and during a time in which harbor seal density is greatest.

The following factors primarily support our determination that the impacts resulting from each of these two years of activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- No Level A harassment is anticipated or authorized;
- The number and intensity of anticipated takes by Level B harassment is relatively low for all stocks;
- No biologically important areas have been identified for the effected species within Coos Bay;
- For all species, including the Oregon/Washington Coastal stock of harbor seals, Coos Bay is a very small part of their range; and
- No pile driving would occur during the harbor seal pupping season; therefore, no impacts to pups from this activity is likely to occur.

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 planned monitoring and mitigation measures, NMFS finds that the total marine mammal take from each of the two years of planned 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. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The authorized take of seven marine mammal stocks comprises less than four percent of any stock abundance.

Based on the analysis contained herein of the planned activity (including the planned mitigation and monitoring measures) and the anticipated take of marine mammals, for each planned IHA, 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

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, for both IHAs, 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.

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 planned action (*i.e.*, the issuance of an incidental harassment authorization) with respect to potential

impacts on the human environment. These actions are consistent with categories of activities identified in Categorical Exclusion B4 (incidental harassment authorizations 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 determined that the issuance of these planned IHAs qualifies to be categorically excluded from further NEPA review.

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. No take of ESA-listed marine mammals are authorized. Therefore, NMFS has determined that consultation under section 7 of the ESA is not required for this action.

Authorizations

As a result of these determinations, NMFS authorizes two IHAs to the USACE for pile driving and removal activities associated with the North Jetty maintenance and repairs project in Coos Bay, Oregon over the course of two non-consecutive years, beginning September 2020 through June 2023, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: January 3, 2020.

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