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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XF882

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Astoria Waterfront Bridge Replacement Project

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

ACTION: Notice; Issuance of an Incidental Harassment Authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the City of Astoria, Oregon, to incidentally harass, by Level B harassment only, marine mammals during construction activities associated with a waterfront bridges replacement project in Astoria, Oregon.

DATES: This authorization is effective from October 1, 2018 through September 30, 2019.

FOR FURTHER INFORMATION CONTACT: Amy Fowler, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the IHA 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/node/23111*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

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 authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

NMFS has defined "negligible impact" in 50 CFR 216.103 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."

The MMPA states that the term "take" means to harass, hunt, capture, kill or attempt to harass, hunt, capture, or kill any marine mammal. Except with respect to certain activities not pertinent here, 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).

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 incidental harassment authorization) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in CE B4 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.

Summary of Request

On October 17, 2017, NMFS received a request from the City of Astoria (City), Oregon, for an IHA to take marine mammals incidental to replacement of bridges in downtown Astoria along the Columbia River. The application was considered adequate and complete on January 17, 2018. The City's request was for take of California sea lions (*Zalophus californianus*), Steller sea lions (*Eumetopias jubatus*), and harbor seals (*Phoca vitulina richardii*) by Level B harassment only. Neither the City nor NMFS expect mortality to result from this activity and, therefore, an IHA is appropriate.

Description of the Specified Activity

The City of Astoria is planning to replace three bridges connecting city streets to waterfront piers in the Columbia River. The bridges are currently supported by deteriorated timber piles, which will be removed and replaced with steel piles. Bridge replacement is scheduled to begin with above-water work to remove the superstructures of the bridges in

October 2018. In-water pile removal and installation will occur over 80 days between November 1, 2018 and February 28, 2019. Vibratory removal of 255 timber piles is expected to take 26 days while impact driving of 74 permanent steel piles and installation and subsequent removal of 10 temporary steel piles is expected to take 42 days. The remaining 12 days of in-water work will be used to remove concrete footings and a concrete retaining wall along the riverbank. Additional above-water construction to replace the bridge superstructures will occur in March and April 2019.

A detailed description of the planned bridge replacement project is provided in the *Federal Register* notice for the proposed IHA (83 FR 7680; February 22, 2018). 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.

Comments and Responses

A notice of NMFS' proposal to issue an IHA was published in the *Federal Register* on February 22, 2018 (83 FR 7680). During the 30-day public comment period, the Marine Mammal Commission (Commission) submitted a letter on March 21, 2018. The Commission provided comments as described below and concurred with NMFS's finding that recommended the issuance of an IHA to the City, subject to the inclusion of the mitigation, monitoring, and reporting measures.

Comment 1: The Commission commented that NMFS' method of estimating takes from this project was inappropriate. Rather than multiplying the average count of pinnipeds from the South Jetty by *months* of activity, NMFS should have multiplied by *days* of activity. As a result, the take numbers proposed in the *Federal Register* notice (83 FR 7680; February 22, 2018) were

underestimated. The Commission recommended revising the take estimates to better reflect the likelihood of pinniped occurrence in the project area.

Response 1: NMFS concurs with the Commission recommendation and has modified the authorized take limits to account for newly available site-specific data. These changes are described further in the "Marine Mammal Occurrence" and "Take Calculation and Estimation" sections in this notice. As a result of this modification, NMFS authorized the take of 33,736 California sea lions, 5,360 Steller sea lions, and 4,560 harbor seals.

Comment 2: The Commission requested clarification of certain issues associated with NMFS's notice that one-year renewals could be issued in certain limited circumstances and expressed concern that the process would bypass the public notice and comment requirements. The Commission also suggested that NMFS should discuss the possibility of renewals through a more general route, such as a rulemaking, instead of notice in a specific authorization. The Commission further recommended that if NMFS did not pursue a more general route, that the agency provide the Commission and the public with a legal analysis supporting our conclusion that this process is consistent with the requirements of 101(a)(5)(D) of the MMPA.

Response 2: The process of issuing a renewal IHA does not bypass the public notice and comment requirements of the MMPA. The notice of the proposed IHA expressly notifies the public that under certain, limited conditions an applicant could seek a renewal IHA for an additional year. The notice describes the conditions under which such a renewal request could be considered and expressly seeks public comment in the event such a renewal is sought. Importantly, such renewals would be limited to where the activities are identical or nearly identical to those analyzed in the proposed IHA, monitoring does not indicate impacts that were not previously analyzed and authorized, and the mitigation and monitoring requirements remain

the same, all of which allow the public to comment on the appropriateness and effects of a renewal at the same time the public provides comments on the initial IHA. NMFS has, however, modified the language for future proposed IHAs to clarify that all IHAs, including renewal IHAs, are valid for no more than one year and that the agency would consider only one renewal for a project at this time. In addition, notice of issuance or denial of a renewal IHA would be published in the *Federal Register,* as are all IHAs. Last, NMFS will publish on our website a description of the renewal process before any renewal is issued utilizing the new process.

Description of Marine Mammals in the Area of Specified Activities

A detailed description of the species likely to be affected by the City's actions, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, are provided in the City's application and the *Federal Register* notice for the proposed IHA (83 FR 7680; February 22, 2018). 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 refer to additional species information available in the NMFS stock assessment reports for the Pacific and Alaska at *http://www.nmfs.noaa.gov/pr/sars/region.htm*.

Table 1. Marine Mammals Potentially Present in the Vicinity of Astoria.

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]	Relative Occurrence near Astoria
Order Carnivora – Superfamily Pinnipedia							
Family Otariidae (eared seals and sea lions)							
California sea lion	*Zalophus californianus*	U.S.	-; N	296,750 (N/A, 153,337, 2011)	9,200	389	Likely
Steller sea lion	*Eumetopias jubatus*	Eastern U.S.	-; N	41,638 (N/A,	2,498	108	Likely

				41,638, 2015)			
Family Phocidae (earless seals)							
Pacific harbor seal	*Phoca vitulina richardii*	Oregon/Washington Coast	-; N	Unknown (0.12, 24,732, 1999)	undet.	10.6	Likely

[1]Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2]NMFS marine mammal stock assessment reports online at: www.nmfs.noaa.gov/pr/sars/. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable. For certain stocks, abundance estimates are actual counts of animals and there is no associated CV.

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

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from vibratory and impact pile driving and airborne noise from superstructure construction for the bridge replacement project have the potential to result in behavioral harassment of marine mammals in the vicinity of the action area. The *Federal Register* notice for the proposed IHA (83 FR 7680; February 22, 2018) included a discussion of the effects of the project and anthropogenic noise on marine mammals, therefore that information is not repeated here; please refer to the *Federal Register* notice (83 FR 7680; February 22, 2018) for that information. We provide a summary here.

The main impact associated with the bridge replacement project would be exposure to temporarily elevated sound levels and the associated direct effects on marine mammals (*e.g.*, temporary hearing impairment, behavioral disturbance, and stress). The new bridges will be installed within the footprint of the existing bridges, therefore no new permanent impacts to habitats used by marine mammals would result from the project. Some short-term impacts to prey availability (*e.g.*, fish) and minor impacts to the immediate substrate may occur as a result of increased turbidity from pile installation and removal but the effects are expected to be minimal. No critical habitat for any marine mammal species occurs in the project area.

Estimated Take

This section provides an estimate of the number of incidental takes authorized by this IHA, which informs both NMFS' consideration of whether the number of takes is "small" 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 are by Level B harassment only, for individual marine mammals resulting from exposure to pile driving and construction activities. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.*, shutdown– 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.

Described in the most basic way, 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.

Below, we describe these components 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). Thresholds have also been developed identifying the received level of in-air sound above which exposed pinnipeds would likely be behaviorally harassed.

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 e*t al.*, 2011). 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 decibels (dB) re 1 micro pascal (μPa) root mean square (rms) for continuous (*e.g.* vibratory pile-driving, drilling) and above 160 dB re 1 μPa (rms) for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. For in-air sounds, NMFS predicts that pinnipeds exposed above received levels of 100 dB re 20 μPa (rms) will be behaviorally harassed.

The City's activities include the use of continuous (vibratory pile driving) and impulsive (impact pile driving) sources, and therefore the 120 and 160 dB re 1 μPa (rms) are applicable.

Level A harassment for non-explosive sources—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Technical Guidance, 2016) 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). The City's activities include the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving) sources.

These thresholds were developed by compiling and synthesizing the best available science and soliciting input multiple times from both the public and peer reviewers to inform the final product, and are provided in Table 2 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2016 Technical Guidance, which may be accessed at: *https://www.fisheries.noaa.gov/resource/document/underwater-acoustic-thresholds-onset-permanent-and-temporary-threshold-shifts*.

Table 2. Thresholds Identifying the Onset of Permanent Threshold Shift.

Hearing Group	PTS Onset Thresholds	
	Impulsive	**Non-impulsive**
Low-Frequency (LF) Cetaceans	$L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	$L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	$L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	$L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	$L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	$L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	$L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	$L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	$L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	$L_{E,OW,24h}$: 219 dB

* 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.

Note: Peak sound pressure (Lpk) has a reference value of 1 µPa, and cumulative sound exposure level (LE) has a reference value of 1µPa2s. 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.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds.

Level B Harassment

In-Air Disturbance during General Construction Activities—Level B behavioral disturbance may occur incidental to the use of construction equipment during general construction that is proposed in the dry, above water, or inland within close proximity to the river banks. These construction activities are associated with the removal and construction of the rail superstructures, and the removal of the existing concrete foundations and the 9th Street retaining wall. Possible equipment includes an excavator, crane, dump truck, and chain saw. It is estimated that the sound levels during these activities will range from 78 to 93 dB (rms) at 20 meters (m) from the sound source, with the loudest airborne noise produced by the use of a concrete saw (Hanan & Associates, 2014). These noise levels are based on acoustic data collected during the City of San Diego Lifeguard Station Demolition and Construction Monitoring project. Using the Spherical Spreading Loss Model (20logR), a maximum sound source level of 93 dB (rms) at 20 m, sound levels in-air would attenuate below the 90dB (rms) Level B harassment threshold for harbor seals at 28 m, and below the 100 dB (rms) threshold for all other pinnipeds at 9 m. Harbor seals are only present in the main river channel and are not expected to occur within 28 m of the activity and are therefore not expected to be harassed by in-air sound. Additionally, the city will implement a 10 m shutdown zone for all general construction work to prevent injury from

physical interaction with equipment. The City would therefore shut down equipment before hauled out sea lions could be acoustically harassed by the sound produced. No Level B harassment is expected to occur due to increased sounds from railway and roadway construction. However, sea lions may be disturbed by the presence of construction equipment and increased human presence during above-water construction.

Although some piles may potentially be driven or removed in the dry due to tidal conditions, the City assumed all pile driving and removal will occur in water. The Level B harassment zone for in-water pile driving and removal is greater than the airborne Level B harassment zone so no airborne harassment is requested from pile driving or removal. All harassment due to pile driving and removal is assumed to be in-water.

In-Water Disturbance during Vibratory Pile Removal—Level B behavioral disturbance may occur incidental to the use of a vibratory hammer due to propagation of underwater noise during the removal of the existing timber substructures. An estimated 255 timber piles will need to be removed to facilitate construction of the three new crossings. It is anticipated that the contractor will need to utilize a vibratory hammer during extraction. Removal via vibratory hammer will result in the greatest amount of underwater noise during construction and will be the farthest reaching extent of aquatic impacts during pile removal activities. We note that some pile removal will occur in the dry (depending on tidal stage); however, we conservatively assumed all work would occur in-water since it is not feasible to determine how many piles would be removed in the dry. When piles are removed at lower tidal stages, we do not anticipate sound to propagate as far or, in the case of no water, at all.

Washington State Department of Transportation (WSDOT) monitored underwater noise during the removal of three 12-in timber dolphin piles at Port Townsend (Laughlin 2011a). Most

of the timber piles to be removed in this project are 12-in but some may be up to 14-in. Average noise levels during vibratory removal of the wood piles were measured at 150 dB (rms) at 16 m from the source. The Practical Spreading Loss Model (15logR) was used to calculate the in-water Level B harassment zone during vibratory pile removal. Using a measurement of 150dB at 16 m, a 1,600 m Level B harassment zone (120 dB rms threshold) is expected for vibratory pile removal activities. Based on the contours of the shoreline and 1,600 m Level B harassment zone, a total of 4.5 square kilometers (km^2) is expected to be ensonified due to vibratory pile removal (see Figure 10 in application) (Table 7).

In-Water Disturbance during Impact Pile Driving—Level B behavioral disturbance may occur incidental to the use of an impact hammer due to the propagation of underwater noise during the installation of permanent and temporary steel piles. The City will install a total of 74 24-in and 10 16-in steel piles. The City used the sound source levels from 24-in piles only to estimate the Level B harassment zone due to pile driving as the sound source levels from 24-in piles are greater than those of 16-in piles. The City will use the Level B harassment zone created by installation of 24-in piles during the installation of 16-in piles to be conservative.

Based on the most recent WSDOT data, the unmitigated sound pressure level associated with impact pile driving 24-in steel piles is 194 dB RMS at 10 m (WSDOT 2016). The contractor will be required to use a bubble curtain device during impact pile driving in compliance with the Federal Aid Highway Program (FAHP) Programmatic Biological Opinion, which will be utilized for ESA coverage for listed salmonids. Use of a bubble curtain device was assumed to decrease initial sound levels by 10 dB (Reyff, 2007), resulting in an initial sound pressure level (SPL) of 184 dB RMS at 10 m from the source. Using the values from WSDOT in the Practical Spreading Loss Model (15logR), the distance to the 160 dB behavioral disturbance

threshold is calculated to be 398 m from the pile when a noise attenuation device is used (Table 3) as opposed to 1,848 m when a device is not used. The use of a noise attenuation device would shrink the distance at which noise exceeds the thresholds by approximately 80 percent, resulting in a significantly smaller area of potential impact. With a 398 m Level B harassment zone, a total of 0.40 km^2 is expected to be ensonified by impact pile driving (Figure 11 in application).

Table 3. Inputs and Resulting Distances to Level B harassment Isopleths.

Activity	SL (distance measured)	Threshold Level	Propagation Loss Coefficient	Level B isopleth (m)	Level B area (km^2)
Vibratory pile driving/removal	150 dB (16 m)	120 dB re 1 µPa	15	1,600	4.5
Impact pile driving (24-in piles)	184 dB (10 m)[a]	160 dB re 1 µPa	15	398	0.4
General Construction (in-air)	93 dB (20 m)	100 dB re 20 µPa[b]	20	9 m	n/a

[a]Proxy SL with 10 dB reduction due to bubble curtain.
[b]100 dB re 20 µPa airborne threshold applies only to sea lions. The distance to the 90 dB re 20µPa applicable to harbor seals is 28 m but harbor seals are not expected to be harassed by airborne sound, as described above.

Level A Harassment

When 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 will result in some degree of overestimate of Level A 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 impact and 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 not incur permanent threshold shift (PTS). Inputs used in the User Spreadsheet, and the resulting isopleths are reported below.

Table 4. PTS Isopleth Data for Vibratory Pile Removal.

Source Level (RMS SPL)	150
Activity Duration (hours) within 24-hr period	8
Activity Duration (seconds)	28,800
10 Log (Duration)	44.59
Propagation (xLogR)	15
Distance of source level measurement (m)	16

Table 5. Resulting PTS Isopleths for Vibratory Pile Driving.

	Phocid Pinnipeds	**Otariid Pinnipeds**
SEL_{cum} Threshold	210	219
PTS Isopleth to Threshold (meters)	4.9	0.3

Table 6. PTS Isopleth Data for Impact Pile Driving.

Source Level (Single Strike/shot SEL)	168
a) Number of strikes in 1 h OR b) Number of strikes per pile	250
a) Activity Duration (h) within 24-h period OR b) Number of piles per day	4
Propagation (xLogR)	15
Distance of single strike SEL measurement (meters)	10

Table 7. Resulting PTS Isopleths for Impact Pile Driving.

	Phocid Pinnipeds	**Otariid Pinnipeds**
SEL_{cum}-Threshold	185	203
PTS Isopleth to Threshold (m)	53.4	3.9

The resulting small PTS isopleths assume an animal would remain stationary at that distance for the duration of the activity. Given the extended durations and due to the relatively small distances to PTS onset from each activity, and the mitigation measures (See "Mitigation") proposed by the City, Level A take is neither expected nor authorized.

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.

In the *Federal Register* notice of proposed IHA (83 FR 7680; February 22, 2018), takes of marine mammals were estimated using counts from 2000-2014 by WDFW at the South Jetty at the mouth of the Columbia River. At the time of publication, these counts were believed to be the best available data on pinniped occurrence in the lower Columbia River. After publication of the *Federal Register* notice (83 FR 7680; February 22, 2018), NMFS learned of Oregon Department of Fish and Wildlife (ODFW) aerial surveys of pinnipeds at the East Mooring Basin (approximately one mile upstream from the project site) and Desdemona Sands (approximately one mile downstream from the project site). Estimated takes of California sea lions were recalculated using data generated by those surveys (ODFW; Bryan Wright, pers. comm., March 2018).

Aerial surveys of the East Mooring Basin in Astoria from 2011 to 2017 were used to calculate take of California sea lions. Maximum daily counts of California sea lions at the East

Mooring Basin ranged from 3 in July 2016 to 3,834 in March 2016. In addition to ODFW aerial surveys, the City conducted opportunistic surveys of pinnipeds at the bridge sites in December 2017. A maximum of four California sea lions were observed in the water surrounding the bridges and piers. Additional California sea lions were heard vocalizing from the riverbanks under the bridges but the number of sea lions could not be determined. A conservative estimate of 16 California sea lions per day may be hauled out on the riverbanks and subject to harassment from above-water construction work.

Counts of Steller sea lions at the East Mooring Basin typically numbered in the single digits (B. Wright, pers. comm., March 2018). However, there are typically dozens of Steller sea lions at the Bonneville Dam and a few individuals at Willamette Falls. While the sea lions observed at Bonneville and Willamette are often the same individuals seen daily, these animals must transit past Astoria at some point in their travels from the Pacific to the upper Columbia River (B. Wright, pers. comm., March 2018).

Numbers of harbor seals hauled out at Desdemona Sands have been reported to reach into the thousands (Profita 2015) but specific counts were unavailable. Without counts of harbor seals closer to the project site, the maximum average count of harbor seals at the South Jetty (57 seals; WDFW 2014) is used to calculate take.

Take Calculation and Estimation

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

In the *Federal Register* notice for the proposed IHA (83 FR 7680; February 22, 2018), take of each species was calculated using average counts of pinnipeds at the South Jetty (WDFW 2014). Average monthly counts were multiplied by months of activity to determine the total take

estimation. During the public comment period, we received information that although the WDFW counts were presented as average number of pinnipeds per month, the numbers were actually daily counts and therefore should have been multiplied by days of activity. The take limits in the final authorization were calculated by multiplying maximum counts of pinnipeds by days of activity.

Although three species of pinniped occur in the vicinity of the project, they do not occur in equal numbers. Harbor seals and Steller sea lions do not haul-out near the project area and would only be harassed if they are transiting through the in-water Level B harassment zone (1,600 m for vibratory pile removal, 398 m for impact pile driving) at the time of pile driving. Because harbor seals and Steller sea lions do not have the potential to be harassed when hauled-out (in-air), they would only be harassed during the in-water work period (November through February).

California sea lions are the most commonly observed marine mammal in the area, and are known to haul out on the riverbanks and structures near the bridges. California sea lions may be harassed by underwater sound resulting from vibratory pile removal and impact pile driving (at the distances listed above) as well as airborne sound resulting from roadway and railway demolition and construction. As such, California sea lions may be subject to both in-water and in-air sources of harassment (October through April).

Using the highest sound source (concrete saw, 93 dB_{rms} re: 20 µPa at 20 m), the isopleth to Level B harassment from airborne noise (100 dB re: 20 µPa) is 9 m. The City is proposing a 10 m shutdown zone during all railway and roadway above-water construction to prevent injury from physical interaction with equipment (see "Mitigation"). The City would therefore shut down equipment before sea lions would be acoustically harassed by the sound produced and no

Level B acoustic harassment would occur. However, the City anticipates that California sea lions hauled out on the banks of the river in the vicinity of the construction work may be visually disturbed by the presence of construction equipment and may flush, resulting in Level B take. Therefore, we have authorized take of California sea lions during the above-water work period (October 2018 and March-April 2019).

While harbor seals and Steller sea lions would only be harassed during the in-water work period (November through February), California sea lions may be harassed over the entire duration of the project (October through April). To determine the estimated exposure and take of harbor seals, the maximum average daily count of harbor seals at the South Jetty (57 seals) was multiplied by planned days of in-water work (80 days). Similarly, the maximum number of Steller sea lions observed at the Bonneville Dam (63; USACE 2017) and Willamette Falls (4; ODFW 2017) were multiplied by 80 days of in-water work to account for the maximum number of Steller sea lions likely to be in the Columbia River transiting past Astoria each day (Table 8).

Table 8. Take Calculation of Harbor Seals and Steller Sea Lions.

Species	Maximum Daily Count	Days of Activity	Total Take (Level B)
Harbor seal	57[1]	80	4,560
Steller sea lion	67[2]	80	5,360

[1]WDFW 2014

[2]63 sea lions at Bonneville Dam + 4 sea lions at Willamette Falls (USACE 2017; ODFW 2017)

Take of California sea lions was calculated by multiplying the average maximum daily count per month by the days of activity in each month (Table 9).

Table 9. Take Calculation of California Sea Lions.

Month	Daily Average Maximum[1]	Days of Work in Month[2]	Total Takes per Month (Level B)
October	16	22	352
November	141	20	2,817
December	135	20	2,690
January	408	21	8,577

February	980	19	18,612
March	16	21	336
April	16	22	352
		Total Takes	33,736

[1]B. Wright, pers. comm.
[2]Days of work excludes weekends and holidays

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.

Mitigation for Marine Mammals and their Habitat

General Construction Measures—All construction activities shall be performed in accordance with the current Oregon Department of Transportation (ODOT) Standard Specifications for Construction, the Contract Plans, and the Project Special Provisions. In addition, the following general construction measures shall be adhered to:

- All work below the highest measured tide shall be completed during the ODFW prescribed in-water work period of November 1 through February 28;
- All work shall be performed according to the requirements and conditions of the regulatory permits issued by federal, state, and local governments. Seasonal restrictions, *i.e.*, work windows, shall be applied to the Project to avoid or minimize potential impacts to listed or proposed species based on agreement with, and the regulatory permits issued by Department of State Lands, and U.S. Army Corps of Engineers (USACE) in consultation with NMFS. The City shall comply with all stipulations from the FAHP Biological Opinion for salmonids (*i.e.*, using air bubble curtains);
- The City shall have an inspector onsite during construction. The role of the inspector is to ensure compliance with the construction contract and other permits and regulations. The onsite inspector shall also perform marine mammal monitoring duties when protected species observers (PSOs) are not onsite (See Proposed Monitoring section);

- To ensure no contaminants enter the water, mobile heavy equipment shall be stored in a staging area at least 150 ft from the river or in an isolated hard zone. Equipment shall be inspected daily for fluid leaks before leaving the staging area. Stationary equipment operated within 150 ft of the river shall be maintained and protected to prevent leaks and spills. Erosion and sediment control BMPs shall be installed prior to initiating and construction activities; and
- The contractor shall be responsible for the preparation of a Pollution Control Plan (PCP). The PCP shall designate a professional on-call spill response team, and identify all contractor activities, hazardous substances used, and wastes generated. The PCP shall describe how hazardous substances and wastes will be stored, used, contained, monitored, disposed of, and documented.

Pile Removal and Installation BMPs—The following mitigation measures shall be implemented to minimize disturbance during pile removal and installation activities:

- An air bubble system shall be employed during impact installation unless the piles are driven on dry areas;
- The contractor shall implement a soft-start procedure for impact pile driving activities. The objective of a soft-start is to provide a warning and/or give animals in close proximity to pile driving a chance to leave the area prior to an impact driver operating at full capacity, thereby exposing fewer animals to loud underwater and airborne sounds. A soft-start procedure shall be used at the beginning of each day that pile installation activities are conducted (*i.e.*, for impact driving, an initial set of three strikes would be made by the hammer at 40 percent energy, followed by a one minute wait period, then two subsequent 3-strike sets at 40 percent energy, with one minute waiting periods, before initiating continuous driving);

- Monitoring of marine mammals shall take place starting 30 minutes before construction begins until 30 minutes after construction ends (See *Proposed Monitoring*);
- Before beginning vibratory pile removal activities, the City shall establish a 15 m shutdown zone to protect marine mammals from Level A harassment;
- Before beginning impact pile driving activities, the City shall establish a 55 m shutdown zone to protect marine mammals from Level A harassment;
- Before beginning any in-water work (not including pile driving/removal) and any above-water construction activities, the City shall establish a 10 m Level A shutdown zone to prevent injury from physical interaction with construction equipment;
- The City shall shut down operations if a marine mammal is sighted within or approaching the shutdown zone until the marine mammal is sighted moving away from the shutdown zone, or if not sighted for 15 minutes after the shutdown;
- If a species for which authorization has been not been granted or for which authorization has been granted but the take limit has been met approaches or enters the Level B harassment zone, construction activity must cease and the City shall contact the Office of Protected Resources, NMFS;
- If the shutdown zone is obscured by poor lighting conditions, pile driving shall not be initiated until the entire zone is visible; and
- In-water work shall only commence once observers have declared the shutdown zone clear of marine mammals.

Based on our evaluation of the applicant's proposed measures, NMFS has determined that the 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 proposed action area. Effective reporting is critical both to compliance and to 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.

Monitoring

The following marine mammal monitoring measures are included in the IHA.

1) Protected Species Observers: the City shall employ two qualified PSOs to monitor the extent of the Region of Activity for marine mammals. Qualifications for marine mammal observers include:

a. Visual acuity in both eyes (correction is permissible) sufficient for discerning moving targets at the water's surface with ability to estimate target size and distance. Use of binoculars is necessary to correctly identify the target;

b. Advanced education (at least some college level course work) in biological science, wildlife management, mammalogy, or related fields (bachelor's degree or higher is preferred but not required);

c. Experience or training in the field identification of marine mammals (cetaceans and pinnipeds);

d. Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

e. 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;

f. Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience); and

g. Writing skills sufficient to prepare a report of observations that would include such information as the number and type of marine mammals observed; the behavior of marine mammals in the project area; dates and times when observations were conducted; dates and times when in-water construction activities were conducted; and dates and times when marine mammals were present at or within the defined Region of Activity.

2) Monitoring Schedule: PSOs shall be present onsite during IWW construction activities as follows:

a. During vibratory pile removal activities:

i. Two NMFS qualified observers shall be onsite the first day of removal at each bridge, one NMFS qualified observer shall be onsite every third day thereafter.

ii. One NMFS qualified observer shall be stationed at the best practicable land-based vantage point to observe the downstream portion of the disturbance zone, and the other positioned at the best practicable land-based vantage point to monitor the upstream portion of the disturbance zone.

iii. When PSOs are not onsite, the contractor's onsite inspector shall be trained in species identification and monitoring protocol, and shall be onsite during all pile removal activities to ensure that no species enter the 15 m shutdown zone.

b. During pile driving activities:

i. Two NMFS qualified observers shall be onsite the first two days of pile driving at each bridge, and every third day thereafter.

ii. One NMFS observer shall be stationed at the best practicable land-based vantage point to observe the downstream portion of the disturbance and exclusion zones, and the other positioned at the best practicable land-based vantage point to monitor the upstream portion of the disturbance and exclusion zones.

iii. When PSOs are not onsite, the contractor's onsite inspector shall be trained in species identification and monitoring protocol, and shall be onsite during all pile driving activities to ensure that no species enter the shutdown zone.

c. During in-water substructure demolition activities (not including pile driving/removal) and above-water superstructure demolition and construction activities:

i. One NMFS qualified observer shall be onsite once a week to monitor the shutdown zone within 10 m of the construction site.

ii. When PSO is not on-site, the contractor's inspector shall be trained in species identification and monitoring protocol, and shall be onsite during all construction activities to ensure that no species enter the 10 m shutdown zone during superstructure demolition and construction activities.

3) Monitoring Protocols: PSOs shall monitor marine mammal presence within the shutdown zone and Level B harassment zones per the following protocols:

a. A range finder or hand-held global positioning system device shall be used by PSOs to ensure that the defined shutdown zones are fully monitored and the Level B ZOIs monitored to the best extent practicable.

b. A 30-minute pre-construction marine mammal monitoring period shall be required before the first pile driving or pile removal of the day. A 30-minute post-construction marine mammal monitoring period shall be required after the last pile driving or pile removal of

the day. If the contractor's personnel take a break between subsequent pile driving or pile removal for more than 30 minutes, then additional pre-construction marine mammal monitoring shall be required before the next start-up of pile driving or pile removal.

c. If marine mammals are observed, the following information shall be documented:

i. Species of observed marine mammals;

ii. Number of observed marine mammal individuals;

iii. Life stages of marine mammals observed;

iv. Behavioral habits, including feeding, of observed marine mammals, in both presence and absence of activities;

v. Location within the Region of Activity; and

vi. Animals' reaction (if any) to pile driving activities or other construction-related stressors including:

1. Impacts to the long-term fitness of the individual animal, if any

2. Long-term impacts to the population, species, or stock (*e.g.*, through effects on annual rates of recruitment or survival), if any

vii. Overall effectiveness of mitigation measures

d. During vibratory pule removal and impact driving, qualified PSOs shall monitor the Level B harassment zones from the best practicable land-based vantage point to observe the downstream and upstream portions of the disturbance zone according to the above schedule.

e. PSOs shall use binoculars to monitor the Level B harassment zone.

f. PSOs shall keep a running tally of takes of each marine mammal species authorized by extrapolating the observed takes to the days when monitoring did not occur. The

City shall notify the Office of Protected Resources, NMFS if takes of any species come with five percent of the take limits established in the IHA.

Reporting

1) The City shall provide NMFS with a draft monitoring report within 90 days of the conclusion of the construction work. This report shall detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been harassed.

2) If comments are received from the NMFS West Coast Regional Administrator or NMFS Office of Protected Resources on the draft report, a final report shall be submitted to NMFS within 30 days thereafter. If no comments are received from NMFS, the draft report will be considered to be the final report.

3) In the unanticipated event that the construction activities clearly cause the take of a marine mammal in a manner prohibited by the NMFS authorization, such as an injury, serious injury, or mortality), the City shall immediately cease all operations and immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, and the West Coast Regional Stranding Coordinator, (206) 526-4747. The report must include the following information:

a. Time, date, and location (latitude/longitude) of the incident;

b. Description of the incident;

c. Status of all sound source use in the 24 hours preceding the incident;

d. Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility, and water depth);

e. Description of marine mammal observations in the 24 hours preceding the incident;

f. Species identification or description of the animal(s) involved, including life stage and the fate of the animal(s); and

g. Photographs or video footage of the animal(s) (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with the City to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Activities may not be resumed until notified by NMFS via letter, email, or telephone.

4) In the event that the City discovers an injured or dead marine mammal, and the lead PSO determines that the cause of injury or death is unknown and the death is relatively recent (*i.e.*, in less than a moderate state of decay as described in the next paragraph), the City shall immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinators. The report must contain the same information identified above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with the City to determine whether modifications in the activities are appropriate.

5) In the event that the City discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the City shall report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinators, within 24 hours of the discovery. The City shall provide photographs or

video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. The City can continue its operations under such a case.

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 discussion of our analyses applies to all three species authorized to be taken by this project (California sea lion, Steller sea lion, and harbor seal), given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. There is little information about the nature or severity of the impacts, or the size, status,

or structure of any of these species or stocks that would lead to a different analysis for this activity.

Authorized takes are expected to be limited to short-term Level B harassment. Marine mammals present in the vicinity of the action area and taken by Level B harassment would most likely show overt brief disturbance (*e.g.*, startle reaction, flushing) and avoidance of the area from elevated noise levels during pile removal and installation and railway superstructure construction. The project is not expected to have a significant adverse effect on affected marine mammal habitat, as discussed in detail in the "Anticipated Effects on Marine Mammal Habitat" section. There is no critical habitat in the vicinity of the project and the project activities would not permanently modify existing marine mammal habitat. The impacts to marine mammal habitat from the construction actions are expected to be temporary and include increased human activity and noise levels, minimal impacts to water quality, and negligible changes in prey availability near the individual bridge sites. The project may benefit marine mammal habitat by removing several hundred treated timber piles from the Columbia River.

Impacts to pinnipeds are expected to be minor and temporary. The area likely impacted by the construction is relatively small compared to the available habitat in the river. Pinnipeds in the vicinity are likely habituated to high levels of human activity as the Astoria waterfront is a highly developed area. Exposures to elevated sound levels produced during pile driving and removal activities may cause behavioral responses by an animal, but they are expected to be minor and temporary. Animals may become alert, avoid the area, leave the area, or show no observable response. Given the short daily duration of noise-generating activities and the limited season of in-water work, any harassment would be temporary. For California and Steller sea lions, sub-adult and adult males could be harassed during construction activities. For harbor

seals, sub-adult and adult males and/or females could be harassed during construction activities. The project occurs outside of known pupping periods for all species, and there are no known rookeries within the region of activity. Therefore, no pups or breeding adults are expected to be affected by the project activities.

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

- No injury is anticipated or authorized;
- No serious injury or mortality is anticipated or authorized;
- In-water work is limited to a four-month period, and likely only 80 days within that time;
- No permanent effects to marine mammal habitat or prey is expected;
- Marine mammals are currently exposed to high human use area and are likely habituated to disturbance;
- Any impacts from the project are expected to result in short-term, mild behavioral reactions such as avoidance or flushing;
- There are no known important feeding, pupping, or other areas of biological significance in the project area; and
- The project affects only a small percentage of each stock of marine mammal affected, and only in a limited portion of their overall range.

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 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 section 101(a)(5)(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.

Table 10. Authorized Pinniped Take, by Level B harassment.

	Authorized take	Percent of stock
California Sea Lion	33,736	11.4%
Steller Sea Lion	5,360	12.9
Harbor Seal	4,560	18.4

The number of instances of take of each stock proposed to be taken as a result of this project is less than 20 percent of the total stock (Table 10). Additionally, the number of takes requested is based on the number of estimated exposures, not necessarily the number of individuals exposed. Pinnipeds may remain in the general area of the project sites and the same individuals may be harassed multiple times over multiple days, rather than numerous individuals harassed once. Therefore, the percent of stock may be less since the numbers represented in Table 10 assume distinct individuals.

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 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 (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. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with the NMFS West Coast Region Protected Resources Division Office, whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is authorized or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Authorization

As a result of these determinations, NMFS has issued an IHA to the City for the harassment of small numbers of California sea lions, Steller sea lions, and Pacific harbor seals

incidental to construction activities related to bridge replacements in Astoria, Oregon, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: April 26, 2018.

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Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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