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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XG506

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to In-Water Demolition and Construction Activities Associated with a Harbor Improvement Project in Statter Harbor, Alaska

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 Juneau to incidentally harass, by Level A and Level B harassment, marine mammals during construction activities associated with harbor improvements at Statter Harbor in Auke Bay, Alaska

DATES: This authorization is effective from October 1, 2019 to September 30, 2020.

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

SUPPLEMENTARY INFORMATION:

Background

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

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other means of effecting the least practicable adverse impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of 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 NDAA (Pub. L. 108–136) removed the "small numbers" and "specified geographical region" limitations indicated above and amended the definition of "harassment" as it applies to a "military readiness activity." The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On February 12, 2018, NMFS received a request from the City of Juneau for an IHA to take marine mammals incidental to harbor improvement projects in Statter Harbor, Alaska. The original application covered three years of potential work and was revised to one year of work on March 9, 2018. A series of exchanges regarding acoustic analyses continued until a meeting was held on June 21, 2018. An additional revision was received on August 8, 2018. The application was deemed adequate and complete on September 18, 2018. The City of Juneau's request is for take of a small number of harbor seal, harbor porpoise, humpback whale, and Steller sea lion by Level B harassment and Level A harassment. Neither the City of Juneau nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Activity

The harbor improvements described in the application include demolition and disposal of the existing boat launch ramp and timber haulout pier, dredging of the planned harbor basin with offshore disposal, excavation of bedrock within the basin by blasting from a temporary fill pad, and construction of a mechanically stabilized earth wall. In our notice of proposed IHA, we stated work was expected to begin in April. Due to administrative delays and other permitting needs, we were notified by the City of Juneau that work is now expected to occur between October 1, 2019 and September 30, 2020. The expected allocation of days for each activity is as follows: two to ten days of vibratory pile removal, 30-45 days of dredging and dredge disposal, 15 days of in-water fill placement and removal, and two days of blasting. To be conservative, 12-hour work days were used to analyze construction noise. The daily construction window for blasting and dredging will begin no sooner than 30 minutes after sunrise to allow for initial marine mammal monitoring to take place and will end 30 minutes before sunset to allow for post-activity monitoring.

The activities will occur at Statter Harbor in Auke Bay, Alaska which is in the southeast portion of the state. See Figures 1 and 4 in the application for detailed maps of the project area. Statter Harbor is located at the most northeasterly point of Auke Bay.

A detailed description of the planned harbor improvements project is provided in the **Federal Register** notice for the proposed IHA (83 FR 52394; October 17, 2018). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for detailed description of the specified activity.

Comments and Responses

A notice of NMFS's proposal to issue an IHA to the City of Juneau was published in the **Federal Register** on October 17, 2018 (83 FR 52394). That notice described, in detail, the City'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 comments from the Marine Mammal Commission. For full details of the comments, please see the Commission's letter, which is available online at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities#active-authorizations*. The comments and our response are provided below.

Comment: The Commission recommends that NMFS estimate and ultimately authorize takes of marine mammals by Level B harassment during all activities involving explosives, including single detonation events, for this and all future IHAs.

Response: NMFS believes that the best scientific evidence available indicates that it is appropriate to use a behavioral onset threshold for multiple detonations and to consider

detonations with microdelays between them as a single detonation. The two blasts conducted by Statter Harbor are confined blasts with charge detonations separated by microdelays, constituting a single detonation event per day with blasts occurring for a total of two days.

Comment: The Commission recommends that NMFS require the City of Juneau to conduct hydroacoustic monitoring of blasting activity and provide data from the first blast event to NMFS for review prior to the second blasting event. The Commission also states that NMFS should adjust Level A and B harassment zones if necessary prior to the second blasting event.

Response: NMFS disagrees with the Commission that hydroacoustic monitoring of the two blasts conducted at Statter Harbor should be required. The blasts are considered single detonation events with only two total blasts proposed, occurring on two separate days. It is still unknown how close together the two blasting days would occur, and is likely not enough time to analyze data and develop a hydroacoustic monitoring report, submit to NMFS for review, and make adjustments accordingly. Additionally, the City plans to conduct blasting as quickly and efficiently as possible so as not to overlap with the beginning of harbor seal pupping season, as harbor seals are resident in the area.. Therefore, this requirement may result in more severe impacts to local harbor seals through delay of the second blast.

Comment: The Commission states that if NMFS believes that authorization for taking marine mammals incidental to vessel transit by tug is not warranted, that NMFS should find that authorization for take of marine mammals incidental to dredging is also not warranted. Furthermore, the Commission recommends that NMFS determine which activities warrant incidental take authorizations under the MMPA and apply that approach consistently for all actions.

Response: NMFS makes determinations on whether take should be authorized for specific activities on a case by case basis while factoring in project-specific considerations. While NMFS does not generally think noise generated from dredging is likely to result in take, the dredging that is planned for this action occurs directly in an area known to be habitat for a resident harbor seal population and will occur for an extended period. This project constitutes a grouping of activities in a small geographic area, where marine mammals are known to be resident, and the presence of these activities could disrupt their behavioral patterns. While we do not think that dredging by itself is likely to result in take, the combination of factors presented in this specific circumstance, in conjunction with other activities in a confined harbor area that is consistently inhabited by harbor seals, leads us to conclude that dredging presents the potential to harass marine mammals.

Comment: The Commission recommends that NMFS refrain from implementing its proposed renewal process and instead use abbreviated **Federal Register** notices and reference existing documents to streamline the IHA process. If NMFS adopts the proposed renewal process, the Commission recommends that NMFS provide the Commission and the public a legal analysis supporting its conclusion that the process is consistent with section 101(a)(5)(D) of the MMPA.

Response: The notice of the proposed IHA (83 FR 52394; October 17, 2018) 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. Additional reference to this solicitation of public comment has recently been added at the beginning of the FR notices that consider renewals, requesting input specifically on the possible

renewal itself. NMFS appreciates the streamlining achieved by the use of abbreviated FR notices and intends to continue using them for proposed IHAs that include minor changes from previously issued IHAs, but which do not satisfy the renewal requirements. However, we believe our method for issuing renewals meets statutory requirements and maximizes efficiency. However, importantly, such renewals will be limited to circumstances 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 will consider only one renewal for a project at this time. In addition, notice of issuance or denial of a renewal IHA will be published in the **Federal Register**, as they are for all IHAs. The option for issuing renewal IHAs has been in NMFS' incidental take regulations since 1996. We will provide any additional information to the Commission and consider posting a description of the renewal process on our website before any renewal is issued utilizing this process.

Description of Marine Mammals in the Area of Specified Activities

Seven species of marine mammal have been documented in southeast Alaska waters in the vicinity of Statter Harbor. These species are: harbor seal, harbor porpoise, Dall's porpoise, killer whale, humpback whale, minke whale, and Steller sea lion. Of these species, only three are known to occur in Statter Harbor: harbor seal, Steller sea lion, and humpback whale.

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 (SAR; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports)* 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 1 lists all species with expected potential for occurrence in Statter Harbor 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 (2017). 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 managed stocks in this region are assessed in NMFS's U.S. Alaska Region Draft 2018 SAR (Muto *et al*, 2018). All values presented in Table 1 are the most recent available at the time of publication and are available in the Draft 2018 SAR (Muto *et al*, 2018).

Table 1. Species with the Potential to Occur in Statter Harbor.

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)						
Humpback whale	Megaptera noveangliae	Central North Pacific	E, D,Y	10,103 (0.3, 7,891, 2006)	83	26
Minke whale	Balaenoptera acutorostrata	Alaska	-;N	N/A	Und	0
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	Orcinus orca	Northern Resident	-;N	261 (N/A, 261, 2011)	1.96	0
Killer whale	Orcinus orca	Gulf of Alaska transient	-;N	587 (N/A, 587, 2012)	5.87	1
Killer whale	Orcinus orca	West Coast Transient	-;N	243 (N/A, 243, 2009)	2.4	0
Family Phocoenidae (porpoises)						
Harbor porpoise	Phocoena phocoena	Southeast Alaska	-; Y	975 (0.14, 872, 2012)	8.7	34
Dall's porpoise	Phocoenoides dalli	Alaska	-;N	83,400 (0.097, N/A, 1991)	Und	38
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller sea lion	Eumetopias jubatus	Western DPS	E/D; Y	54,267 (N/A; 54,267, 2017)	326	252
Steller sea lion	Eumetopias jubatus	Eastern DPS	T/D; Y	41,638 (N/A, 41,638, 2015)	2498	108
Family Phocidae (earless seals)						
Harbor seal	Phoca vitulina	Lynn Canal	-; N	9,478 (N/A, 8,605, 2011)	155	50

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

2- NMFS marine mammal stock assessment reports online at: www.nmfs.noaa.gov/pr/sars/. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.

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

NOTE - Italicized species are not expected to be present and take is not authorized

All species that could potentially occur in the action areas are included in Table 1. It is unlikely the species italicized above in Table 1 are likely to venture far enough into the harbor to enter the acoustic isopleths where we expect take to occur. The spatial occurrence of minke whale and Dall's porpoise is such that take is not expected to occur, and they are not discussed further beyond the explanation provided here. While these species have been sighted in southeast Alaska more broadly, these sightings have been recorded for areas closer to the ocean. Auke Bay is separated from the Pacific by multiple barrier islands and Statter Harbor is located in the most inland section of the bay, making the occurrence of species infrequently sighted farther seaward even less likely. Killer whales are not known to occur frequently in Auke Bay, although they have been sighted infrequently, with no obvious temporal pattern to the sightings. While it is possible killer whales could enter Auke Bay during work, it is unlikely they would continue as far inland as Statter Harbor. If killer whales did venture into Statter Harbor to a distance where acoustic exposure would be a concern, they would be easily identifiable to observers stationed in the harbor for mitigation and monitoring purposes and a shutdown would be ordered. Therefore, take of killer whales from these activities is unlikely to occur and they are not considered further in this document. The work in Statter Harbor is in a very sheltered and inland harbor with a consistent sightings record of the three species considered further: Steller sea lion, humpback whale, and harbor seal. Harbor porpoise, while infrequently sighted near Statter Harbor, are considered further as their fast swim speeds and small size make detection to implement mitigation measures difficult.

A detailed description of the species likely to be affected by the Statter Harbor 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 (83 FR 52394; October 17, 2018); 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.

Marine Mammal Hearing

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

range for the composite group, with the entire range not necessarily reflecting the capabilities of every species within that group):

- Low-frequency cetaceans (mysticetes): generalized hearing is estimated to occur between approximately 7 hertz (Hz) and 35 kilohertz (kHz);
- Mid-frequency cetaceans (larger toothed whales, beaked whales, and most delphinids): generalized hearing is estimated to occur between approximately 150 Hz and 160 kHz;
- High-frequency cetaceans (porpoises, river dolphins, and members of the genera *Kogia* and Cephalorhynchus; including two members of the genus Lagenorhynchus, on the basis of recent echolocation data and genetic data): generalized hearing is estimated to occur between approximately 275 Hz and 160 kHz.
- Pinnipeds in water; Phocidae (true seals): generalized hearing is estimated to occur between approximately 50 Hz to 86 kHz;
- Pinnipeds in water; Otariidae (eared seals): generalized hearing is estimated to occur between 60 Hz and 39 kHz.

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

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Four marine mammal species (two cetacean and two pinniped (one otariid and one phocid) species) have the reasonable potential to co-occur with the construction activities. Please refer to Table 1. Of the cetacean species that may be

present, humpback whales are classified as low-frequency cetaceans, and harbor porpoise are classified as high-frequency cetaceans.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from blasting, vibratory pile removal, and dredging activities for the Statter Harbor 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 52394; October 17, 2018) included a discussion of the effects of anthropogenic noise on marine mammals, therefore that information is not repeated here; please refer to the **Federal Register** notice for that information.

Anticipated Effects on Habitat

The main impact associated with the Statter Harbor improvement project will be temporarily elevated sound levels and the associated direct effects on marine mammals. The project will not result in permanent impacts to habitats used directly by marine mammals, such as haulout sites, but may have potential short-term impacts to food sources such as forage fish, etc, and minor impacts to the immediate substrate during installation and removal of piles and blasting during the project. These potential effects are discussed in detail in the **Federal Register** notice for the proposed IHA (53 FR 5394; October 17, 2018), therefore that information is not repeated here; please refer to that **Federal Register** notice for that information.

Estimated Take

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

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

Authorized takes will primarily be by Level B harassment, as use of the explosives, vibratory pile removal, and dredging has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result from blasting, primarily for high frequency species and phocids because predicted auditory injury zones are larger than for low-frequency species and otariids. The mitigation and monitoring measures are expected to minimize the severity of such taking to the extent practicable. While the zones for slight lung injury are large enough that a marine mammal could occur within the zone (45 meters), the mitigation and monitoring measures, such as delaying blasting as long as possible until animals are no longer within the PTS zone, are expected to minimize the potential for such taking to the extent practicable, such that the potential for non-auditory physical injury is considered discountable.

As described previously, no mortality is anticipated or authorized for this activity. Of the activities for which take is requested, only blasting has the potential to result in mortality. When the isopleths within which mortality could occur were calculated, the zones were sufficiently small that the risk of mortality is considered discountable. 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 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 permanent threshold shift (PTS) of some degree (equated to Level A harassment). Thresholds have also been developed to identify the pressure levels above which animals may incur different types of tissue damage from exposure to pressure waves from explosive detonation.

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS

uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. This threshold is not applied to single detonations as the sound is instantaneous in nature such that a behavioral harassment is not expected to result, although temporary threshold shift (TTS) may occur. A single detonation is not considered as being able to result in a disruption of behavioral patterns because the instantaneous sound is not likely to result in anything more prolonged than a brief startle response. 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 micro pascal (µPa) root mean square (rms) for continuous (*e.g.*, vibratory pile-driving, drilling) and above 160 dB re 1 µPa (rms) for intermittent (*e.g.*, impact pile driving) sources.

The City of Juneau's activity includes the use of continuous sounds (vibratory pile removal, dredging) and therefore the 120 dB re 1 µPa (rms) threshold for behavioral harassment is applicable. While the activity also includes impulsive sounds (blasting), the 160 dB re 1 µPa (rms) threshold for behavioral harassment is not applicable, as behavioral harassment is not expected from single detonation events, although TTS is possible.

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

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical

Guidance, which may be accessed at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

Table 2. Thresholds identifying the onset of Permanent Threshold Shift.

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	**Impulsive**	**Non-impulsive**
Low-Frequency (LF) Cetaceans	*Cell 1* $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	*Cell 2* $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	*Cell 3* $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	*Cell 4* $L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	*Cell 5* $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	*Cell 6* $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	*Cell 8* $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	*Cell 10* $L_{E,OW,24h}$: 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 (L_{pk}) has a reference value of 1 µPa, and cumulative sound exposure level (L_E) 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.

Explosive sources – Based on the best available science, NMFS uses the acoustic and pressure thresholds indicated in Table 3 to predict the onset of behavioral harassment, PTS, tissue damage, and mortality.

Table 3. Explosive acoustic and pressure thresholds for marine mammals.

Group	Level B harassment		Level A harassment	Serious injury		Mortality
	Behavioral (multiple detonations)	TTS	PTS	Gastro-intestinal tract	Lung	
Low-freq cetacean	163 dB SEL	168 dB SEL or 213 dB SPL_{pk}	183 dB SEL or 219 dB SPL_{pk}	237 dB SPL	$39.1M^{1/3}(1+[D/10.081])^{1/2}$ Pa-sec where: M = mass of the animals in kg D = depth of animal in m	$91.4M^{1/3}(1+[D/10.081])^{1/2}$ Pa-sec where: M = mass of the animals in kg D = depth of animal in m
High-freq cetacean	135 dB SEL	140 dB SEL or 196 dB SPL_{pk}	155 dB SEL or 202 dB SPL_{pk}			
Phocidae	165 dB SEL	170 dB SEL or 212 dB SPL_{pk}	185 dB SEL or 218 dB SPL_{pk}			
Otariidae	183 dB SEL	188 dB SEL or 226 dB_{pk}	203 dB SEL or 232 dB SPL_{pk}			

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.

Vibratory removal - The closest known measurements of vibratory pile removal similar to this project are from the Kake Ferry Terminal project for vibratory extraction of an 18-inch (in) steel pile. The extraction of 18-in steel pipe pile using a vibratory hammer resulted in underwater noise levels reaching 156.2 dB rms at 7 meters (m) (Denes *et al*. 2016). The pile diameters for this project are smaller, thus the use of noise levels associated with the pile extraction at Kake may be somewhat conservative. For timber pile removal, the Seattle Pier 62/63 sound source verification report contains an appendix with source measurements at

different distances for 63 individual pile removals (WSDOT, 2015). When the data are normalized to 10 m, the median source level is 152 dB rms at 10 m.

Dredging - For dredging, sound source data was used from bucket dredging operations in Cook Inlet, Alaska (Dickerson *et al*. 2001). Dredging in that project consisted of six distinct events, including the bucket striking the channel bottom, bucket digging, winch in/out as the bucket is lowered/raised, dumping of the material on the barge and emptying the barge at the disposal site. Although the waveform of the bucket strike has a high peak sound pressure with rapid rise time and rapid decay (characteristics typical of an impulsive sound source), the duration of the source signal was longer than what is often considered for an impulsive sound source, about 50 seconds, which is the approximate duration of one continuous noise signal from the dredging equipment. The events following the initial waveform impulse were of longer duration and were non-impulsive in form and therefore dredging was analyzed as a continuous source. Dickerson *et al* (2001) took 104 SPLrms measurements for the first five distinct phases of the dredging cycle and averaged them, including the impulse in the waveform of the dredge making contact with the substrate. These averages were distance corrected to determine an average SPL of 150.5 dB rms at 1 m for the bucket dredging process, with an assumed maximum duration of up to 50 seconds, of non-impulsive, continuous noise.

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, NMFS 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, the NMFS User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it will not incur PTS. Inputs used in the User Spreadsheet, and the resulting isopleths are reported below.

Table 4. NMFS User Spreadsheet Inputs.

	Timber removal	**Steel removal**	**Dredging**
Spreadsheet Tab Used	A.1: Vibratory Pile Driving	A.1: Vibratory Pile Driving	A: Stationary: Non-impulsive, Continuous
Source Level (RMS SPL)	152	156.2	150.5
Weighting Factor Adjustment (kHz)	2.5	2.5	2
a) Activity Duration (h) within 24-h period			11
Propagation (xLogR)	15	15	15
Distance of source level measurement (m)[+]	10	7	1
# of piles/shots in a 24 h period	16	4	
Duration to drive (remove) a single pile (min)	20	20	

When using the inputs from Table 4, the outputs generated are summarized below in Table 5.

Table 5. NMFS User Spreadsheet Generated Outputs.

USER SPREADSHEET OUTPUT				
	PTS Isopleth (meters)			
Source Type	**Low-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
Timber removal	5.2	7.7	3.2	0.2
Steel Removal	2.8	4.1	1.7	0.1
Dredging	0.7	0.6	0.4	0.0

Level B Behavioral Harassment Isopleth (meters)	
Timber removal	1359.36
Steel removal	1813.14
Dredging	107.98

*Impulsive sounds have a dual metric threshold (SELcum and PK). Metric producing the largest isopleth should be used.

Blasting – In our proposed IHA, historic data from an analog project were analyzed to create a conservative attenuation model for anticipated pressure levels from confined blasting in drilled shafts in underwater bedrock. Sound pressure data from the analog project were analyzed to compare source pressure levels to received impulse levels (Alaska Seismic, 2018). These models were used to predict distances to the peak level and impulse thresholds. Cumulative source levels from the analog project were used in conjunction with the NMFS 2018 updated User Spreadsheet Tool for predicting threshold shift isopleths for multiple detonations, after being corrected to a 1-m reference source level. The median of 10 measurements, consisting of detonations ranging from 19 to 78 individual holes for the detonation, resulted in a source level of 227.98 dB single shot SEL.

However, during the public comment period, the Marine Mammal Commission noted some errors in the User Spreadsheet methodology for single detonations. Following consultation with the Commission, NMFS computed cumulative sound exposure impact zones from the blasting information by the City of Juneau. Peak source levels of the confined blasts were calculated based on Hempet *et al.* (2007), using a distance of eight feet and a weight of 95 pounds for a single charge. The total charge weight is defined as the product of the single charge weight and the number of charges. In this case, the number of charges is 75. Explosive energy was then computed from peak pressure of the single maximum charge, using the pressure and time relationship of a shock wave (Urick 1983). Due to time and spatial separation of each single

charge by a distance of eight feet, the accumulation of acoustic energy is added sequentially, assuming the transmission loss follows cylindrical spreading within the matrix of charges. The sound exposure level (SEL) from each charge at its source can then be calculated, followed by the received SEL from each charge. Since the charges will be deployed in a grid of 8 ft by 8 ft apart, thus the received SELs from different charges to a given point will vary depending on the distance of the charges from the receiver. Without specific information regarding the layout of the charges, the modeling assumes a grid of 8 by 9 charges with an additional three charges located in three peripheral locations. Among the various total SELs calculated, the largest value, SELtotal(max) is selected to calculate the impact range. Using the pressure versus time relationship above, the frequency spectrum of the explosion can be computed by taking the Fourier transform of the pressure (Weston, 1960). Frequency specific transmission loss of acoustic energy due to absorption is computed using the absorption coefficient, α (dB/km), summarized by François and Garrison (1982a, b). Seawater properties for computing sound speed and absorption coefficient were based on NMFS Alaska Fisheries Science Center report of mean measurements in Auke Bay (Sturdevant and Landingham, 1993). Transmission loss was calculated using the sonar equation:

$$TL = SEL_{total(m)} - SEL_{threshold}$$

where $SEL_{threshold}$ is the Level A harassment threshold. The distances, R, where such transmission loss is achieved were computed numerically by combining both geometric transmission loss, and transmission loss due to frequency-specific absorption. A spreading coefficient of 20 is assumed to account for acoustic energy loss from the sediment into the water column. The outputs from this model are summarized in Table 6 below, and replace those values given for blasting previously in Table 5 of our Federal Register Notice of Proposed IHA.

Table 6. Model Results of Impact Zones for Blasting in Meters (m).

Species	Mortality	Slight lung injury	GI Tract	PTS: SELcum	PTS: SPLpk	TTS: SELcum	TTS: SPLpk
Low frequency ceteacean	3.9975	9.3445	26.0142	**380**	206.64	**2120**	412.3
High frequency cetacean	20.5573	48.0546	26.0142	1340	**1462.9**	**4910**	2918.8
Otariid	13.9502	32.6100	26.0142	20	**46.261***	**140***	92.302
Phocid	18.3762	42.9561	26.0142	180	**231.85**	**1000**	462.61

*For the dual criteria of SELcum and SPLpk, distances in **bold** are more predominant and were used in our analysis. The PTS and TTS distances for Steller sea lions resulting from the model seemed uncharacteristically small when compared to the other thresholds resulting from the model and were doubled to 93 m and 280 m respectively for take estimation, mitigation, and monitoring.

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. Reliable densities are not available for Statter Harbor or the Auke Bay area. Generalized densities for the North Pacific are not applicable given the high variability in occurrence and density at specific inlets and harbors. Therefore, the applicant consulted opportunistic sightings data from oceanographic surveys in Auke Bay and sightings from Auke Bay Marine Station observation pier for Statter Harbor to arrive at a number of animals expected to occur within the harbor per day. For humpback whales, it is assumed that a maximum of two animals per day are likely to occur in the harbor. For Steller sea lions, the potential maximum daily occurrence of animals is 121 individuals within the harbor. For harbor seals, the maximum daily occurrence of animals is 52 individuals.

Take Calculation and Estimation

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

Because reliable densities are not available, the applicant requests take based on the above mentioned maximum number of animals that may occur in the harbor per day multiplied

by the number of days of the activity. The applicant varied these calculations based on certain factors.

Humpback whale - Based on the size of the harassment zone for dredging, in combination with the Mitigation outlined below, the applicant does not expect humpback whales to approach the dredging vessel and therefore is not requesting take of humpback whales from dredging. Because of the nature of blasting, there is no behavioral threshold associated with the activity, but TTS, which is a form of Level B harassment take, may occur. With a maximum take of two animals per day, multiplied by a maximum of 10 days of pile removal and two days of blasting (TTS), the applicant requests authorization of 24 Level B harassment takes of humpback whale.

Steller sea lion – For the final IHA it is still estimated that a maximum of 121 Steller sea lions may occur in outer Statter Harbor within one day. A maximum take of 121 animals per day for 10 days of pile removal is 1,210 Steller sea lions. Given the size of the Level B harassment zone for dredging (108 m), it is possible Steller sea lions may approach the source vessel. However, given the small size of the zone, the applicant reduced the number of animals expected to be sighted daily within the Level B harassment isopleth to be 10 animals per day for 45 days of dredging. This is reduced from the 60 sea lions per day that were estimated to occur within the dredging isopleth in the proposed IHA. However, because animals would not be expected to occur so close to the source every day, we assume that takes would occur on only half of dredging days, resulting in 225 estimated exposures of Steller sea lions from dredging. This second reduction in dredging takes was incorporated based on input from the Marine Mammal Commission during the public comment period suggesting that Steller sea lions are infrequently seen in the inner harbor. For blasting, the size of the TTS zone (280 m) increased from the

distance estimated in the proposed IHA (57 m). Given the size of the revised zones for blasting and the location of the blasting close to shore and harbor structures, it is expected that a maximum of 106 Steller sea lions could occur within the inner harbor where the blasts will occur. Therefore, it is assumed that 106 sea lions may occur within the zone for two days of blasting, resulting in a potential Level B harassment take (TTS only) of 212 Steller sea lions. No more than 15 Steller sea lions are assumed to be within range of the PTS blasting isopleth (46.3 m, which has been conservatively doubled to 93 m), resulting in a total of 30 potential Level A harassment takes of Steller sea lion from blasting. While it is conservative to assume this many Steller sea lions may occur close to the blast source, they are regularly seen in the area and the explosives need to be detonated within a certain number of hours after being planted. It is possible that Steller sea lions could approach the source and the detonation could no longer be delayed, exposing Steller sea lions to sound levels that may induce PTS. This adds to a total of 1,447 Level B takes and 30 Level A takes of Steller sea lion.

Harbor seal – The largest known group size to occur in Statter Harbor is 52 individuals, which is the maximum number of takes per day used here. For 10 days of pile removal, using an assumed rate of 52 individuals per day, the potential take of harbor seals is 520. For 45 days of dredging, the estimated daily take was reduced by half due to the small size of the zone (26 individuals), resulting in an estimate of 1,170 takes. For blasting, the size of the Level A harassment isopleth increased from 71 m to 232 m. Therefore, we assume an increased abundance of harbor seals potentially present within the Level A harassment zone, *i.e.*, all 52 assumed resident seals may occur within the Level A harassment zone during blasts on each of the two days of blasting for a total of 104 takes by Level A harassment. However, as these are the only harbor seals that could occur in the harbor, no additional seals are added as Level B

harassment (TTS) exposures from blasting. Summed together, this would result in 1,690 Level B takes and 104 Level A takes of harbor seal.

Harbor porpoise – Very little is known about likelihood of occurrence of harbor porpoise in Statter Harbor but they are rarely observed in the area and we assume that may occur, while their cryptic nature makes it difficult to mitigate all potential for take. If it is assumed one pair could occur per day for 10 days of pile removal, this would result in potential take of 20 harbor porpoise. For 45 days of dredging, the estimated daily take was reduced by half due to the small size of the zone, which would result in take of 44 estimated takes of harbor porpoise. For two days of blasting, it is assumed three pairs of harbor porpoise (6 individuals) may occur each day in the TTS zone, for 12 total TTS takes, and two pairs on each day may appear in the PTS zone, resulting in eight Level A harassment takes of harbor porpoise. This is an increase from the estimated take number provided in the proposed IHA, reflecting the increase in zone size for blasting.

The total number of takes authorized are summarized in Table 7 below.

Table 7. Takes Authorized.

	Takes from Pile Removal	Takes from Dredging	TTS Takes from Blasting	PTS Takes from Blasting	Total Level B harassment Takes	Total Level A harassment Takes
Humpback whale	20	0	4	0	**24**	**0**
Steller sea lion	1,210	225	12	30	**1,447**	**30**
Harbor seal	520	1,170	0	104	**1,690**	**104**
Harbor porpoise	20	44	12	8	**76**	**8**

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.

In addition to the measures described later in this section, the City of Juneau will employ the following standard mitigation measures:

- Conduct a briefing between construction supervisors and crews and the marine mammal monitoring team prior to the start of construction, and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures;
- For in-water and over-water heavy machinery work, if a marine mammal comes within 10 m, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions. This 10 m shutdown encompasses the Level A harassment zone for pile removal and dredging and therefore this requirement is not listed separately;
- Work may only occur during daylight hours, when visual monitoring of marine mammals can be conducted;
- For those marine mammals for which Level B harassment take has not been requested, pile removal and dredging will shut down immediately when the animals are sighted approaching the monitoring zones; and
- If take reaches the authorized limit for an authorized species, activity for which take is authorized will be stopped as these species approach the monitoring zones to avoid additional take of them.

The following measures will apply to the City of Juneau's mitigation requirements:

Establishment of Monitoring Zones for Level B— The City of Juneau will establish Level B monitoring zones or zones of influence (ZOI) which are areas where SPLs are equal to or exceed the 120 dB rms threshold during vibratory removal and dredging. Similar harassment

monitoring zones will be established for the TTS isopleths associated with each functional hearing group for blasting activities. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project area outside the shutdown zone and thus prepare for a potential cease of activity should the animal enter the shutdown zone. The Level B monitoring zones are depicted in Table 8.

Table 8. Shutdown and Monitoring Zones.

	Monitoring Zones				Shutdown Zones
Source	High Frequency Cetacean	Low Frequency Ceteacean	Phocid	Otariid	All species
Vibratory Removal – Steel	1,820 m	1,820 m	1,820 m	1,820 m	10 m
Vibratory Removal – Timber	1,360 m	1,360 m	1,360 m	1,360 m	10 m
Dredging	110 m	110 m	110 m	110 m	10 m
Blasting (PTS)	1,465 m	380 m	235 m	95 m	N/A
Blasting (TTS)	4,910 m	2,120 m	1,000 m	280 m	N/A

As shown, the largest Level B harassment zone is greater than 4,000 m, making it unlikely that PSOs will be able to view the entire harassment area. Due to this, Level B harassment exposures will be recorded and extrapolated based upon the number of observed take and the percentage of the Level B harassment zone that was not visible.

Pre-Activity Monitoring - Prior to the start of daily in-water activity, or whenever a break in activity of 30 minutes or longer occurs, the observer will observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone will be cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zone, activity cannot proceed until the animal has left the zone or has not been observed for 15 minutes. If the Level B harassment zone has been observed for 30 minutes and non-permitted species are not present within the zone, activity can commence in good visibility conditions. Work can continue even if visibility becomes impaired within the monitoring zone. When a marine mammal permitted for Level B harassment take is present in the monitoring zone, activities may begin and Level B harassment take will be recorded. As stated above, if the entire monitoring zone is not visible at the start of construction, activity can begin. If work ceases for more than 30 minutes, the pre-activity monitoring of both the monitoring zone and shutdown zone will commence.

Charges for blasting will not be laid if marine mammals are within the shutdown zone or appear likely to enter the shutdown zone However, once charges are placed, they cannot be safely left undetonated for more than 24 hours. For blasting, the TTS zone will be monitored for a minimum of 30 minutes prior to detonating the blasts. If a marine mammal is sighted within the TTS zone, blasting will be delayed until the zone is clear of marine mammals for 30 minutes. This will continue as long as practicable within the constraints of the blasting design but not beyond sunset on the same day as the charges cannot lay dormant for more than 24 hours, which may force the detonation of the blast in the presence of marine mammals. Charges will be laid as early as possible in the morning and stemming procedures will be used to fill the blasting holes to potentially reduce the noise from the blasts. Blasting will only be planned to occur in good

visibility conditions, and at least 30 minutes after sunrise and at least one hour prior to sunset. The TTS zone will also be monitored for one hour post-blasting.

Based on our evaluation of the applicant's 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 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.

Visual Monitoring

Monitoring will be conducted 30 minutes before, during, and 30 minutes after construction activities. In addition, observers must record all incidents of marine mammal occurrence, regardless of distance from activity, and must document any behavioral reactions in concert with distance from construction activities.

Protected Species Observers (PSO) will be land-based observers. For dredging, pile removal, and blasting, one, two, and four PSOs will be required, respectively. Observers will be stationed at locations that provide adequate visual coverage for shutdown and monitoring zones. Potential observation locations are depicted in Figures 2 and 3 of the applicant's Marine Mammal Mitigation and Monitoring Plan. A minimum of one observer will be placed at a vantage point providing total coverage of the monitoring zones and for observation zones larger than 500 m, at least one other additional observer will be placed at the outermost float or other similar vantage point in order to observe the extend observation zone. During blasting, pre-blast

monitoring, and post-blast monitoring, four observers will be on duty. Optimal observation locations will be selected based on visibility and the type of work occurring. All PSOs will be trained in marine mammal identification and behaviors and are required to have no other project-related tasks while conducting monitoring. In addition, monitoring will be conducted by qualified observers, who will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. Monitoring of construction activities must be conducted by qualified PSOs (see below), who must have no other assigned tasks during monitoring periods. The applicant must adhere to the following conditions when selecting observers:

- Independent PSOs must 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 must be designated. The lead observer must have prior experience working as a marine mammal observer during construction; and
- The applicant must submit PSO curriculum vitaes for approval by NMFS.

The applicant must ensure that observers have the following additional qualifications:

- 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; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.:

At least 24 hours prior to blasting, the City will notify the Office of Protected Resources, NMFS Alaska Regional Office, and the Alaska Regional Stranding Coordinator that blasting is planned to occur, as well as notify these parties within 24 hours after blasting that blasting actually occurred.

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

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (*e.g.,* percent cover, visibility);
- Water conditions (*e.g.*, sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from construction activity;

- Distance from construction activities to marine mammals and distance from the marine mammals to the observation point;
- Locations of all marine mammal observations; and
- Other human activity in the area.

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

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

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

Activities will not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with The City of Juneau to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The City of

Juneau will not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that The City of Juneau discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition as described in the next paragraph), the City of Juneau will immediately report the incident to the Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinator. The report will include the same information identified in the paragraph above. Activities will be able to continue while NMFS reviews the circumstances of the incident. NMFS will work with the City of Juneau to determine whether modifications in the activities are appropriate.

In the event that the City of Juneau 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 of Juneau will report the incident to the Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator, within 24 hours of the discovery. The City of Juneau will provide photographs, video footage (if available), or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Coordinator.

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).

As stated in the mitigation section, shutdown zones equal to or exceeding Level A isopleths shown in Table 8 for all activities other than blasting will be implemented. Serious injury or mortality is not anticipated nor authorized. Behavioral responses of marine mammals to pile removal and dredging, if any, are expected to be mild and temporary due to the short term duration of the noise produced by the source as well as the relatively low source levels when compared with ambient levels in an area with high levels of anthropogenic activity. Given the short duration of noise-generating activities per day and that pile removal and dredging would occur for 55 days, any harassment would be temporary. The blasting will only occur across two days, with one blast scheduled on each day. In addition, the project includes generally low level sound sources, such as dredging and removal of piles much smaller than those frequently used in other construction projects. In addition, for all species except humpbacks, there are no known

biologically important areas near the project zone that would be impacted by the construction activities. The region of Statter Harbor where the project will take place is located in a developed harbor area with regular marine vessel traffic. Although there is a resident harbor seal population, the area of construction is not known to be of important biological significance such as used for breeding or foraging. 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 mortality is anticipated or authorized;
- There are no known biologically important areas within the project area;
- The City of Juneau will implement mitigation measures such as shut down zones for all in-water and over-water activities;
- Monitoring reports from similar work in Alaska have documented little to no effect on individuals of the same species impacted by the specified activities;

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

Small Numbers

As noted 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.

Table 9 below shows take as a percent of population for each of the species listed above.

Table 9. Summary of authorized instances of Level A and Level B harassment.

Species	DPS/Stock	Number of Level B Takes by Stock	Number of Level A Takes by Stock	Stock Abundance	Percent of Population[1]
Steller sea lion	Eastern DPS Western DPS	1,418 29	29 1	41,638 53,303	3.48 0.06
Harbor seal	Lynn Canal	1,690	104	9,478	18.93
Harbor porpoise	Southeast Alaska	76	8	975	8.62
Humpback whale	Central North Pacific Stock	24	0	10,103	0.24

Table 9 presents the number of animals that could be exposed to received noise levels that may result in Level A or Level B take for the construction at Statter Harbor. Our analysis shows that less than one third of the best available population estimate of each affected stock could be taken. Therefore, the numbers of animals authorized to be taken for all species would be considered small relative to the relevant stocks or populations even if each estimated taking occurred to a new individual—an extremely unlikely scenario. For pinnipeds, especially harbor seals and Steller sea lions, occurring in the vicinity of the project site, there will almost certainly be some overlap in individuals present day-to-day, and these takes are likely to occur only within some small portion of the overall regional stock.

Based on the analysis contained herein of the activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small

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

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. The project is not known to occur in an important subsistence hunting area. It is a developed area with regular marine vessel traffic and the project is one year of a multi-year harbor improvement effort that is already underway. The work at this harbor has been publicized and public input has been solicited on the overall improvement.

Based on the description of the specified activity, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the mitigation and monitoring measures, NMFS has determined that there will not be an unmitigable adverse impact on subsistence uses from the City of Juneau's activities.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NAO 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that will preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA 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. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with the NMFS Alaska Regional Office, whenever we propose to authorize take for endangered or threatened species.

There are two marine mammal species (western DPS Steller sea lion; Mexico DPS humpback whale) with confirmed occurrence in the project area that are listed as endangered under the ESA. The NMFS Alaska Regional Office issued a Biological Opinion on February 22, 2019 under section 7 of the ESA, on the issuance of an IHA to the City of Juneau under section 101(a)(5)(D) of the MMPA by the NMFS Office of Protected Resources. The Biological Opinion concluded that the action is not likely to jeopardize the continued existence of western DPS Steller sea lions or the Mexico DPS of humpback whales, and is not likely to destroy or adversely modify western DPS Steller sea lion critical habitat.

Authorization

NMFS has issued an IHA to the City of Juneau for the potential harassment of small

numbers of four marine mammal species incidental to the Statter Harbor improvements project in Auke Bay, Alaska, provided the previously mentioned mitigation, monitoring and reporting.

Dated: March 20, 2019.

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Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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