BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RTID 0648-XR066

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Alaska Marine Lines Lutak Dock Project, Haines, Alaska

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

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from Alaska Marine Lines, Inc. (AML) for authorization to take marine mammals incidental to Lutak Dock project in Haines, Alaska. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in *Request for Public Comments* at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service.

Physical comments should be sent to 1315 East-West Highway, Silver Spring, MD 20910 and electronic comments should be sent to *ITPMeadows@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments received electronically, including all attachments, must not exceed a 25-megabyte file size. Attachments to electronic comments will be accepted in Microsoft Word or Excel or Adobe PDF file formats only. All comments received are a part of the public record and will generally be posted online at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection*-act without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

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

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than

commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other "means of effecting the least practicable adverse impact" on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as "mitigation"); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

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

This action is consistent with categories of activities identified in Categorical Exclusion B4 (incidental harassment authorizations with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment

and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On 9 July 2019, NMFS received a request from AML for an IHA to take marine mammals incidental to Lutak Dock project in Haines, Alaska. The application was deemed adequate and complete on October 23, 2019. AML's request is for take of seven species of marine mammals by Level B harassment and/or Level A harassment. Neither AML nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

The project consists of the demolition, re-construction, and improvement of a commercial barge cargo dock in Lutak Inlet near Haines, Alaska adjacent to the Haines Ferry Terminal. The project includes the following in-water components: removal (by vibratory pulling or cutting off at the mudline) of 12 steel pipe piles (16" diameter) of two berthing dolphins associated with the existing steel cargo bridge; fill 4,000 yards of gravel and 1,000 yards of riprap to construct a causeway below the new dock; installing below mean high water (MHW) a 46-foot long by 15-foot wide steel float; installing below MHW (using vibratory or impact pile driving or down-the-hole (DTH) drilling) four 24-inch diameter steel pipe piles to construct two float strut dolphins, six 36-inch diameter steel pipe piles to construct two breasting dolphins; and construction of a

40-foot wide by 40-foot long, pile supported (three 30-inch diameter steel pipe piles), concrete abutment within the proposed causeway to support a 120-foot long by 24-foot wide steel bridge over navigable waters.

The pile driving or DTH drilling can result in take of marine mammals from sound in the water which results in behavioral harassment or auditory injury. The footprint of the project is approximately one square mile around the project site. The project will take no more than 8 days of pile-driving/pulling or DTH drilling.

Dates and Duration

The work for which take will be authorized will occur between June 15, 2020 and June 14, 2021. The duration of the pile driving would be from approximately mid- to late June through October 2020. Noise generating activities will not overlap with high densities of marine mammal prey that occur March 1 through May 31. The daily construction window for pile removal and driving would begin no sooner than 30 minutes after sunrise and would end 30 minutes prior to sunset to allow for marine mammal monitoring.

Specific Geographic Region

The project site is located at Lutak Dock near the mouth of Lutak Inlet, approximately 4 miles north of Haines in northern southeastern Alaska. The Chilkat, Chilkoot, Lutak, and Taiya inlets compose the northern part of Lynn Canal (see Figure 1-1 in application). The project area is situated on the shore of Lutak Inlet between the Chilkoot and Chilkat rivers. Lutak Inlet is a glacial scoured fjord with an estuary that is five miles long and one mile wide from Tanani Point and Taiya Point to its confluence with the Chilkoot River. The Inlet has depths generally less than 275 feet, with depths at the mouth of about 400 feet (Haines, 2007).

Several seasonally available prey species are abundant and densely aggregated within the project area. In Southeast Alaska, spawning of eulachon (*Thaleichtys pacificus*) (Marston *et al.*, 2002; Sigler *et al.*, 2004) and herring (*Clupea pallasii*) (Womble *et al.*, 2005) play an important role in the seasonal foraging ecology of sea lions in the area (Marston *et al*., 2002; Sigler *et al.*, 2004; Womble *et al*., 2005; Womble and Sigler, 2006). Eulachon are anadromous smelt that spawn primarily from March to May (Marston *et al*., 2002; Womble, 2003).

The underwater acoustic environment in the project area is dominated by ambient noise from day-to-day ferry terminal, port, and vessel activities. Haines Borough operates two harbor facilities (Portage Cove and Letnikof Cove), a float moored at Swanson Harbor in Couverden, two docks (Lutak and Port Chilkoot), and three boat launch ramps (at Lutak Dock, Portage Cove and Letnikof Cove) (Haines Borough Comprehensive Plan (2012)). Lutak Dock is the second busiest port for the Alaska Marine Highway System. Delta Western (tug and barge business) also operates out of this area.

Detailed Description of Specific Activity

An existing steel cargo bridge with steel floats and associated berthing dolphins currently used for cargo barge operations would be removed. The structure is currently supported by twelve 16-inch diameter steel piles. These 12 piles would be removed utilizing a crane-mounted vibratory hammer located on a barge or on land. If piles cannot be removed using vibratory methods, they would be cut at the mudline using an underwater shielded metal-arc cutter or left in place. Removal of the existing piles is expected to take one day.

To facilitate the project, a causeway will be constructed below the new dock using approximately 4,000 yards of gravel and 1,000 yards of riprap fill, and a 46-foot long by 15-foot wide steel float will be installed below MHW. Neither of these project components are expected

to impact marine mammals, their habitat, or their subsistence use, so these components will not be considered further.

To support the new 120 foot by 24 foot long steel bridge and associated dolphins, four 24-inch diameter and six 36-inch diameter steel pipes would be driven into the marine sand and gravel at the project location. Three additional 30-inch diameter steel pipes would be installed to support a concrete abutment (see Figure 1-2 of application). The pipe piles would be installed to a depth of 40 feet or more below the surface using a crane-mounted vibratory and/or impact hammer located on a barge. It may take up to about 60 minutes per pile of vibratory driving to set each pile. If impact hammering is used, about 700 strikes would be needed to drive each of the piles to a sufficient depth which may require about 15 minutes of hammering. It is estimated that about 3 hours (maximum) would be required to drive each pile and they would be proofed the same day.

Bedrock may be encountered before the full required pile depth is achieved. Where bedrock is present, piles would be installed using both vibratory and DTH drilling. Initially a vibratory hammer would be used to drive the sediment until bedrock is reached (~60 minutes). A DTH hammer (e.g., Numa) would be used to drill and socket the pile into bedrock. This could take up to an additional 180 minutes.

In summary, vibratory and impact driving would take up to three hours for each pile. Multiple piles would not be concurrently driven. Under the best-case scenario, using solely vibratory and impact driving, five piles would be set in a day. If DTH drilling is needed, it would be used the same day following vibratory driving, with the worst case scenario being only two piles could be set and drilled in one day. Therefore, the duration of drilling activity for the 13

piles could be as short as three days or as long as seven days. Thus in the worst case, the entire project would take a total of eight days of pile driving/drilling.

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

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find-species*).

Table 1 lists all species with expected potential for occurrence in Haines, Alaska and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2016). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a

particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Alaska SARs (*e.g.*, Muto *et al*. 2019). All values presented in Table 1 are the most recent available at the time of publication and are available in the 2019 SARs (Muto *et al*., 2019).

Table 1. Marine Mammals Potentially Present in the Vicinity of the Study Areas.

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 Physeteridae						
Sperm whale	*Physeter macrocephalus*	North Pacific	-; N	N/A (see SAR, N/A, 2015), see text	See SAR	4.4
Family Balaenopteridae (rorquals)						
Humpback Whale	*Megaptera novaeangliae*	Central North Pacific	-;N (Hawaii DPS)	10,103 (0.3, 7,890, 2006)	83	25
		Central North Pacific	T,D,Y (Mexico DPS)	3264	N/A	N/A
Minke whale[4]	*Balaenoptera acutorostrata*	Alaska	-; N	N/A, see text	N/A	0
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale[5]	*Orcinus orca*	Alaska Resident Northern Resident West Coast transient	-; Y	2347 261 243	24 1.96 2.4	1 0 0
Family Phocoenidae (porpoises)						
Dall's porpoise[4]	*Phocoenoides dalli*	Alaska	-;N	83,400 (0.097, N/A, 1991)	N/A	38
Harbor porpoise	*Phocoena phocoena*	Southeast Alaska	-; Y	975 (2012)	8.9	34
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
California sea lion	*Zalophus californianus*	U.S.	-; N	257,606 (N/A,233,515, 2014)	14,011	>320
Steller sea lion	*Eumetopias jubatus*	Eastern U.S.	-; N	41,638 (n/a;	2,498	108

				41,638; 2015)		
Steller sea lion	*Eumetopias jubatus*	Western U.S.	E,D,Y	54,268 (see SAR, 54,267, 2017)	326	247
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina richardii*	Lynn Canal/Stephens Passage	-; N	9,478 (see SAR, 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: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable
3 - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.
4 - The most recent abundance estimate is >8 years old, there is no official current estimate of abundance available for this stock.
5 - NMFS has preliminary genetic information on killer whales in Alaska which indicates that the current stock structure of killer whales in Alaska needs to be reassessed. NMFS is evaluating the new genetic information. A complete revision of the killer whale stock assessments will be postponed until the stock structure evaluation is completed and any new stocks are identified" (Muto, Helker et al. 2018). For the purposes of this IHA application, the existing stocks are used to estimate potential takes.

All species that could potentially occur in the proposed survey areas are included in Table 1. As described below, all seven species (with ten managed stocks) temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it.

In addition, the northern sea otter may be found in the project vicinity. However, that species is managed by the U.S. Fish and Wildlife Service and is not considered further in this document.

Sperm Whale

Sperm whales (*Physeter macrocephalus*) are considered extralimital in the project area. However, on March 20, 2019, a dead sperm whale was found washed up in Lynn Canal. Based on NOAA's Whale alert system (NOAA 2019), the Alaska State Ferry reported seeing four sperm whales in December 2018 off False Point Retreat, and two near Point Howard in lower Lynn Canal early in March 2019. Despite these recent sightings, sperm whales are very rare in the area. Due to the low probability of these species occurring in the project area, exposure of

these cetaceans to project impacts is considered unlikely and take is not requested for these species and they are not considered further.

Humpback Whale

Humpback whales (*Megaptera novaeangliae*) in the North Pacific migrate from low-latitude breeding and calving grounds to form geographically distinct aggregations on higher-latitude feeding grounds. They occur in Chilkoot Inlet and have been observed infrequently near the mouth of Lutak Inlet during the spring eulachon and herring runs; they generally vacate the area by July to feed on aggregations of herring in lower Lynn Canal. In recent years, however, a few whales have been observed at the entrance to Taiya Inlet throughout the fall months (NMFS 2019) and at the mouth of Lutak Inlet (K. Hastings, (Alaska Department of Fish and Game (ADF&G), personal communication). Hastings observed from one to three humpback whales at Gran Point in May of 2015 and 2018. Individuals have been observed in the same area intermittently throughout the summer months, but most whales move further south and are absent from the Action Area during summer.

In 2016 NMFS revised the ESA listing of humpback whales (81 FR 62259; September 8, 2016). NMFS is in the process of reviewing humpback whale stock structure and abundance under the MMPA in light of the ESA revisions. The MMPA stock in Alaska is considered to be the Central North Pacific stock. Humpbacks from two of the 14 newly identified Distinct Population Segments (DPSs) occur in the project area: the Mexico DPS, which is a threatened species; and the Hawaii DPS, which is not protected under the ESA. NMFS considers humpback whales in Southeast Alaska to be 94 percent comprised of the Hawaii DPS and 6 percent of the Mexico DPS (Wade *et al*., 2016). While the range of the Mexico DPS extends up to Southeast Alaska, this DPS has never been reported as far north as Sitka. The likelihood that an individual

from the Mexico DPS is part of the relatively few humpback whales that move to extreme northern Lynn Canal in July is extremely low; nevertheless, we use the 6 percent estimate to be conservative in this analysis.

On October 9, 2019, NMFS published a proposed rule to designate critical habitat for the humpback whale (84 FR 54354). Areas proposed as critical habitat include specific marine areas off the coasts of California, Oregon, Washington and Alaska, including near the project area. AML expects to complete this project before the critical habitat designation is effective, therefore we do not consider it further in this analysis.

Estimates of humpback whale abundance for the Mexico DPS are from the ESA listing process. Local abundances were calculated from data provided by K. Hastings (ADF&G), who reported humpback whales at Gran Point in 2015 and 2018.

Minke Whale

There are three stocks of minke whales (*Balaenopera acutorostrata*) recognized in U.S. waters of the Pacific Ocean; only members of the Alaska stock could potentially occur within the project area. This stock has seasonal movements associated with feeding areas that are generally located at the edge of the pack ice (Muto et al., 2019). Minke whales are considered to be rare in northern parts of Lynn Canal (Dahlheim *et al*., 2009). However, minke whales forage on schooling fish and may rarely enter the project area in Upper Lynn Canal. In 2015, one minke whale was sighted in Taiya Inlet, northeast of the Project Area (K. Gross, personal communication, as cited in 84 FR 4777).

No comprehensive estimates of abundance have been made for the Alaska stock or near the project area, but a 2010 survey conducted on the eastern Bering Sea shelf produced a provisional abundance estimate of 2,020 whales (Friday *et al.*, 2013).

Killer Whale

NMFS recognizes eight killer whale (*Orcinus orca*) stocks throughout the Pacific Ocean. However, only three of these stocks can be found in Southeast Alaska: 1) the Alaska Resident stock ranges from southeastern Alaska to the Aleutian Islands and Bering Sea; 2) the Northern Resident stock occurs from Washington State through part of southeastern Alaska; and 3) the West Coast Transient stock ranges from California through southeastern Alaska (Muto *et al*., 2019). Resident and transient killer whales are sporadically and seasonally attracted to Lutak Inlet during the spring to feed on the large aggregations of fishes and pinnipeds.

Killer whale abundance estimates are determined by a direct count of individually identifiable animals. While killer whales occurring in Lynn Canal can belong to one of three stocks, photoidentification studies since 1970 have catalogued most individuals observed in this area as belonging to the Northern Resident stock. The occurrence of transient killer whales in Upper Lynn Canal increases in summer, with lower numbers observed in spring and fall.

Dall's Porpoise

Dall's porpoise (*Phocoenoides dalli*) are widely distributed throughout the region and have been observed in Lynn Canal (Dahlheim *et al*., 2009). They were observed more frequently in the spring, tapering off in summer and fall. The Alaska stock is the only Dall's porpoise stock found in Alaska waters.

Harbor Porpoise

Harbor porpoise (*Phocoena phocoena*) are common in coastal waters of Alaska. There are three harbor porpoise stocks in Alaska, but only the Southeast Alaska stock occurs in the project area (Muto *et al*., 2019). Individuals from the Southeast Alaska stock of harbor porpoise

are infrequently observed in Upper Lynn Canal, though they have been observed as far north as Haines during the summer months (Dahlheim *et al*., 2015).

California Sea Lion

Several California sea lions (*Zalophus californianus*) were observed at Gran Point in May 2005 (K. Hastings, ADF&G); however they have not been observed since that date and will not be considered further in this analysis.

Steller Sea Lion

Steller sea lions (*Eumetopias jubatus*) range along the North Pacific Rim from northern Japan to California, with centers of abundance and distribution in the Gulf of Alaska and Aleutian Islands. Large numbers of individuals widely disperse when not breeding (late May to early July) to access seasonally important prey resources (Muto *et al*., 2019). In 1997 NMFS identified two DPSs of Steller sea lions under the ESA: a Western DPS and an Eastern DPS (62 FR 24345, May 5, 1997). The Eastern DPS is not ESA-listed, the Western DPS is. For MMPA purposes the Eastern DPS is called the Eastern U.S. stock and the Western DPS is called the Western U.S. stock. For simplicity we will refer to them by their DPS name in this analysis. Most of the Steller sea lions in southeastern Alaska have been determined to be part of the Eastern DPS, however, in recent years there has been an increasing trend of the Western DPS animals occurring and breeding in southeastern Alaska (Muto *et al*., 2019).

Steller sea lions have been observed in the project vicinity throughout the year in Chilkoot Inlet; they seasonally occupy Lutak Inlet. They follow spring foraging runs of eulachon into Lutak Inlet up to the mouth of the Chilkoot River, then move farther south to forage on herring in late-summer and fall. Salmon increase in importance as prey for sea lions from late-October and December in the Chilkat River. The closest haulout to the project area is Gran Point,

about 14 miles southeast. During the spring eulachon run, a temporary seasonal haulout site is also located on Taiya Point at the southern tip of Taiya Inlet (approximately 3.1 miles from the project site).

Branded individuals from the Western DPS have been observed at the Gran Point haulout. Three individual Western DPS sea lions were observed repeatedly at Gran Point from 2003 through 2012 (NMFS, 2013). The most recent assessment of branded or marked Western DPS sea lions at the Gran Point haul out was provided by Hastings (ADF&G, personal communication) and Jemison *et al*. (2018). The percentage of Western DPS animals in the recent time period was 1.7 percent; for the rest of this analysis we conservatively assume that 2 percent of the Steller sea lions in the project area are from the Western DPS.

Data from almost two decades of surveys and research on distribution, abundance and seasonal foraging behavior of Steller sea lions from the Gran Point haul out are used in to estimate take. These data, with sightings through 2018, have been provided through personal communication to the applicants with key marine mammal researchers in the region (K. Hastings ADF&G; Tom Gelatt, NMFS Alaska Fisheries Science Center). The average monthly densities for Steller sea lions at Gran Point were estimated using this database as a proxy for the monthly abundance of sea lions within the project area.

Harbor Seal

Harbor seals (*Phoca vitulina*) inhabit coastal and estuarine waters off Alaska. They haul out on rocks, reefs, beaches, and drifting glacial ice. They are opportunistic feeders and often adjust their distribution to take advantage of locally and seasonally abundant prey (Womble *et al*., 2009, Allen and Angliss, 2015). Harbor seals occurring in the project area belong to the Lynn Canal/Stephens Passage (LC/SP) stock. Harbor seals are common in Lutak Inlet and in Chilkat

Inlet where there is a small haulout at Pyramid Island. They are abundant in the Chilkat and Chilkoot rivers in late fall and winter during spawning runs of salmon (*Onchorhynchus spp*.) and in the spring (mid-March through mid- May) when eulachon (*Thaleichtys pacificus*) are present. As many as about 100 individuals have been observed actively feeding in Lutak Inlet near the mouth of the Chilkoot River, and at up-river locations during these fish runs (K. Hastings ADF&G, 2016 and J. Womble, 2016 personal communication).

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 2.

Table 2. Marine Mammal Hearing Groups (NMFS, 2018).

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

***** Represents the generalized hearing range for the entire group as a composite (i.e., all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall et al. 2007) and PW pinniped (approximation).

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

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Seven marine mammal species (five cetacean and two pinniped (one otariid and one phocid) species have the reasonable potential to co-occur with the proposed survey activities (see Table 1). Of the cetacean species that may be present, two are classified as low-frequency cetaceans (*i.e.*, all mysticete species), one is classified as a mid-frequency cetacean (*i.e.*, all delphinid and ziphiid species and the sperm whale), and two are classified as high-frequency cetaceans (*i.e.*, harbor porpoise, Dall's porpoise and *Kogia* spp.).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

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

Description of Sound Sources

The marine soundscape is comprised of both ambient and anthropogenic sounds. Ambient sound is defined as the all-encompassing sound in a given place and is usually a composite of sound from many sources both near and far (ANSI 1994, 1995). The sound level of an area is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.*, waves, wind, precipitation, earthquakes, ice, atmospheric sound), biological (*e.g.*, sounds produced by marine mammals, fish, and invertebrates), and anthropogenic sound (*e.g.*, vessels, dredging, aircraft, construction).

The sum of the various natural and anthropogenic sound sources at any given location and time – which comprise "ambient" or "background" sound – depends not only on the source levels (as determined by current weather conditions and levels of biological and shipping activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column

and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10-20 dB from day to day (Richardson *et al*., 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals.

In-water construction activities associated with the project would include impact pile driving, vibratory pile driving and removal, and DTH drilling. The sounds produced by these activities fall into one of two general sound types: impulsive and non-impulsive. Impulsive sounds (*e.g*., explosions, gunshots, sonic booms, impact pile driving) are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (ANSI, 1986; NIOSH, 1998; ANSI, 2005; NMFS, 2018). Non-impulsive sounds (*e.g.*, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems) can be broadband, narrowband or tonal, brief or prolonged (continuous or intermittent), and typically do not have the high peak sound pressure with raid rise/decay time that impulsive sounds do (ANSI 1995; NIOSH 1998; NMFS 2018). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g*., Ward 1997 in Southall *et al*., 2007).

Two types of pile hammers would be used on this project: impact and vibratory. Impact hammers operate by repeatedly dropping a heavy piston onto a pile to drive the pile into the substrate. Sound generated by impact hammers is characterized by rapid rise times and high peak levels, a potentially injurious combination (Hastings and Popper, 2005). Vibratory hammers install piles by vibrating them and allowing the weight of the hammer to push them into the

sediment. Vibratory hammers produce significantly less sound than impact hammers. Peak Sound pressure Levels (SPLs) may be 180 dB or greater, but are generally 10 to 20 dB lower than SPLs generated during impact pile driving of the same-sized pile (Oestman *et al*., 2009). Rise time is slower, reducing the probability and severity of injury, and sound energy is distributed over a greater amount of time (Nedwell and Edwards, 2002; Carlson *et al*., 2005).

DTH drilling would be conducted using a down-the-hole drill inserted through the hollow steel piles. A down-the-hole drill is a drill bit that drills through the bedrock using a pulse mechanism that functions at the bottom of the hole. This pulsing bit breaks up rock to allow removal of debris and insertion of the pile. The head extends so that the drilling takes place below the pile. The pulsing sounds produced by the down-the-hole drilling method are continuous, however this method likely increases sound attenuation because the noise is primarily contained within the steel pile and below ground as opposed to impact hammer driving methods which occur at the top of the pile.

The likely or possible impacts of AML's proposed activity on marine mammals could involve both non-acoustic and acoustic stressors. Potential non-acoustic stressors could result from the physical presence of the equipment and personnel; however, any impacts to marine mammals are expected to primarily be acoustic in nature. Acoustic stressors include effects of heavy equipment operation during pile installation and removal and drilling.

Acoustic Impacts

The introduction of anthropogenic noise into the aquatic environment from pile driving and removal and DTH drilling is the primary means by which marine mammals may be harassed from AML's specified activity. In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe

(Southall *et al*., 2007). *G*enerally, exposure to pile driving and drilling noise has the potential to result in auditory threshold shifts and behavioral reactions (*e.g.,* avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). Exposure to anthropogenic noise can also lead to non-observable physiological responses such an increase in stress hormones. Additional noise in a marine mammal's habitat can mask acoustic cues used by marine mammals to carry out daily functions such as communication and predator and prey detection. The effects of pile driving and drilling noise on marine mammals are dependent on several factors, including, but not limited to, sound type (*e.g.,* impulsive vs. non-impulsive), the species, age and sex class (*e.g.,* adult male vs. mom with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure (Wartzok *et al.,* 2004; Southall *et al*., 2007). Here we discuss physical auditory effects (threshold shifts) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced threshold shift (TS) as a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). The amount of threshold shift is customarily expressed in dB. A TS can be permanent or temporary. As described in NMFS (2018), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.,* impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.,* spectral content), the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.,* how

animal uses sound within the frequency band of the signal; *e.g.*, Kastelein *et al.*, 2014), and the overlap between the animal and the source (*e.g.*, spatial, temporal, and spectral).

Permanent Threshold Shift (PTS) - NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS 2018). Available data from humans and other terrestrial mammals indicate that a 40 dB threshold shift approximates PTS onset (see Ward *et al*., 1958, 1959; Ward, 1960; Kryter *et al.*, 1966; Miller, 1974; Ahroon *et al*., 1996; Henderson and Hu, 2008). PTS levels for marine mammals are estimates, with the exception of a single study unintentionally inducing PTS in a harbor seal (Kastak *et al.*, 2008), there are no empirical data measuring PTS in marine mammals, largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing PTS are not typically pursued or authorized (NMFS, 2018).

Temporary Threshold Shift (TTS) - A temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). Based on data from cetacean TTS measurements (see Southall *et al.*, 2007), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Schlundt *et al*., 2000; Finneran *et al*., 2000, 2002). As described in Finneran (2016), marine mammal studies have shown the amount of TTS increases with cumulative sound exposure level (SEL_{cum}) in an accelerating fashion: At low exposures with lower SEL_{cum}, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher SEL_{cum}, the growth curves become steeper and approach linear relationships with the noise SEL.

Depending on the degree (elevation of threshold in dB), duration (i.e., recovery time), and frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during time when communication is critical for successful mother/calf interactions could have more serious impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.*, 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Currently, TTS data only exist for four species of cetaceans (bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*)) and five species of pinnipeds exposed to a limited number of sound sources (i.e., mostly tones and octave-band noise) in laboratory settings (Finneran, 2015). TTS was not observed in trained spotted (*Phoca largha*) and ringed (*Pusa hispida*) seals exposed to impulsive noise at levels matching previous predictions of TTS onset (Reichmuth *et al*., 2016). In general, harbor seals and harbor porpoises have a lower TTS onset than other measured pinniped or cetacean species (Finneran, 2015). The potential for TTS from impact pile driving exists. After exposure to playbacks of impact pile driving sounds (rate 2760 strikes/hour) in captivity, mean TTS increased from 0 dB after 15 minute exposure to 5 dB after 360 minute exposure; recovery occurred within 60 minutes (Kastelein *et al*., 2016). Additionally, the existing

marine mammal TTS data come from a limited number of individuals within these species. No data are available on noise-induced hearing loss for mysticetes. For summaries of data on TTS in marine mammals or for further discussion of TTS onset thresholds, please see Southall *et al*. (2007), Finneran and Jenkins (2012), Finneran (2015), and Table 5 in NMFS (2018).

Installing piles requires a combination of impact pile driving, vibratory pile driving, and DTH drilling. For the project, these activities would not occur at the same time and there would likely be pauses in activities producing the sound during each day. Given these pauses and that many marine mammals are likely moving through the action area and not remaining for extended periods of time, the potential for TS declines.

Behavioral Harassment - Exposure to noise from pile driving and removal and drilling also has the potential to behaviorally disturb marine mammals. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.*, Lusseau and Bejder, 2007; Weilgart, 2007; NRC, 2005).

Disturbance may result in changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping); avoidance of areas where sound sources are located. Pinnipeds may increase their haul-out time, possibly to avoid

in-water disturbance (Thorson and Reyff, 2006). Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.*, species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (*e.g.*, Richardson *et al.*, 1995; Wartzok *et al.*, 2003; Southall *et al.*, 2007; Weilgart, 2007; Archer *et al.*, 2010). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.*, 2012), and can vary depending on characteristics associated with the sound source (*e.g.*, whether it is moving or stationary, number of sources, distance from the source). In general, pinnipeds seem more tolerant of, or at least habituate more quickly to, potentially disturbing underwater sound than do cetaceans, and generally seem to be less responsive to exposure to industrial sound than most cetaceans. Please see Appendices B and C of Southall *et al.* (2007) for a review of studies involving marine mammal behavioral responses to sound.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (e.g., bubble nets or sediment plumes), or changes in dive behavior. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (e.g., Croll *et al.*, 2001; Nowacek *et al.*, 2004; Madsen *et al.*, 2006; Yazvenko *et al.*, 2007). A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

In 2016, the Alaska Department of Transportation and Public Facilities (ADOT&PF) documented observations of marine mammals during construction activities (*i.e.,* pile driving and down-hole drilling) at the Kodiak Ferry Dock (see 80 FR 60636, October 7, 2015). In the marine mammal monitoring report for that project (ABR 2016), 1,281 Steller sea lions were observed within the Level B disturbance zone during pile driving or drilling (*i.e.,* documented as Level B harassment take). Of these, 19 individuals demonstrated an alert behavior, 7 were fleeing, and 19 swam away from the project site. All other animals (98 percent) were engaged in activities such as milling, foraging, or fighting and did not change their behavior. In addition, two sea lions approached within 20 meters of active vibratory pile driving activities. Three harbor seals were observed within the disturbance zone during pile driving activities; none of them displayed disturbance behaviors. Fifteen killer whales and three harbor porpoise were also observed within the Level B harassment zone during pile driving. The killer whales were travelling or milling while all harbor porpoises were travelling. No signs of disturbance were noted for either of these species. Given the similarities in activities and habitat and the fact the same species are involved, we expect similar behavioral responses of marine mammals to AML's specified activity. That is, disturbance, if any, is likely to be temporary and localized (*e.g.,* small area movements). Monitoring reports from other recent pile driving and DTH drilling projects in Alaska have observed similar behaviors (for example, the Biorka Island Dock Replacement Project).

Masking - Sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation) (Richardson *et al*., 1995). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and

may occur whether the sound is natural (*e.g.*, snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.*, pile driving, shipping, sonar, seismic exploration) in origin. The ability of a noise source to mask biologically important sounds depends on the characteristics of both the noise source and the signal of interest (*e.g.*, signal-to-noise ratio, temporal variability, direction), in relation to each other and to an animal's hearing abilities (*e.g.*, sensitivity, frequency range, critical ratios, frequency discrimination, directional discrimination, age or TTS hearing loss), and existing ambient noise and propagation conditions. Masking of natural sounds can result when human activities produce high levels of background sound at frequencies important to marine mammals. Conversely, if the background level of underwater sound is high (*e.g.* on a day with strong wind and high waves), an anthropogenic sound source would not be detectable as far away as would be possible under quieter conditions and would itself be masked. Lutak Dock and the Haines area contains active commercial shipping and ferry operations as well as numerous recreational and commercial vessels; therefore, background sound levels in the area are already elevated.

Airborne Acoustic Effects - Pinnipeds that occur near the project site could be exposed to airborne sounds associated with pile driving and removal and DTH drilling that have the potential to cause behavioral harassment, depending on their distance from pile driving activities. Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

Airborne noise would primarily be an issue for pinnipeds that are swimming or hauled out near the project site within the range of noise levels elevated above the acoustic criteria. We recognize that pinnipeds in the water could be exposed to airborne sound that may result in behavioral harassment when looking with their heads above water. Most likely, airborne sound

would cause behavioral responses similar to those discussed above in relation to underwater sound. For instance, anthropogenic sound could cause hauled-out pinnipeds to exhibit changes in their normal behavior, such as reduction in vocalizations, or cause them to temporarily abandon the area and move further from the source. However, these animals would previously have been 'taken' because of exposure to underwater sound above the behavioral harassment thresholds, which are in all cases larger than those associated with airborne sound. Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Therefore, we do not believe that authorization of incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further here.

Marine Mammal Habitat Effects

AML's construction activities at Lutak Dock could have localized, temporary impacts on marine mammal habitat and their prey by increasing in-water sound pressure levels and slightly decreasing water quality. Increased noise levels may affect acoustic habitat (see masking discussion above) and adversely affect marine mammal prey in the vicinity of the project area (see discussion below). During impact pile driving, elevated levels of underwater noise would ensonify Lutak Inlet where both fish and mammals occur and could affect foraging success.

Construction activities are of short duration and would likely have temporary impacts on marine mammal habitat through increases in underwater and airborne sound. These sounds would not be detectable at Gran Point.

In-water pile driving, pile removal, and drilling activities would also cause short-term effects on water quality due to increased turbidity. Local strong currents are anticipated to disburse suspended sediments produced by project activities at moderate to rapid rates depending on tidal stage. AML would employ standard construction best management practices (BMPs; see

section 11 in application), thereby reducing any impacts. Therefore, the impact from increased turbidity levels is expected to be discountable.

In-water Construction Effects on Potential Foraging Habitat

The area likely impacted by the project is relatively small compared to the available habitat in Lynn Canal (*e.g.*, most of the impacted area is limited to the Lutak Dock area) and does not include any BIAs or ESA-designated critical habitat. Pile installation/removal and drilling may temporarily increase turbidity resulting from suspended sediments. Any increases would be temporary, localized, and minimal. AML must comply with state water quality standards during these operations by limiting the extent of turbidity to the immediate project area. In general, turbidity associated with pile installation is localized to about a 25-foot radius around the pile (Everitt *et al.,* 1980). Cetaceans are not expected to be close enough to the project pile driving areas to experience effects of turbidity, and any pinnipeds would be transiting the area and could avoid localized areas of turbidity. Therefore, the impact from increased turbidity levels is expected to be discountable to marine mammals. Furthermore, pile driving and removal at the project site would not obstruct movements or migration of marine mammals.

Avoidance by potential prey (*i.e.*, fish) of the immediate area due to the temporary loss of this foraging habitat is also possible. The duration of fish avoidance of this area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution and behavior is anticipated. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity in Lynn Canal and the project would occur outside the peak eulachon and salmonid runs.

The duration of the construction activities is relatively short. The construction window is for a maximum of 4-5 months with only a maximum of 8 days of pile drilling/removal. During

each day, construction activities would only occur during daylight hours. Impacts to habitat and prey are expected to be minimal based on the short duration of activities.

In-water Construction Effects on Potential Prey (Fish) - Construction activities would produce continuous (*i.e.*, vibratory pile driving and DTH drilling) and pulsed (*i.e*. impact driving) sounds. Fish react to sounds that are especially strong and/or intermittent low-frequency sounds. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. Hastings and Popper (2005) identified several studies that suggest fish may relocate to avoid certain areas of sound energy. Additional studies have documented effects of pile driving on fish, although several are based on studies in support of large, multiyear bridge construction projects (*e.g*., Scholik and Yan, 2001, 2002; Popper and Hastings, 2009). Sound pulses at received levels of 160 dB may cause subtle changes in fish behavior. SPLs of 180 dB may cause noticeable changes in behavior (Pearson *et al.*, 1992; Skalski *et al.*, 1992). SPLs of sufficient strength have been known to cause injury to fish and fish mortality.

The most likely impact to fish from pile driving and drilling activities at the project area would be temporary behavioral avoidance of the area. The duration of fish avoidance of this area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution and behavior is anticipated. In general, impacts to marine mammal prey species are expected to be minor and temporary due to the short timeframe for the project.

Construction activities, in the form of increased turbidity, have the potential to adversely affect forage fish and juvenile salmonid outmigratory routes in the project area. Both herring and salmon form a significant prey base for Steller sea lions, herring is a primary prey species of humpback whales, and both herring and salmon are components of the diet of many other marine mammal species that occur in the project area. Increased turbidity is expected to occur in the

immediate vicinity (on the order of 10 feet or less) of construction activities. However, suspended sediments and particulates are expected to dissipate quickly within a single tidal cycle. Given the limited area affected and high tidal dilution rates any effects on forage fish and salmon are expected to be minor or negligible. In addition, best management practices would be in effect, which would limit the extent of turbidity to the immediate project area. Finally, exposure to turbid waters from construction activities is not expected to be different from the current exposure; fish and marine mammals in the Lynn Canal region are routinely exposed to substantial levels of suspended sediment from glacial sources.

In summary, given the short daily duration of sound associated with individual pile driving and drilling events and the relatively small areas being affected, pile driving and drilling activities associated with the proposed action are not likely to have a permanent, adverse effect on any fish habitat, or populations of fish species. Thus, we conclude that impacts of the specified activity are not likely to have more than short-term adverse effects on any prey habitat or populations of prey species. Further, any impacts to marine mammal habitat are not expected to result in significant or long-term consequences for individual marine mammals, or to contribute to adverse impacts on their populations.

Estimated Take

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

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

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

Authorized takes would primarily be by Level B harassment, as use of the acoustic source (*i.e.*, vibratory or impact pile driving or DTH drilling) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for mysticetes, high frequency species and pinnipeds because predicted auditory injury zones are larger than for mid-frequency species. Auditory injury is unlikely to occur for mid-frequency species. The proposed mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

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

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

factors considered here in more detail and present the proposed take estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 microPascal (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.*, impact pile driving) or intermittent (*e.g.*, scientific sonar) sources.

AML's proposed activity includes the use of continuous (vibratory pile-driving, drilling) and impulsive (impact pile-driving) sources, and therefore the 120 and 160 dB re 1 μPa (rms) thresholds are applicable.

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

These thresholds are provided in Table 3. 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 3. 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 1µPa^{2}s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.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, which include source levels and transmission loss coefficient.

Even though multiple pile sizes will be used, to be conservative for calculation of take, we assumed all piles would be the largest size pile (36 inch). It is also likely that impact and vibratory pile driving will occur on the same day, so we calculate Level B take assuming the larger vibratory disturbance isopleths for every day of activity. For vibratory pile driving we assumed a source level of 175 dB (RMS SPL) based on Caltrans (2015) with a maximum of 5 piles per day and 60 minutes per pile. For DTH drilling we used a source level of 171 dB (RMS SPL); this is derived from Denes *et al*. (2016), where we used the more conservative 90 percent median value. We assumed no more than 2 piles per day with DTH drilling as the duration per pile was assumed to be 3 hours. For impact pile driving activities we used source levels of 210 dB (PK SPL) or 183 dB (single strike SEL) based on Caltrans (2015). We assumed no more than 5 piles per day and 700 strikes per pile. In all cases we used a propagation loss coefficient of 15 logR as most appropriate for these stationary, in-shore sources. Because DTH would only be

used in combination with vibratory pile driving, we also used a combined scenario that assumed four hours of vibratory pile driving plus six hours of DTH drilling in a single day. For this scenario the source level was calculated as a log average of the sources.

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

NMFS User spreadsheet input scenarios for vibratory pile driving, impact pile driving, and the combined DTH drilling and vibratory pile driving scenario discussed above are shown in Table 4. These input scenarios lead to PTS isopleth distances (Level A thresholds) of anywhere from 7 to 2742 meters, depending on the marine mammal group and scenario (Table 5). Table 5 also shows the daily ensonified areas (Level A harassment zones) to the PTS threshold distances

for each scenario and marine mammal group; these vary from just a few square meters to 8.736 km^2.

Table 4. NMFS User Spreadsheet Inputs.

USER SPREADSHEET INPUT			
	Vibratory pile driving	**Impact pile driving**	**DTH/ vibratory pile driving**
Spreadsheet Tab Used	A.1) Vibratory pile driving	E.1) Impact pile driving	A.1) Vibratory pile driving
Source Level (RMS SPL or single strike SEL)	175	183	173
Weighting Factor Adjustment (kHz)	2.5	2	2.5
a) Number of strikes per pile	N/A	700	N/A
a) Activity Duration (h) within 24-h period	60	N/A	10
Propagation (xLogR)	15	15	15
Distance of source level measurement (meters)	10	10	10
Number of piles per day	5	5	2

Table 5. NMFS User Spreadsheet Outputs: PTS Isopleths and Daily Ensonified Area.

USER SPREADSHEET OUTPUT					
	PTS Isopleth (meters)				
Source Type	**Low-Frequency Cetaceans**	**Mid-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
Vibratory pile driving	171	15	253	104	7
Impact pile driving	2302	82	2742	1232	90
DTH/ vibratory pile driving	200	18	296	122	9
	Daily ensonified area (km^2)				
Vibratory pile driving	0.056	0.001	0.113	0.025	0
Impact pile driving	6.899	0.017	8.736	2.369	0.02
DTH/ vibratory pile driving	0.074	0.001	0.151	0.032	0

The distances to the Level B threshold of 120 dB RMS are 28.8 miles for vibratory pile driving and 1.1 miles for impact driving. The enclosed nature of Lutak Inlet restricts the propagation of noise in all directions before noise levels reduce below the Level B threshold for continuous source types (i.e., vibratory pile driving, DTH). Therefore, the area ensonified to the

Level B threshold is truncated by land in all directions. Measurements of the ensonified areas show that 5.179 km^2 are ensonified to the Level B threshold for impact pile driving and 22.164 km^2 are ensonified to the Level B threshold for vibratory pile driving. Note that thresholds for behavioral disturbance are unweighted with respect to marine mammal hearing and therefore the thresholds apply to all species.

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. The density of the seven marine mammal species for which take will be proposed is calculated by month in the project area (see Table 6-4 in the application) for months when project activity is planned to occur (June through October). Density was estimated using available survey data, literature, sightings from protected Species observers (PSOs) from other projects, personal communication from researchers, state and federal biologists, average group size (i.e., killer whales, Dall's porpoise) and the data underlying the IHA issued by NMFS for the ADOT&PF Haines Ferry Terminal Project (NMFS, 2018b). Density estimates were calculated by dividing the estimated monthly abundance for each species by the area of marine mammal habitat near the project, which is approximately 91.3 km and extends from Lutak Inlet/Chilkat River south down Lynn Canal to the Gran Point haulout. In order to be conservative, even though pile driving could occur at any period from June through October, for purposes of requesting takes, we used the highest monthly density for each species to calculate take. For killer whales and Dall's porpoises we calculated density by assuming a minimum group size of 5 and 10 animals, respectively, might enter the ensonified area, rather than their lower density value, because of the social nature of these species. Thus the species densities used in our take calculations are shown in Table 6.

Table 6. Species Density Values Used to Calculate Take.

Species	Density (#/km^2)
Humpback Whale	0.055
Minke Whale	0.022
Killer Whale	0.055
Harbor Porpoise	0.055
Dall's Porpoise	0.11
Harbor Seal	1.095
Steller Sea Lion	7.382

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate. We estimated Level A take for the project by multiplying the maximum monthly species density from Table 6 by the daily ensonified area for PTS for Level A from Table 5 above and then multiplying by the maximum possible number of work days (8) and finally rounding to the next whole number (Table 7). We similarly estimated Level B take for the project by multiplying the maximum monthly species density from Table 6 by the ensonified area for Level B (22.164 km^2) and then multiplying by the maximum possible number of work days (8) and finally rounding to the next whole number. Estimated Level A takes from Table 7 were then subtracted from the preliminary Level B takes to get the total number of unique Level B takes that do not double-count the Level A takes (Table 7).

Table 7. Proposed Authorized Level A and B Take and Percent of MMPA Stock Proposed to Be Taken.

	Proposed Authorized Take		
Species	**Level B**	**Level A**	**% of Stock**
Humpback Whale[1]	7	3	0.1
Minke Whale	2	2	N/A

Killer Whale[2]	10	0	0.35
Harbor Porpoise	6	4	1.03
Dall's Porpoise	12	8	N/A
Harbor Seal	174	21	2.06
Steller Sea Lion (Eastern DPS)[2, 3]	1283	0	3.08
Steller Sea Lion (Western DPS)[2, 3]	26	0	0.05

1 – Distribution of proposed take by ESA status is 6 Level B takes and 3 Level A takes for Hawaii DPS and 1 Level B take for Mexico
2 - The potential for these species to experience PTS due to vibratory/impact driving or from DTH drilling is very low considering the distances to the PTS thresholds and the species behavior. Shutdown for all species is proposed at 200 m (see below) which would further decrease possibility of Level A takes for these species. Therefore, Level A takes are not proposed or requested by the applicant.
3- Total estimated take of Steller sea lions was 1309 individuals. Distribution between the stocks was calculated assuming 2% Western DPS and rounding to nearest whole number.

Effects of Specified Activities on Subsistence Uses of Marine Mammals

The availability of the affected marine mammal stocks or species for subsistence uses may be impacted by this activity. The subsistence uses that may be affected and the potential impacts of the activity on those uses are described below. The information from this section is analyzed to determine whether the necessary findings may be made in the *Unmitigable Adverse Impact Analysis and Determination* section.

No records exist of subsistence harvests of whales and porpoises in Lynn Canal (Haines, 2007). Subsistence harvest of harbor seals and Steller sea lions by Alaska Natives is not prohibited by the MMPA. The ADF&G has regularly conducted surveys of harbor seal and Steller sea lion subsistence harvest in Alaska and the number of animals taken for subsistence in this immediate area is low when compared to other areas in Southeast Alaska (Wolfe *et al.* 2013). Marine mammals comprise less than 1 pound per capita of all resources harvested by Haines residents (Household Survey of Wildfoods Resources Harvest in Haines, as cited in Haines, 2007). Construction activities at the project site would be expected to cause only short

term, non-lethal disturbance of marine mammals. Impacts on the abundance or availability of either species to subsistence hunters in the region are not anticipated.

Proposed Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) the manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat, as well as subsistence uses. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) the practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The following mitigation measures are proposed in the IHA:

- *Schedule*: No pile driving or removal would occur from March 1 through May 31 to avoid peak marine mammal abundance periods and critical foraging periods;
- *Pile Removal*: If possible, piles would be removed by using a direct pull method or by cutting piles off at the mudline instead of using a vibratory hammer;
- *Pile Driving Delay/Shut-Down*: For use of in-water heavy machinery/vessel (e.g., dredge), AML will implement a minimum shutdown zone of 10 m radius around the pile/vessel. For vessels, AML must cease operations and reduce vessel speed to the minimum required to maintain steerage and safe working conditions. In addition, if an animal comes within 200 m of a pile being driven or removed, AML would shut down. The 200 m shutdown zone would only be reopened when a marine mammal has not been observed within the shutdown zone for a 30-minute period. If pile driving is stopped, pile installation would not commence if pile any marine mammals are observed anywhere within the Level A harassment zone. Pile driving activities would only be conducted during daylight hours when it is possible to visually monitor for marine mammals. If poor environmental conditions restrict visibility (*e.g.*, from excessive wind or fog, high Beaufort state), pile installation would be delayed. If a species for which authorization has not been granted, or if a species for which authorization has been granted but the authorized takes are met, AML would delay or shut-down pile driving if the marine mammal approaches or is observed within the Level A and/or B harassment zones. In the unanticipated event that the

specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA, such as serious injury or mortality, the PSO on watch would immediately call for the cessation of the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and NMFS Alaska Regional Office;

- *Soft-start*: For all impact pile driving, a ‘‘soft start’’ technique will be used at the beginning of each pile installation day, or if pile driving has ceased for more than 30 minutes, to allow any marine mammal that may be in the immediate area to leave before hammering at full energy. The soft start requires AML to provide an initial set of three strikes from the impact hammer at reduced energy, followed by a one-minute waiting period, then two subsequent 3–strike sets. If any marine mammal is sighted within the 200-m Level A shutdown zone prior to pile-driving, or during the soft start, AML will delay pile-driving until the animal is confirmed to have moved outside and is on a path away from the Level A harassment zone or if 15 minutes have elapsed since the last sighting; and
- *Other best management practices*: AML will drive all piles with a vibratory hammer to the maximum extent possible (*i.e.,* until a desired depth is achieved or to refusal) prior to using an impact hammer and will use DTH drilling prior to using an impact hammer. AML will also use the minimum hammer energy needed to safely install the piles.

Based on our evaluation of the applicant’s proposed measures, NMFS has preliminarily determined that the proposed 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, and on the availability of such species or stock for subsistence uses.

Proposed Monitoring and Reporting

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

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

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

- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Visual Monitoring

Monitoring would be conducted 30 minutes before, during, and 30 minutes after pile driving and removal activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than thirty minutes.

A primary PSO would be placed at Lutak Dock where pile driving would occur. The primary purpose of this observer is to monitor and implement the 200 m Level A shutdown zone. Two additional observers would focus on monitoring large parts of the Level B harassment zone as well as visible parts of the Level A shutdown and harassment zones. The second observer would be placed at a vantage point near Tanani Point that allows monitoring of the area offshore from Lutak Dock and across the inlet, a width of about 0.6 miles (see application Figure 11-1). This location is near the edge of the Level A harassment zone for low-frequency cetaceans during impact pile driving. The third PSO would be placed northwest of the dock near the edge of the Level A harassment zone for low-frequency cetaceans. Therefore, the outer edge of the largest Level A harassment zone and a majority of the Level B harassment zone would be monitored by these other two PSOs. These two PSOs would also assess movement of animals within Level A harassment zones, including time spent at various distances from the sound source to help us gather needed information on the dynamics of marine mammal behavior around

pile driving activities. Since not all of the level B harassment zone will be observable by PSOs, they will calculate take for the project by extrapolating the observable area to the total size of the Level B harassment zone. PSOs would scan the waters using binoculars, and/or spotting scopes, and would use a handheld GPS or range-finder device to verify the distance to each sighting from the project site. All PSOs would be trained in marine mammal identification and behaviors and are required to have no other project-related tasks while conducting monitoring. The following measures also apply to visual monitoring:

(1) 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. Qualified observers are trained biologists, with the following minimum qualifications:

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

(b) Advanced education in biological science or related field (undergraduate degree or higher required);

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

(d) Experience or training in the field identification of marine mammals, including the identification of behaviors;

(e) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

(f) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

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

(2) AML shall submit observer CVs for approval by NMFS.

A draft marine mammal monitoring report would be submitted to NMFS within 90 days after the completion of pile driving and removal activities, or 60 days prior to a requested date of issuance of any future IHAs for projects at the same location, whichever comes first. It will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated marine mammal observation 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 pile driving activity, and estimated time spent within the Level A harassment zone;

- Distance from pile driving 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.
- Estimated take.

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 an injury, serious injury or mortality, AML would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinator. The report would 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 would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with AML to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. AML would not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that AML 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), AML would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator. The report would include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with AML to determine whether modifications in the activities are appropriate.

In the event that AML 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), AML would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator, within 24 hours of the discovery. AML would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any 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 the species listed in Table 7, 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. Pile driving/removal and drilling activities have the potential to disturb or displace marine mammals. Specifically, the project activities may result in take, in the form of Level A harassment and Level B harassment from underwater sounds generated from

pile driving and removal and DTH drilling. Potential takes could occur if individuals of these species are present in the ensonified zone when these activities are underway.

The takes from Level A and Level B harassment would be due to potential behavioral disturbance, TTS, and PTS. No mortality is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. Level A harassment is only anticipated for humpback whales, minke whales, Dall's porpoise, harbor porpoise, and harbor seal. The potential for harassment is minimized through the construction method and the implementation of the planned mitigation measures (see *Proposed Mitigation* section).

The Level A harassment zones identified in Table 5 are based upon an animal exposed to impact pile driving five piles per day. Considering duration of impact driving each pile (up to 15 minutes) and breaks between pile installations (to reset equipment and move pile into place), this means an animal would have to remain within the area estimated to be ensonified above the Level A harassment threshold for multiple hours. This is highly unlikely given marine mammal movement throughout the area. If an animal was exposed to accumulated sound energy, the resulting PTS would likely be small (*e.g.*, PTS onset) at lower frequencies where pile driving energy is concentrated. Nevertheless, we propose authorizing a small amount of Level A take for five species which is considered in our analysis.

Behavioral responses of marine mammals to pile driving and removal at the Dock, if any, are expected to be mild and temporary. Marine mammals within the Level B harassment zone may not show any visual cues they are disturbed by activities (as noted during modification to the Kodiak Ferry Dock) or could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns. Given the short duration of noise-generating activities per day and that pile driving and removal would occur on

8 days across 4-5 months, any harassment would be temporary. In addition, AML would not conduct pile driving or removal during the spring eulachon and herring runs, when marine mammals are in greatest abundance and engaging in concentrated foraging behavior. There are no other areas or times of known biological importance for any of the affected species.

In addition, although some affected humpback whales and Steller sea lions may be from a DPS that is listed under the ESA, it is unlikely that minor noise effects in a small, localized area of habitat would have any effect on the stocks' ability to recover. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities will have only minor, short-term effects on individuals. The specified activities are not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts.

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

- No mortality is anticipated or authorized;
- Authorized Level A harassment would be very small amounts and of low degree;
- AML would avoid pile driving and removal during peak periods of marine mammal abundance and foraging (*i.e.*, March 1 through May 31 eulachon and herring runs);
- AML would implement mitigation measures such as vibratory driving piles to the maximum extent practicable, soft-starts, and shut downs; and
- 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 proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under 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.

The amount of take NMFS proposes to authorize is 0.05 to 3.1 percent of any stock's best population estimate. These are all likely conservative estimates because they assume all pile driving occurs the month which has the highest marine mammal density and assumes all takes are of individual animals which is likely not the case. The Alaska stock of Dall's porpoise has no official NMFS abundance estimate as the most recent estimate is greater than eight years old. Nevertheless, the most recent estimate was 83,400 animals and it is highly unlikely this number has drastically declined. Therefore, the 20 authorized takes of this stock clearly represent small numbers of this stock. The Alaska stock of minke whale has no stock-wide abundance estimate. The stock ranges from the Bering and Chukchi seas south through the Gulf of Alaska. Surveys in portions of the range have estimated abundances of 2,020 on the eastern Bering Sea shelf and

1,233 from the Kenai Fjords in the Gulf of Alaska to the central Aleutian Islands. Thus there appears to thousands of animals at least in the stock and clearly the 2 authorized takes of this stock represent small numbers of this stock.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. As discussed above, subsistence harvest of harbor seals and Steller sea lions comprise less than 1 pound per capita of all resources harvested by Haines residents. Therefore, NMFS has preliminarily 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 Alaska Region Protected Resources Division Office, whenever we propose to authorize take for endangered or threatened species.

NMFS is proposing to authorize take of Western DPS Steller sea lion (*Eumetopias jubatus*) and Mexico DPS of humpback whales (*Megaptera novaeangliae*), which are listed under the ESA. The Permit and Conservation Division has requested initiation of Section 7 consultation with the Alaska Region for the issuance of this IHA. NMFS will conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to AML for conducting the Lutak Dock project in Haines, Alaska between Jun 15, 2020 and June 14, 2021, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this Notice of Proposed IHA for the proposed Lutak Dock project. We also request at this time comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal.

On a case-by-case basis, NMFS may issue a one-year IHA renewal with an additional 15 days for public comments when (1) another year of identical or nearly identical activities as described in the Specified Activities section of this notice is planned or (2) the activities as described in the Specified Activities section of this notice would not be completed by the time

the IHA expires and a Renewal would allow for completion of the activities beyond that described in the Dates and Duration section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to expiration of the current IHA.
- The request for renewal must include the following:

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

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

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

Dated: November 21, 2019.

Donna S. Wieting,
Director, Office of Protected Resources,
National Marine Fisheries Service.

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