Request for Incidental Harassment Authorization

Halibut Point Marine Services, LLC
Old Sitka Dock North Dolphins Expansion Project
Sitka Sound, Sitka, Alaska

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1 Description of Specified Activity

1.1 PROJECT INFORMATION

Halibut Point Marine Services LLC (HPM) proposes to install new mooring dolphin at its deep water dock facility in Sitka, Alaska. The installation of the new mooring dolphins would require in water pile driving. As a result HPM is requesting an Incidental Harassment Authorization (IHA).

The proposed project will occur in Sitka Sound. Several species of marine mammals are found in Sitka Sound. The pile driving associated with the project may result in Level A and Level B take of marine mammals protected under the Marine Mammal Protection Act of 1972 (MMPA). HPM is requesting an IHA for seven marine mammal species. These include humpback whale (*Megaptera novaeangliae*), killer whale (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), harbor seal (*Phoca viutlina*), Steller sea lion (*Eumetopias jubatus*), gray whale (*Eschrichtius robustus*), and minke whale (*Balaenoptera acutorostrata*) that may occur in the vicinity of the proposed project. Level B take is requested for humpback whales, harbor porpoises, harbor seal, killer whale, minke whale, gray whale and Steller sea lions; level A take is requested for harbor porpoise and harbor seal.

1.2 DETAILED DESCRIPTION OF PROJECT

1.2.1 Location

The proposed project is at the existing HPM deep water dock facility which is located within the Sitka Borough in Southeast Alaska; T55S, R63E, S9, Copper River Meridian; Latitude 57 06'55" and Longitude 135 23'34"

Figure 1 – Project Location Map *(Apple Maps)*

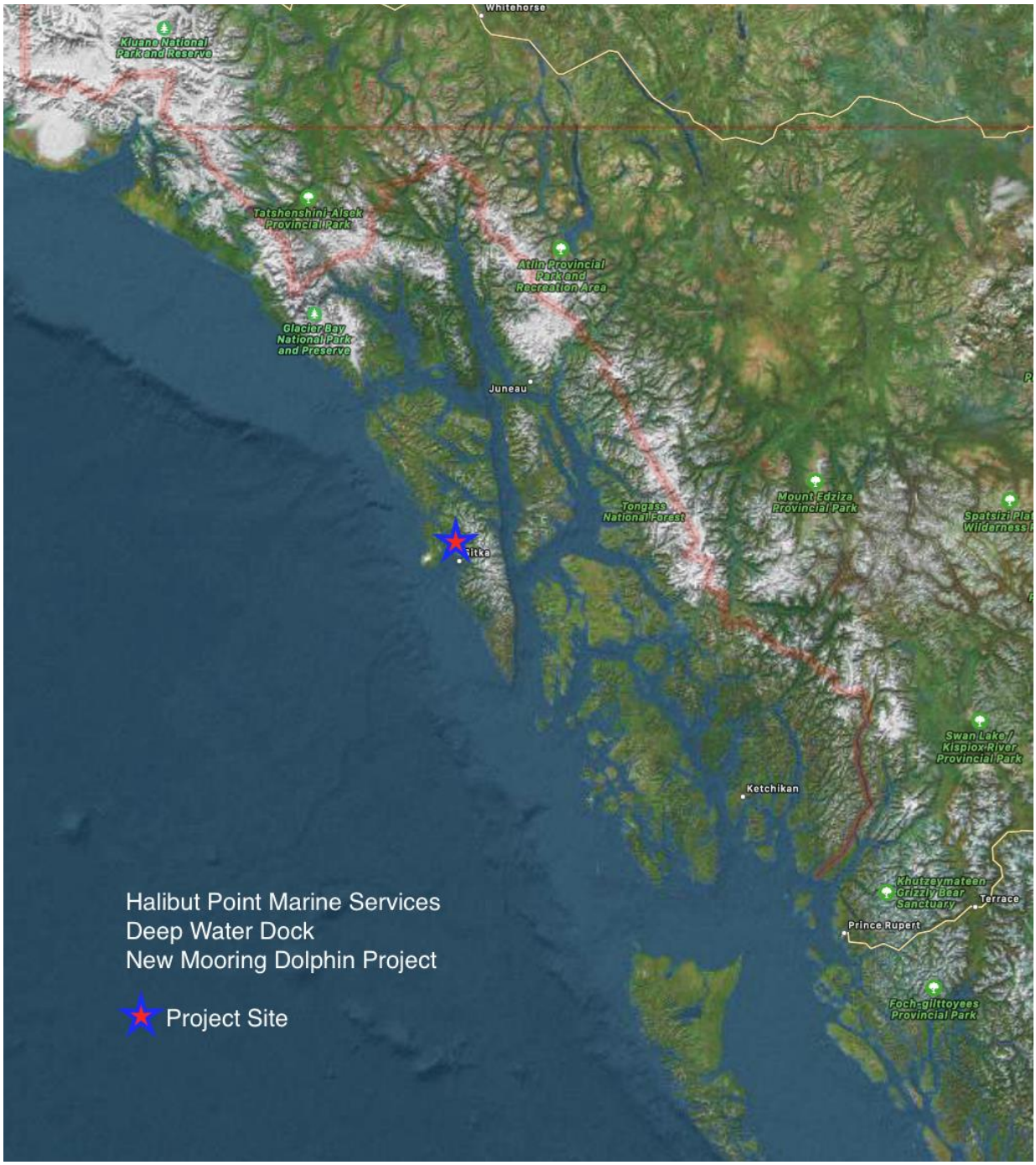


Figure 3 Aerial Photo of Halibut Point Marine Dock Facility (Apple Maps)

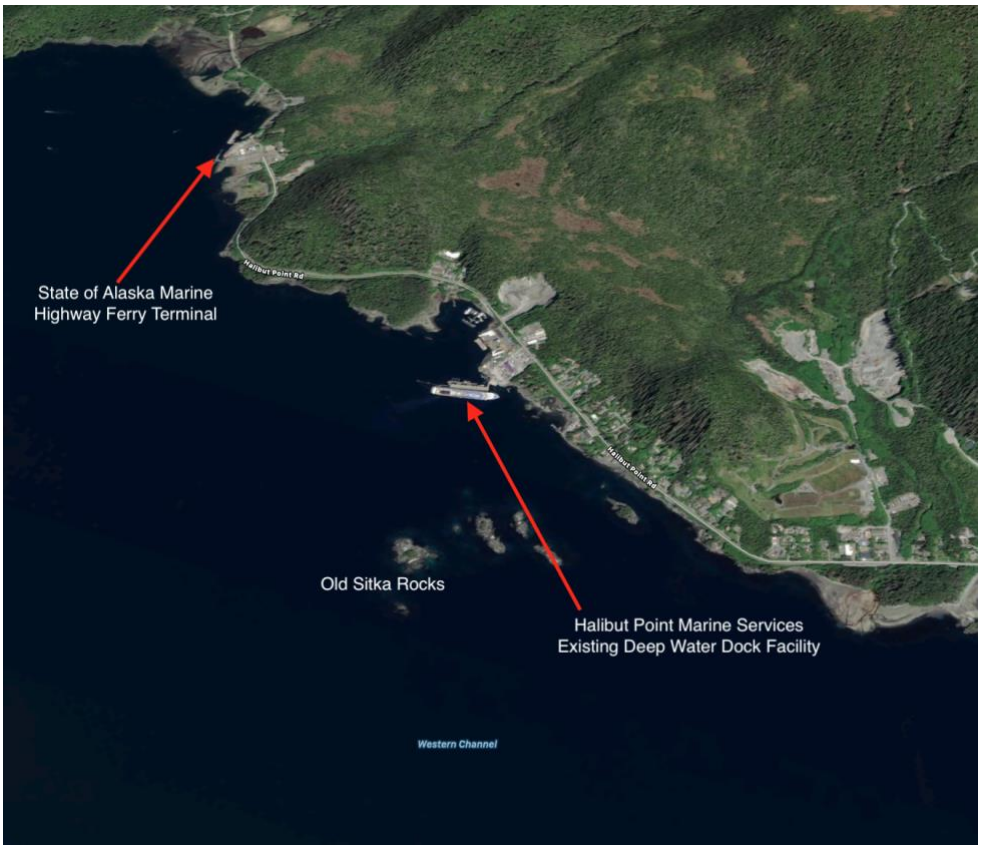


Figure 2 Photo of Existing Halibut Point Marine Dock Facility (Chris McGraw)

1.2.2 Purpose

Sitka is a port-of call for cruise ships in Alaska. The average length of cruise ships has increased over time. In the 1970s, 550-foot long ships were common and now ships with lengths over 900 feet are becoming the operational standard. The number neo-Panamax cruise ships which are larger than those that have been coming through Alaska's Inside Passage have increased in numbers during the summer of 2019 and it is anticipated that this tread will continue into the future based on the fact that the majority of the large ships being constructed are of the neo Panamax size.

Currently Halibut Point Marines Services dock facility does not meet the industry required specifications for mooring the neo-Panamax vessels. The purpose of this project is to add 2 additional mooring dolphin that will provide the adequate mooring loads desired by the neo-Panamax ships. The cruise visitor industry is a major sector of Sitka's economy. The additional dolphins are needed so that Sitka can continue to market itself and be a viable port of call for the cruise industry as they modernize their fleets with larger vessels.

1.2.3 Proposed Activities

The proposed project includes the following activities over and in navigable waters of Sitka Sound.

- Install two 4-pile mooring dolphin (made up of 48-inch diameter piles)
- Remove Existing Pile Cap on Existing Mooring Dolphin No 1 & No 2, Install One 48-inch diameter pile over top of existing 36-inch diameter pile on each dolphin, Re-install existing pile caps and catwalks.

1.2.4 Construction Methods

1.2.4.1 Equipment

The following equipment is expected to be used (a final determination will be made through the permitting process):

- Vibratory Hammer: ICE 44B/Static weight 12,250 pounds
- Diesel Impact Hammer: Delmag D46/Max Energy 107,280 feet-pounds
- Drilled shaft drill: Holte 100,000 feet-pounds top drive with down-the-hole (DTH) hammer and bit

1.2.4.2 Transport of Materials and Equipment

Materials and equipment would be transported to the project site by barge. While work is conducted in the water, anchored barges will be used to stage construction materials and equipment.

1.2.4.3 Construction Sequence

Install & Remove 30" Template Piles: This activity is expected to take 2 days to install and 2 days to remove per dolphin. Anticipate using the vibro hammer to install full length piles through the overburden to bedrock. May need to use an impact hammer if driving conditions

require. Figure 30 mins vibratory hammer and 3 mins impact hammer (100 blows) per pile for install. Figure 30 mins vibratory hammer per pile for removal. We expect to use 4 pile in our template. Assume no more than 2 pile installed/removed per day.

Production piles: We will loft 180' pile and drive into the overburden with the vibro hammer. Figure 30 mins per pile. Stop and splice pile. Resume driving through overburden with vibro hammer (figure another 30 mins per pile). Seat pile into bedrock with impact hammer (3 mins/100 blows per pile). Once production pile are seated we will drill the shaft using the hole top drive/DTH hammer combo. Figure 4 hours of active drilling operation per pile. Once all holes are drilled, install a rebar cage and then fill with concrete. You can assume no more than 2 pile are vibrated/impacted per day.

Summary Schedule:
Dolphin #1

- 2 days installing template pile (2 pile per day)
- 2 days driving permanent pile to bedrock (2 pile per day) – pile splicing isn't included
- 2 days to drill shafts (2 Shafts per day)
- days to set cage/pour concrete (1 shaft per day)
- 2 days to set/weld cap
- 1 days to remove template (4 pile per day)

Dolphin #2

- 2 days installing template pile (2 pile per day)
- 2 days driving permanent pile to bedrock (2 pile per day) – pile splicing isn't included
- 2 days to drill shafts (2 shafts per day)
- days to set cage/pour concrete (1 shaft per day)
- 2 days to set/weld cap
- 1 days to remove template (4 pile per day)

Existing Dolphin #1 Modification

- 1 day remove existing pile cap
- 1 day driving pile to bedrock
- 1 day to reinstall pile cap

Existing Dolphin #2 Modification

- 1 day remove existing pile cap
- 1 day driving pile to bedrock
- 1 day to reinstall pile cap

1.2.4.4 Pile Removal and Installation Methods

Installation of Permanent Piles

Permanent 48-inch diameter piles would be driven through sand and gravel with a vibratory hammer operated at a reduced energy setting and impacted into bedrock. After being

impacted, a smaller 30-inch diameter drilled shaft will be drilled within the pile and into the bedrock below the pile. Here the 48-inch diameter pile would act as an isolation casing and will prevent drilling noise from propagating through the water column. Once the shaft is drilled a DTH hammer with a 33-inch diameter bit (isolated from the steel casing) will be used to drill an approximately 15-foot long shaft (as determined by geotechnical engineer) into the bedrock. Each shaft will take approximately 4 hours to complete.

Table 1 Pile Installation and Removal Summary

Description	Project Component			
	Temporary Pile Installation	**Temporary Pile Removal**	**Permanent Pile Installation**	**Max Installation/ Removal Per day**
Diameter of Steel Piles	30	30	48	
# of Piles	8	8	10	
Vibratory Pile Driving				
Total Quantity	8	8	10	
Max # Piles Vibrated per Day	2	4	2	
Vibratory Time per Pile	30 min	10 min	60 min	
Vibratory Time per Day	60 min	40 min	120 min	120 min
Vibratory Time Total (11 days)	240 min	80 min	600 min	
Impact Pile Ddriving				
Total Quantity	0	0	10	
Max # Piles Impacted per Day	0	0	2	
# of Strikes per Pile	0	0	100	
Impact Time per Pile	0	0	3 min	
Impact Time per Day	0	0	6 min	6 min
Impact Time Total (4 days)	0	0	30 min	
Rock Anchor Installation (Drilled Shaft)				
Total Quantity	0	0	8	
Anchor Diameter	0	0	33"	
Max # Piles Anchored Per Day	0	0	2	
Anchor Time per Pile	0	0	240 min	
Anchor Time per Day	0	0	480 min	480 min
Anchor Time Total (4 days)	0	0	1920 min	

1.3 Acoustic Threshold Information and Action Area

The proposed project will produce noise through vibratory pile driving and pile removal, impact pile driving, and rock anchor drilling. Vibratory and impact pile driving will generate in-water and in-air noise that may result in take of marine mammals. Rock anchor drilling will not result in the propagation of noise into the water column because it would be completed inside center of the permanent piles.

The National Marine Fisheries Service (NMFS) has developed waterborne noise guidelines for determining sound thresholds that can cause injury (Level A threshold) or disturbance (Level B threshold) in marine mammals. These waterborne thresholds are shown in Tables 2 and 3. Distances to the Level A and B thresholds, as defined by sound isopleths, vary by pile size and installation and removal methods. Level A thresholds also vary by marine mammal hearing type. Calculated distances to threshold for this project are shown in Table 4 and range from approximately 1 m to 18.8 km. Please see Section 11 for figures that illustrate the monitoring and shutdown zones associated with these thresholds.

The action area for this project, defined as all areas affected directly by the action, has been determined by the distance to the farthest-reaching noise threshold. In this case, the distance where received noise levels from drilling 33” diameter shafts inside the 48-inch piles are expected to decline to 120 decibels (dB). As shown in Table 3, this distance is 15.8 km. However, the action area will be truncated where land masses obstruct underwater sound transmission.

1.3.1 Level A Harassment

NMFS’ Technical Guidance for Assessing the Effects of Anthropogenic Sounds on Marine Mammal Hearing (NMFS 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) (NMFS 2018). HPMS’s activity includes the use of both impulsive (impact pile driving) and non-impulsive (vibratory pile driving and removal and socketing) sources. The thresholds for auditory injury are provided in Table 2.

Table 2 – Summary In-water permanent Threshold Shifts Onset Acoustic Thresholds (Level A) Injury

	PTS Onset Thresholds*(received level)	
Hearing Group	**Impulsive (Impact Pile Driving)**	**Non-impulsive (Vibratory Pile Driving)**
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

Adapted from: NMFS 2016

* 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 (LE) has a reference value of 1µPa2s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

1.3.2 Level B Harassment

NMFS predicts that all marine mammals are likely to be behaviorally harassed in a manner that they consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 decibels (dB) re 1µPa (rms) for continuous and above 160 dB re 1µPa (rms) for non-explosive impulsive sources.

1.3.3 Calculated Distances to Level A and Level B Thresholds

For this project, distances to the Level A and Level B thresholds were calculated based on various source levels for a given activity and pile type (e.g., vibratory removal 30-inch diameter steel pile, impact pile driving 48-inch diameter steel pile) and, for Level A harassment, accounted for the maximum duration of that activity per day using the practical spreading model in the spreadsheet tool developed by NMFS. Calculated distances to thresholds are shown in Table 3 and range from approximately 1 m to 15.8 kilometers. Please see Section 11.3 for shutdown and monitoring zones associated with these thresholds.

Table 3 - Calculated Distances to NMFS Level A and B Acoustic Thresholds

Activity	Source Level at 10 meters (dB)	Distance (m) to Level A and Level B Thresholds					
		Level A					Level B
		Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid	Otariid	
Vibratory Pile Driving/Removal							
30-inch steel temporary installation (8 piles) (2 hour per day on 4 days)	168.0 SPL[1]	20.0	1.8	29.6	12.2	0.9	15,849
30-inch steel temporary removal (8 piles) (40 min on 2 day)	168.0 SPL[1]	20.0	1.8	29.6	12.2	0.9	15,849
48-Inch Steel Permanent Installation (10 piles) (2 hour per day on 5 days)	168.0 SPL[1]	20.0	1.8	29.6	12.2	0.9	15,849
Anchor Drilling							
33-Inch Drilled Anchor Shaft (1 per Pile) (4 Hours Per Shaft)	166.2 SPL[3]	60.7	5.4	89.7	36.9	2.6	12,023
Impact Pile Driving							
30-inch steel temporary installation (8 piles- Impact Driving not anticipated)	186.7SEL/ 197.9 SPL[2]	736.2	26.2	876.9	394.0	28.7	3,363
48-Inch Steel Permanent Installation (10 piles) (6 min per day on 5 days)	186.7SEL/ 197.9 SPL[2]	736.2	26.2	876.9	394.0	28.7	3,363

[1]The 48- inch diameter source levels for vibratory driving and the 30- inch diameter source levels for vibratory driving are from piles driven at Auke Bay from the Denes et al. (2016) report. Information provided by NMFS to HPMS

[2]Sound pressure level root-mean-square (SPL rms) values were used to calculate distance to Level B harassment isopleths for impact pile driving. The source level of 186.7 SEL is the median measured from the Port of Anchorage test pile project for 48-inch piles (Austin et al. 2016, Table 9). Level B source level of 197.9 source level was used from (IP5 in Table 8, Austin et al. 2019) Provided to HPMS from NMFS.

[3]33" Vibrating Source. The source levels for anchor shaft drilling are from table 49, Denes et al. 2016. Information provided by NMFS to HPMS

1.3.4 Action Area

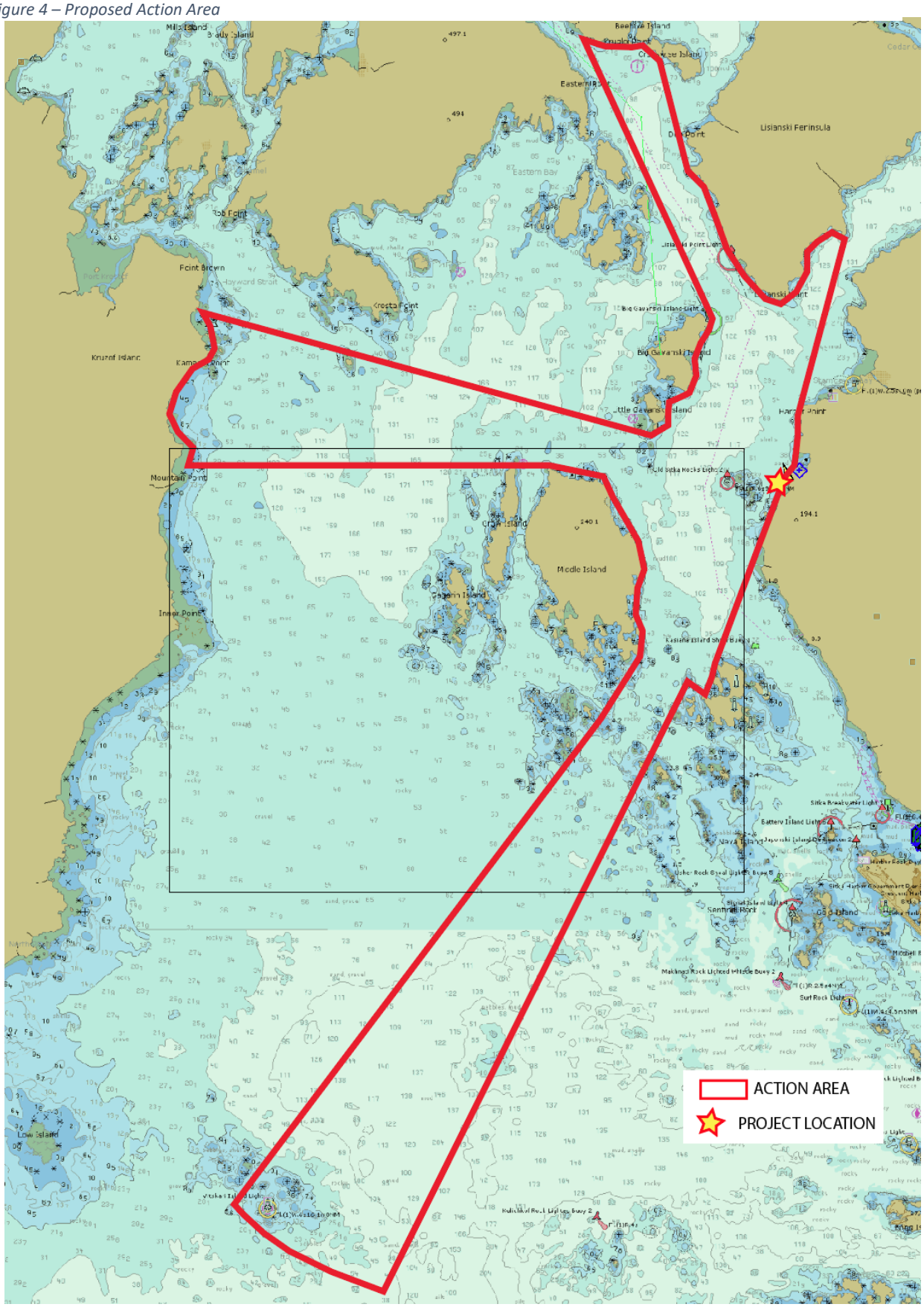
The vicinity of the project area that will be affected directly by the action, referred to as the action area in this document, has been determined by the area of water that will be ensonified above acoustic thresholds in a day. In this case, the action area is the area where received noise levels from vibratory installation of 48-inch piles (the farthest-reaching noise associated with the project) are expected to decline to 120 dB. As shown in Table 3, this area extends 15.8 kilometers from the source. However, the action area would be truncated where land masses associated with Middle Island, Big Gavanski Island, and Little Gavanski Island obstruct underwater sound transmission. Locations where these islands do not obstruct underwater sound transmission include an area 1.2 km wide extending 10.4 kilometers to Kruzoff Island, a second area 1.0 km wide extending 15.85 kilometers into Sitka Sound near Vitskari Rocks, and a third area 1.0 km wide extending 8.9 kilometers into Olga Strait. The total action area encompasses 55.9 km (Figure 5).

In addition to in-water noise, pinnipeds can be adversely affected by in-air noise. Loud noises can cause hauled-out pinnipeds to flush back into the water, leading to disturbance and possible injury. NMFS has established an in-air noise disturbance threshold of 90 dB rms for harbor seals and 100 dB rms for all other pinnipeds. Pile driving and removal associated with this project will generate in-air noise above ambient levels near the float. The predicted distances to the in-air noise disturbance threshold for hauled-out harbor seals (90 dB) and sea lions (100 dB rms) will not extend more than 53 meters and 17 meters from any type of pile being driven or extracted, respectively.

Pinnipeds are not known to haul out on or near the Halibut Point Marine Services Dock Facility, and no in-air disturbance to hauled-out individuals is anticipated as a result of this project. If a pinniped were to haul out on the float it would likely come from the aquatic action associated with the project; thus, to prevent double counting of pinnipeds, land area is not included in the action area.

To minimize impacts to protected species, shutdowns will be implemented if a species appears likely to enter a shutdown zone, and monitoring of harassment zones will be implemented to protect and document marine mammals in the action area. Please see Table 3 for calculated distances to the Level A and B thresholds; Section 11 for mitigation information and shutdown zones and figures; and the attached Marine Mammal Monitoring and Mitigation Plan (4MP) for more details on mitigation, shutdown, and monitoring procedures (Appendix C).

Figure 4 – Proposed Action Area



2 Dates, Duration, and Geographical Region of Activities

2.1 Dates and Durations of Activities

Construction is expected to take approximately 30 days and would occur sometime between October 2020 and March 2021 (depending on length of permitting and availability of the contractor).

2.2 Geographical Settings

The HPMS deep water dock facility is located in Sitka Sound approximately 5 mile north of downtown Sitka, Alaska at Latitude 57 06'55" and Longitude 135 23'34" on the west coast of Baranof Island in Southeast Alaska. It is located within the City and Borough of Sitka, Alaska.

2.2.1 Physical Environment

The HPMS deep water dock facility is an active marine industrial area. The dock facility will see 150 cruise ship dockings in 2019 in addition HPMS operates a marine haulout facility that utilizes a Marine Travelift to haul approximately 200 vessels per year for maintenance work. Alaska Marine Lines freight terminal is located adjacent to the HPMS facility, they receive twice weekly freight container barges.

The HPMS Facility is located along the Sitka road system and is on the north east end of Sitka Sound which opens to the Gulf of Alaska. In addition, the facility is south of the mouth of Katlian Bay and the entrance of Olga Strait.

2.2.2 Seasonal Issues

Marine mammal species are present year round in the project vicinity. Concentrated numbers are most likely during seasonal prey aggregation. This is typically during spring and summer when herring and salmon are abundant in Sitka Sound. No work would take place from March 1st through October 1st to avoid disruption to the Sitka Sound herring spawning and impact to marine mammals that congregate in Sitka Sound and the project area during the herring spawning event and summer months to feed on prey.

The facility is utilized by cruise ships from May 1st through October 1st during which no work can take place because it would conflict with cruise ship operations.

2.2.3 Acoustical Environment

Baseline background (ambient) sound levels in Sitka Sound are unknown. The areas around the existing facility is frequented by ferries, fishing vessels, and tenders; barges and tugboats; and other commercial and recreational vessels that use the small-boat harbor and small boat harbor north of the facility.

3 Species and Abundance of Marine Mammals in the Action Area

3.1 Marine Mammal Species in Sitka Sound

Sitka Sound supports many species of marine mammals, including pinnipeds and cetaceans. Common species listed by NMFS that may occur in the project area are shown below in table 4, along with their stock or population, their estimated abundance, and occurrence in the project area.

Table 4 – Marine Mammal Species with Ranges Extending into Project Area.

Common Name	Scientific Name	Stock Name	Stock Abundance	Source	MMPA Designation	ESA Listing	Occurrence in Project Area[a]
Steller sea lion	*Eumetopias jubatus*	Western	53,303	NMFS	Strategic, depleted	Endangered	Infrequent
Steller sea lion	*Eumetopias jubatus*	Eastern	51,638	NMFS	Strategic, depleted	Not Listed	Frequent
Humpback Whale	*Megaptera novaeangliae*	Hawaii	11,398	Wade	Strategic, depleted	Not Listed	Frequent
Humpback Whale	*Megaptera novaeangliae*	Mexico	3,264	Wade	Strategic, depleted	Threatened	Frequent
Fin Whale	*Balaenoptera physalus*	Northeast Specific	NA	NMFS	Strategic, depleted	Endangered	Rare
Harbor Seal	*Phoca vitulina*	Sitka/Chatham Strait	14,855	NMFS	Not Strategic, not depleted	Not Listed	Frequent
Dall's Porpoise	*Phocoenoides dalli*	Alaska	83,400	NMFS	Not Strategic, not depleted	Not Listed	Rare
Gray Whale	*Eschrichtius robustus*	Eastern North Pacific	19,000	NMFS 2015 Website	Not Strategic, not depleted	Not Listed	Rare
Habor Porpoise	*Phocoena phocoena*	Southeast Alaska	11,146	NMFS	Strategic, not depleted	Not Listed	Infrequent
Killer Whale	*Orcinus orca*	West Coast Transient	243	NMFS	Not Strategic, not depleted	Not Listed	Frequent
Killer Whale	*Orcinus orca*	Gulf, Aleutian Bearing Transient	587	NMFS	Not Strategic, not depleted	Not Listed	Frequent
Killer Whale	*Orcinus orca*	Norther Resident (BC)	261	NMFS	Not Strategic, not depleted	Not Listed	Rare
Killer Whale	*Orcinus orca*	Alaska Resident	2,347	NMFS	Not Strategic, not depleted	Not Listed	Rare
Pacific White Sided Dolphin	*Lagenorhynchus obliquidens)*	North Pacific	26,880	NMFS	Not Strategic, not depleted	Not Listed	Rare
Mike Whale	*B. acutorostrata*	Alaska	NA	NMFS	Not Strategic, not depleted	Not Listed	Rare
Northern Right Whale	*Eubalaena japonica*	Eastern North Pacific	31	NMFS	Strategic, depleted	Endangered	Rare
Sperm Whale	*Physeter macrocephalus*	North Pacific	NA	NMFS	Strategic, depleted	Endangered	Rare
Northern Fur Seal	*inus ursinus*	Eastern Pacific	637,561	NMFS	Strategic, depleted	Not Listed	Rare
Cuvier's Beaked Whale	*Ziphius cavirostris)*	Alaska	NA	NMFS	Not Strategic, not depleted	Not Listed	Rare

[a] Occurrence in the project area based on surveys from 1994 to 2002 as reported in Straley and Pendell 2017 and personal communication with individuals that work at this location.

Information pertaining to density of marine mammals in the north east portion of Sitka Sound is limited. Research to determine the species and numbers of marine mammals likely to be found within the project area included the following.

- Reviewing the NOAA online Mapper
- Reviewing NMFS Stock Assessment Reports for status and abundance and group size information.
- Discussing the project with HPMS boat yard staff who have worked at the facility since 2005.
- Discussion with staff of McGraw's Custom Construction, Inc. who was the contractor on the HPMS dock facility and installed all of the existing piling between October 2010 and March 2011. A condition of the US Army Corp of Engineers Permit for this project was to monitor for marine mammals within a 200 meter radius of the project.
- Reviewing 21 days of marine mammal observation logs from construction at the GPIP Dock in Silver Bay in October and November of 2017. The logs recorded marine mammal sightings from the north end of Eastern Channel/mouth of Silver Bay to the end of Silver Bay (Turnagain 2017);
- Reviewing the marine mammal observation report from the Petro Marine Dock construction at the south end of Sitka Channel in 2017. The report documented 8 days of monitoring between January 11 and 23, 2017 (Windward 2017);
- Summary report by Professor Jan Straley summarizing marine mammal occurrence in Sitka Sound. Between September and May from 1994 to 2002, weekly land based surveys of marine mammals were conducted from Sitka's Whale Park, located on the western edge of Eastern Channel at the entrance to Silver Bay. Vessel based surveys were also conducted in Sitka Sound during various months throughout the year from 2000 to 2017 (Straley and Pendell 2017). This report was used to estimate species occurrence and groups sizes as outlined in Table 5 (Straley and Pendell 2017);

The majority of the marine mammal observation efforts listed above documented marine mammals in fall and/or winter months. The proposed project would be constructed during the fall and winter months. These reports help to understand species occurrence in the action area, the sighting information should be in line with occurrence and densities that would occur during the proposed October-February work period.

The monitoring reports from the Sitka region, and discussions with others who worked near the project area all indicate that humpback whales, harbor seals, and Steller sea lions are frequently sighted in the project vicinity (Straley and Pendell 2017, McGraw 2019). According to Straley, transient killer whales can also occur frequently in the project area as they pass through to feed on marine mammals (Straley and Pendell 2017). Harbor porpoise can also occur in the action area, however sightings during the proposed work period from October – February are uncommon. Gray whales have been document in the project area however sightings are rare (Straley and Pendell 2017). Minke whales were observed and taken during the Biorka

Island Dock Replacement project which is was also located in Sitka Sound in 2017 and therefore it is possible that they could occur in the project area. (Biorka Island Dock). Exposure of these species to project impacts is likely, and their take is requested.

Although listed on the NMFS Mapper (NMFS 2019), the other species listed in Table 4 are rare in the project vicinity: Straley et al.'s surveys marine mammal monitoring during GPIP Dock Construction, and marine mammal monitoring during Petro Marine Dock Replacement did not observe fin whale, North Pacific right whale, sperm whale, Cuvier's beaked whale, Dall's porpoise, or norther fur seal. During Straley's eight years of surveys, seven Pacific white sided dolphins were observed. Therefore, exposure of these species to project impacts is considered unlikely, and their take is not requested, and they are not discussed in this document. This IHA application is limited to humpback whales, killer whales, harbor porpoises, harbor seals, and Steller sea lions, gray whales, and minke whales and assesses the potential impacts of the project on these five species, which are discussed more fully in Section 4.

4 Affected Species Status and Distribution

This IHA application is requesting incidental take for potential underwater acoustic disturbance from pile installation activities at the Project site for the following seven species: harbor seals, Steller sea lions (eastern and western DPS), humpback whales, (Hawaii DPS of the CNP stock), transient killer whales (potentially two stocks), gray whale, minke whale and harbor porpoise.

4.1 Harbor Seal

4.1.1 Distribution and Status

Harbor seals inhabit coastal and estuarine waters off Alaska. They haul out on rocks, reefs, beaches, and drifting glacial ice, and feed in marine, estuarine, and occasionally fresh waters (Allen and Angliss 2014, 2015). Harbor seals in Southeast Alaska are considered non-migratory with local movements attributed to factors such as prey availability, weather, and reproduction. In 2010, NMFS identified 12 stocks of harbor seals in Alaska based on genetic structure (Allen and Angliss 2015). The Sitka/Chatham (S/C) stock is genetically distinct and believed to be year-round residents of the region; therefore, estimates of abundance are considered reliable for this stock. During the 2011 range-wide survey, there were approximately 325 haulout locations identified within the range of the S/C stock5. Based on aerial survey data, the current abundance estimate for the S/C stock is 14,855 individuals (Allen and Angliss 2014) (see Table 4). The population trend for the S/C harbor seal stock is positive (Muto *et al.* 2016). Harbor seals are not considered depleted under the MMPA, they are not listed under the ESA, and none of the stocks are classified as strategic (Muto *et al.* 2016).

4.1.2 Presence in Sitka Sound and the Action Area

Harbor seals are common in the inside waters of southeastern Alaska, including in Sitka Sound and within the project action area. The species were seen during most months of monitoring (September through May) from Whale Park between 1994 and 2002, except in December and May (Straley and Pendell 2017). Harbor seals were seen on 10 out of the 21 days of monitoring for GPIP dock construction between October and November 2017, and 2 out of 8 days of monitoring for the Petro Marine dock in January 2017 (Turnagain 2017 and Windward 2017).

Straley et al.'s data indicates a typical group size between 1 and 2 harbor seals, a maximum group size of 2 seals. Observations during the original construction of the Halibut Point Marine Services dock facility recorded zero Harbor Seals within the 200 meter shutdown zone during pile driving operations. Observers indicated only observing individual seals outside the 200 meter zone 2-3 times per week. (McGraw 2019).

Harbor seals haul out of the water periodically to rest, give birth, and nurse their pups. According to the Alaska Fisheries Science Center's list of harbor seal haul-out locations, the closest listed haulout (id CE49 name CE49C) is located in Sitka Sound approximately 6.4 km south west, of the project site (AFSC 2019).

4.1.3 Acoustics

According to Kastak and Schusterman (1995), harbor seals respond to underwater sounds below 180 kHz. Their functional high frequency limit is about 60 kHz and peak sensitivity is around 32kHz. Harbor seals have reduced hearing ability for in air sounds, as they respond to sounds from 1-22 kHz with a peak sensitivity of 12 kHz.

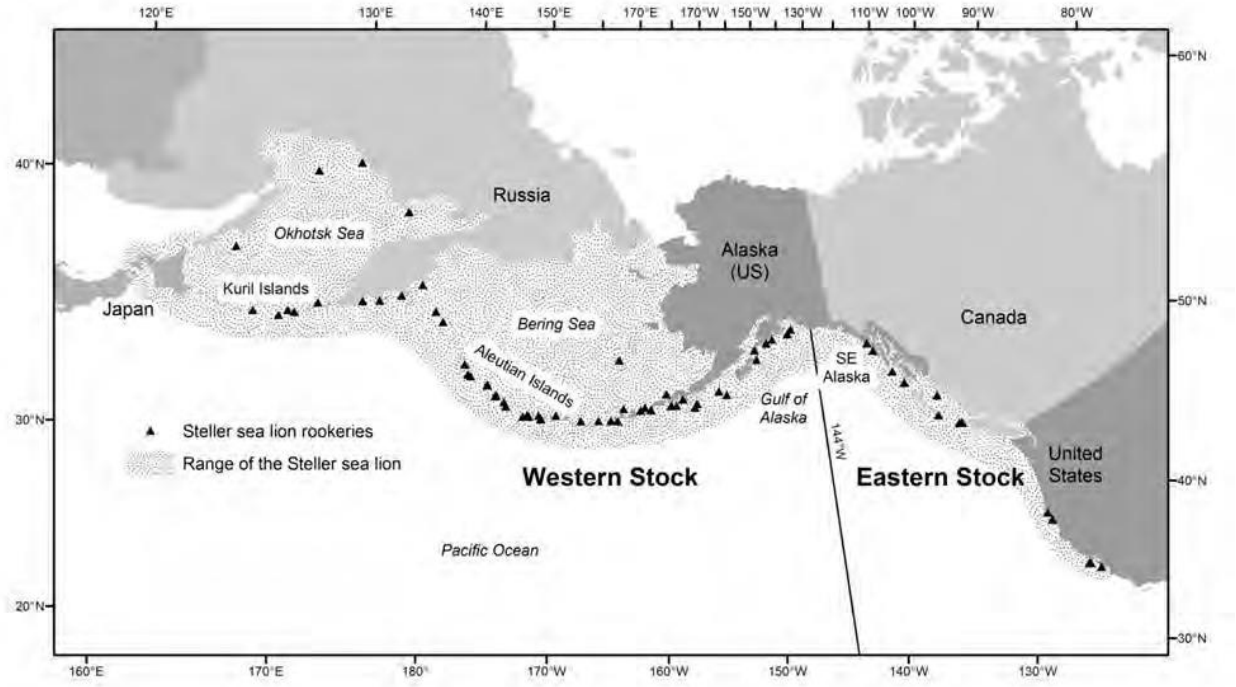
4.2 Steller Sea Lion

4.2.1 Distribution and Status

Steller sea lions have been studied throughout their range for the past several decades (Calkins and Pitcher 1982; Fritz *et al.* 1995, 2008, 2013, 2016; Loughlin *et al.* 1984, 1987, 1990, 1992; Loughlin and York 2000; Merrick *et al.* 1987; Merrick and Loughlin 1997; NMFS 1995, 2008, 2013; Sease *et al.* 2001). Their range includes the North Pacific Rim from northern Japan to California, with centers of abundance located in the Gulf of Alaska and Aleutian Islands. Large numbers of individuals disperse widely outside of the breeding season (late May to early July), thus potentially intermixing with animals from other areas to access seasonally important prey resources (Allen and Angliss 2014).

In 1997, based on demographic and genetic dissimilarities, NMFS identified two DPSs of Steller sea lions under the ESA: a western DPS and an eastern DPS. The western DPS breeds on rookeries located west of 144°W in Alaska and Russia, whereas the eastern DPS breeds on rookeries in southeast Alaska through California. The majority of Steller sea lions are part of the eastern DPS (Jemison *et al.* 2013). In recent years, there has been an increasing trend of western DPS animals occurring and breeding in Southeast Alaska (NMFS 2013; Fritz *et al.* 2015). Figure 5 below depicts the geographical delineation of these two DPSs.

Figure 5 – Steller Sea Lion Range and Rookery Locations with designation between western and eastern DPS.



4.2.1.1 Western DPS

The current minimum population of western DPS sea lions in Alaska is estimated at 49,497 based on 2014 survey results (DeMaster 2014; Fritz *et al.* 2015; Muto *et al.* 2016). For this estimate, pups were counted during the breeding season, and the numbers of births were estimated from the pup count. Because of uncertainties regarding the use of pup data, this estimate is also considered the minimum population estimate. During the 1980s, counts of western Steller sea lions declined approximately 15 percent per year (NMFS 2008), which prompted the threatened listing under the ESA. Continued declines in the 1990s resulted in listing the species as endangered in 1997 (NMFS 2008). Survey data in 2002 and subsequent surveys suggest that the overall decline stopped between 2000 and 2002 (Sease and Gudmundson 2002). Trend data collected through 2014 suggest there is strong evidence that the population has increased between 2000 and 2014; however, there are also strong regional differences across the range in Alaska (Muto *et al.* 2016). Therefore, the western DPS remains listed as endangered under the ESA, and depleted under the MMPA. As a result, the DPS is classified as a strategic stock.

4.2.1.2 Eastern DPS

Steller sea lions occurring in Southeast Alaska are dominated by individuals from the eastern DPS. The current total population estimate for eastern DPS Steller sea lions is estimated at 60,131 based on counts made between 2009 and 2013 (Allen and Angliss 2014; Muto *et al*. 2016). This estimate is also considered the minimum population estimate. The best available information indicates the eastern DPS has increased at a rate of 4.18 percent per year between

1979 and 2010 based on an analysis of pup counts in California, Oregon, British Columbia, and Southeast Alaska (Allen and Angliss 2014). The increase in the eastern DPS has been driven by growth in pup counts in all regions (NMFS 2013). As a result of the sustained increase in abundance (Pitcher *et al*. 2007), the eastern DPS of Steller sea lions has been de-listed under the ESA, but is still considered depleted and strategic under the MMPA.

4.2.1.3 Overlap between the Eastern and Western DPS

Movement between the western and eastern DPS of Steller sea lions occurs, and increasing numbers of individuals from the western DPS have been seen in Southeast Alaska in recent years (NMFS 2013, Fritz *et al.* 2013, 2016; DeMaster 2014). This DPS-exchange is especially evident in the outer Southeast coast of Alaska including Sitka Sound. The distribution of marked animals (along with other demographic data) indicates that movements of Steller sea lions during the breeding season result in a small net annual movement of animals from southeast Alaska (eastern DPS) to the western DPS (approximately 80 sea lions total) but a much larger inter-regional movement between the western DPS and the eastern DPS (approximately 1,000 sea lions per year; Fritz *et al.* 2016). DNA analyses of pup tissue samples demonstrate that recently-established rookeries in northern southeast Alaska have been partially to predominately formed by western DPS females (Gelatt *et al.* 2007, Jemison *et al.* 2013).

4.2.2 Critical Habitat

Critical habitat has been defined in Southeast Alaska at major haulouts and major rookeries (50 CFR 226.202). Critical habitat has been defined in Southeast Alaska at major haulouts and major rookeries (50 CFR 226.202).

The project action area does not overlap Steller sea lion critical habitat. The Biorka Island haulout is the closest designated critical habitat and is over 25 kilometers southwest of the project area. Steller sea lions also haul out on buoys and navigational markers in Sitka Sound and along the rocky shores of Sugarloaf south of the project site. These haulouts are far beyond in-water and in-air noise disturbance threshold for hauled-out pinnipeds as described in Section 1.3

4.2.3 Presence in Sitka Sound and the Action Area

Steller sea lions are common in the inside waters of southeastern Alaska and are common in the vicinity of the project. Eastern DPS and Western DPS species are thought to be within Sitka Sound.

Steller sea lions were seen during every month of monitoring (September to May) between 1994 and 2002 (Straley and Pendell 2017). Individual sea lions were seen on 19 of 21 days in Silver Bay and Easter Channel during monitoring for GPIP dock construction between October and November 2017 (Turnagain 2017). During 8 day of monitoring for the Petro Marine dock in January 2017, individual sea lions were seen on 3 days (Windward 2017).

During Straley's surveys sealions were often seen in groups of 2 to 3; however, a group of more than 100 was sighted on at least one occasion (Straley and Pendell 2017). Steller sea lions in

groups of 1 to 8 individuals were observed around Sitka GPIP dock construction. All Steller sea lions were alone in Sitka Channel during Petro Marine Dock construction monitoring (Windward 2017).

Observations during the original construction of the Halibut Point Marine Services dock facility recorded zero Steller sea lions within the 200 meter shutdown zone during pile driving operations. Observers indicated observing individual sea lions outside the 200 meter zone 4-5 times per week. (McGraw 2019). During the summer months sea lions are seen in the project area daily. 2-3 individual sea lions feed on fish carcasses dumped adjacent to the project site from fishing charter operations in a near by private marina. However, during the proposed project timing of fall and winter; the charter fishing operations are not underway and the sea lions are not as active in the area. (McGraw 2019)

4.2.4 Acoustics

Hearing capacity for Steller sea lions is thought to be similar to the hearing range of California Sea lions ranging from 1-80 kHz in water and less than 30 kHz in air (Nedwell *et al*. 2004). Kastelein *et al*. (2005) documented that the best hearing range for Steller sea lions was 1-16 kHz.

4.3 Humpback Whale

4.3.1 Distribution and Status

Humpback whales are the most commonly observed baleen whale in Sitka Sound and generally throughout Southeast Alaska. The humpback whales of Southeast Alaska and Northern British Columbia form a genetically discrete feeding aggregation, migrating seasonally between lower latitude mating and calving areas to high latitude feeding areas (Gaskin 1982; Baker *et al* 1986; Calambokidis *et al.* 2001). While a very small degree of interchange has been documented, these feeding aggregations are generally isolated from each another (Witheveen *et al.* 2011).

The humpback whale population was considerably reduced due to intensive commercial exploitation during the 20th century (Perry *et al.* 1999). In 1970, the humpback whale was listed as endangered under the ESA. As a result of the ESA listing, the central North Pacific Stock of humpback whale was also designated as depleted under the MMPA. The humpback whale is also considered a strategic stock under the MMPA. In 1991, NMFS published a Final Recovery Plan for Humpback Whales (NMFS 1992).

A large-scale study of humpback whales throughout the North Pacific was conducted between 2004 and 2006 (the Structure of Populations, Levels of Abundance, and Status of Humpbacks [SPLASH] project).

Initial results from this project including abundance estimates and movement information have been reported in Calambokidis *et al.* (2008), Barlow *et al.* (2011), and Baker *et al*. (2008). Abundance estimates for Hawaii show an annual increase that ranged from 5.5 to 6.0 percent 1991-1993 (Calambokidis *et al.* 2008), and a population that is doubling approximately every 15

years (Heintz *et al*. 2010). It is also clear that the abundance of humpback whales has increased in Southeast Alaska (*Muto et al.* 2016).

On February 26, 2014, the State of Alaska submitted a petition to delineate the CNP stock of the humpback whale as a DPS and subsequently remove that DPS from the ESA List of Endangered and Threatened Species. NMFS conducted a review of the humpback whale DPS designation and ESA listings to prepare a status report12. Based on information presented in the status report, NMFS proposed a revised species-wide listing of the humpback whale in 2015. A revision to the status of humpback whale DPSs was finalized by NMFS on September 8, 201614, effective October 11, 2016. In the final decision, NMFS recognized the existence of 14 DPSs, classified four of those as endangered and one as threatened, and determined that the remaining nine DPSs do not warrant protection under the ESA. Three DPSs of humpback whales occur in waters off the coast of Alaska: the Western North Pacific (WNP) DPS, an endangered species under the ESA; the Mexico DPS, listed as threatened under the ESA; and Hawaii DPS, which is not listed under the ESA. Wade *et al*. (2016) determined that humpback whales from the endangered WNP DPS are uncommon in waters off Alaska and are only likely to be encountered in the Aleutian Islands and Bering Sea region. Mexico DPS whales occur in the Gulf of Alaska with a 10.5 percent probability of occurrence. Humpback whales in Southeast Alaska are most likely to be from the Hawaii DPS (93.9 percent probability) (Wade *et al*. 2016).

Under the MMPA, humpback whale DPSs are considered to be depleted based solely on their ESA listing status. Therefore, humpback whale DPSs that are listed as threatened or endangered would retain depleted status under the MMPA, and DPSs that are not listed as threatened or endangered would not be considered depleted under the MMPA. NMFS would conduct a review of humpback whale stock delineations in waters under the jurisdiction of the U.S. to determine whether any stocks should be realigned in light of the ESA. Until such time as the MMPA stock delineations are reviewed, NMFS would treat existing MMPA stocks that fully or partially coincide with a listed DPS as depleted and stocks that do not fully or partially coincide with a listed DPS as not depleted for management purposes. Therefore, as shown in Table 3-1, the Hawaiian DPS is considered as Not Strategic, Non-depleted under the MMPA, while the Mexico DPS is considered Strategic, Depleted. As noted above, humpback whales in southeast Alaska, including Sitka Sound, are most likely to be from the CNP stock/Hawaii DPS. However, for this application, based on NMFS recommendation for proposed actions off Southeast Alaska, 6.1 percent of humpback whales has been apportioned to the Mexico DPSs (Wade *et al*. 2016).

4.3.2 Critical Habitat

Critical habitat has not been designated for the humpback whale.

4.3.3 Presence in Sitka Sound and the Action Area

Although humpback whales are known to undertake seasonal migrations from their tropical calving and breeding grounds in winter to their high-latitude feeding grounds in summer, humpback whales have been observed in Southeast Alaska in all months of the year. Humpback whales are most common in Sitka Sound's Eastern Channel in November, December, and

January (Straley and Pendell 2017). In late fall and winter, herring sometimes overwinter in deep fjords in Silver Bay and Eastern Channel, and humpback whales aggregate in these areas to feed on them. At some point in the late winter, it is likely that whales migrate south across the North Pacific to their mating and calving grounds in Hawaii and Mexico; however, this likely occurs after herring have moved out of the fjords. Humpback whales have been documented making this migration in under forty days, allowing whales to feed longer in Alaska before they migrate south for mating and calving activities (ASG 1997). In the summer when prey is dispersed throughout Sitka Sound, humpback whales also disperse throughout the Sound (Straley and Pendell 2017).

During 190 hours of observation from 1994 to 2002 from Sitka's Whale Park, 440 humpback whales were observed (Straley and Pendell 2017). During 21 days of monitoring during the construction of GPIP Dock between October 9 and November 9, 2017, 39 humpback whales were observed (Turnagain 2017). No humpback whales were observed within Sitka Channel during the 8 days of monitoring in January 2017 during the construction of the Sitka Petro Dock (Windward 2017).

Most humpback whales observed in the area were solitary; however, groups up to 10 individuals were seen during Straley's observations and the average group size was 2 whales. During work on GPIP Dock, groups of 5 and 10 individuals were seen a few times, but most of the time, single whales were observed near the mouth of Silver Bay (Turnagain 2017). In most cases, humpback whales were feeding when they were observed.

The observation data indicated above is primarily from observation in Southern Sitka Sound. The project area is on the north side of Sitka Sound. There is no recorded observation data from the immediate project area. Halibut Point Marine staff works year-round at the project site and note that humpback whales are rarely seen during the months from October through mid-February. Halibut Point Marine staff noted that starting in Late February humpback whale activity increases and whales are frequently seen during the months of March into mid-April. (HPMS 2019) This activity coincides with the migration of herring into Sitka sound for spawning.

4.3.4 Acoustics

Southall *et al*. (2007) categorized humpback whales in the low frequency functional hearing group, with and estimated auditory bandwidth of 7 to 22 kHz.

4.4 Killer Whale

4.4.1 Distribution and Status

Killer whales are found throughout the North Pacific. Along the west coast of North America, killer whales occur along the entire Alaskan coast, in British Columbia and Washington inland waterways, and along the outer coasts of Washington, Oregon, and California (Allen and Angliss 2014). Seasonal and year-round occurrence has been documented for killer whales throughout Alaska and in the intra-coastal waterways of British Columbia and Washington State. Killer whales that are observed in Southeast Alaska could belong to one of three different stocks: Eastern North Pacific Northern Resident Stock (Northern residents); Gulf of Alaska, Aleutian

Islands, and Bering Sea Transient Stock (Gulf of Alaska transients); or West Coast Transient Stock. The Gulf of Alaska Transient Stock occupies a range that includes southeastern Alaska. Photo-identification studies have identified 587 individual whales in this stock (Table 3-1). A total of 219 killer whales from the West Coast Transient Stock have also been identified between Southeast Alaska and British Columbia (Allen and Angliss 2013). More recent analyses of photographic data identified 243 individual transient killer whales in this stock (Allen and Angliss 2013). From 1991 to 2007, an increasing population trend of 5.2 percent annually has been documented for transient killer whales in Southeast Alaska (Dahlheim et al. 2009). All killer whale stocks in Southeast Alaska are protected under the MMPA. However, none of them are designated as depleted or listed as threatened or endangered under the ESA (Allen and Angliss 2014). Therefore, none of the three stocks of killer whales are classified as strategic.

4.4.2 Presence in Sitka Sound and the Action Area

Forty-four (44) killer whales were observed during 190 hours of observation from Whale Point between September and May from 1994 to 2002 (Straley and Pendell 2017). Three killer whales were documented in Sitka Channel on one day in January 2017 during the Petro Marine Dock construction (Windward 2017). Seven killer whales were observed in June, but no killer whales were seen in July, August, or September in 2018 at Biorka Island (Turnagain 2018). No killer whales were observed in October or November 2017 on the western side of Eastern Channel or Silver Bay (Turnagain 2017).

Straley's survey data indicates a typical killer whale group size between 4 and 8 and a maximum group size of 8 whales in the area (Straley and Pendell 2017). In general, killer whales are feeding while in the project area.

Transient killer whales, primarily from the West Coast transient stock, occur most frequently in the project area. Less often, whales from the Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea transient stock occur in the project area. Because of their transient nature, it is difficult to predict when killer whales will be present in the area. Whales from the Alaska resident stock and the Northern resident stock primarily feed on fish and do occur in Southeast Alaska; however, they are rare in the project area (Straley and Pendell 2017).

Halibut Point Marine Staff has only seen killer whales on one occasion from the project site in the past 5 years. It was a pod of 8 whales that appeared to be stocking sea lions during the summer months in which sea lions feed on fish caraccas' that are dumped by charter fishing boats in the area. (HPMS 2019)

4.4.3 Acoustics

Killer whales have a well-developed sense of hearing and are able to respond to sounds between 1 and 120 kHz, with the most sensitive range between 18 and 42 kHz (Szymanski *et al.* 1999). Their greatest sensitivity is approximately 20 kHz, lower than many other toothed whales.

4.5 Harbor Porpoise

4.5.1 Distribution and Status

Harbor porpoise are common in coastal waters. In the Gulf of Alaska and Southeast Alaska they are observed most frequently in waters less than 350 ft (107 m) deep (Dahlheim *et al*. 2009). Within the inland waters of Southeast Alaska, the harbor porpoise distribution is patchy and clumped. There are three harbor porpoise stocks in Alaska: the Bering Sea Stock; the Southeast Alaska Stock; and the Gulf of Alaska Stock (Angliss and Allen 2015). Only the Southeast Alaska stock occurs in the Action Area (Muto *et al.* 2016). Harbor porpoise numbers for the Southeast Alaska stock are estimated at 11,146 animals (Allen and Angliss 2014). The abundance estimates for harbor porpoise occupying the inland waters of Southeast Alaska was 1,081 in 2012. However, this number may be low due to survey methodology (Allen and Angliss 2014). The mean group size of harbor porpoise in Southeast Alaska is estimated at two to three individuals (Dahlheim *et al.* 2009). Information on harbor porpoise abundance and relative abundance has been collected by NMFS MML using both aerial and shipboard surveys. Aerial surveys of this stock were conducted in June and July 1997 and resulted in an observed abundance estimate of 3,766 (CV = 0.162) porpoise (Hobbs and Waite 2010); the surveys included a subset of smaller bays and inlets. Correction factors for observer perception bias and porpoise availability at the surface were used to develop an estimated corrected abundance of 11,146 (3,766 × _2.96; CV = 0.242) harbor porpoise in the coastal and inside waters of Southeast Alaska (Hobbs and Waite 2010, reported in Muto *et al*. 2016). Harbor porpoise are not designated as depleted under the MMPA or listed as threatened or endangered under the ESA. However, because the abundance estimates are 12 years old and the frequency of incidental mortality in commercial fisheries is not known, the Southeast Alaska Stock of harbor porpoise is classified as a strategic stock under the MMPA (Muto *et al.* 2016).

4.5.2 Presence in Sitka Sound and the Action Area

Harbor porpoises commonly frequent nearshore waters, but are not common in the project vicinity. Monthly tallies from observations from Sitka's Whale Park show harbor porpoises occurring infrequently in or near the action area in March, April, and October between 1994 to 2002 (Straley and Pendell 2017). Meanwhile, no harbor porpoises have been observed more recently during monitoring. No harbor porpoises were seen during the Petro Marine Dock construction monitoring in January 2017 or during monitoring for the GPIP dock between October of November of 2017 (Windward 2017 and Turnagain 2017). Halibut Point Marine staff indicated that they have not seen a harbor porpoise near the project site during the past 5 years (HPMS 2019)

Survey data indicates a typical group size of 5 porpoises and a maximum group size of 8 porpoises. When they do occur near Sitka, they exhibit feeding behavior (Straley and Pendell 2017).

4.5.3 Acoustics

The harbor porpoise has the highest upper-frequency limit of all odontocetes investigated. Kastelein et al.(2002) found that the range of best hearing was from 16 to 140 kHz, with a

reduced sensitivity around 64 kHz. Maximum sensitivity (about 33 dB referenced to 1 micropascal (dB re 1 µPa) occurred between 100 and 140 kHz. This maximum sensitivity range corresponds with the peak frequency of echolocation pulses produced by harbor porpoises (120–130 kHz).

4.6 Gray Whale

4.6.1 Distribution and Status

Gray whales are found exclusively in the North Pacific Ocean. The Eastern North Pacific stock of gray whales inhabit the Chukchi, Beaufort, and Bering Seas in northern Alaska in the summer and fall and California and Mexico in the winter months, with a migration route along the coastal waters of Southeast Alaska. Gray whales have also been observed feeding in waters off Southeast Alaska during the summer (NMFS 2019a).

There are two recognized gray whale stocks in the Pacific Ocean. The Western North Pacific stock largely migrates along the Russian coastline and is unlikely to be found in Southeast Alaska. This stock is classified as endangered by the ESA, with an estimated 140 individual whales in 2012 (NMFS 2014). At one time, the Eastern North Pacific stock of gray whales was also listed as endangered under the ESA but was removed from the list in 1994. Today this stock is abundant, with a population estimated to be near 20,000 whales (NMFS 2014).

4.6.2 Presence in Sitka Sound and the Action Area

The migration pattern of gray whales appears to follow a route along the western coast of Southeast Alaska, traveling northward from British Columbia through Hecate Strait and Dixon Entrance, passing the west coast of Baranof Island from late March to May and then return south in October and November (Jones et al. 1984, Ford et al. 2013). The project area is well inside Sitka Sound on the west coast of Baranof Island and it is unlikely that the Gray Whales will venture this far into Sitka Sound during their migration. During 8 years of observations in Sitka Sound only a single group of 3 gray Whales were observed (Straley 2017).

4.6.3 Acoustics

Gray whales are classified by NMFS as low-frequency cetaceans, with an estimated hearing range of approximately 10 Hz to 30 kHz (NMFS 2018).

4.7 Minke Whale

4.7.1 Distribution and Status

Northern minke whales have a widespread distribution in the Northern Hemisphere and are found throughout the northern Atlantic and Pacific Oceans. Their range extends from the ice edge in the Arctic during the summer to close to the equator during winter (NMFS 2019b)

No estimates have been made for the number of minke whales or population trends in the entire North Pacific.

4.7.2 Presence in Sitka Sound and the Action Area

Minke whales are rare in the action area, but they could be encountered during any given day of construction. During the Biorka Island Dock Replacement project in 2017 two minke whales were observed (Biorka Island Dock)

4.7.3 Acoustics

Minke whales are classified by NMFS as low-frequency cetaceans with a generalized hearing range of 7 hertz (Hz) to 35 kilohertz (kHz; NMFS 2018).

5 Type of Incidental Taking Authorization Requested

The type of incidental taking authorization that is being requested (i.e., takes by harassment only; takes by harassment, injury, and/or death) and the method of incidental taking.

HPMS requests the issuance of an IHA pursuant to Section 101(a)(5) of the MMPA for incidental take by Level A harassment of two species (harbor porpoises, harbor seals), that may occur in the Halibut Point Marine Services North Dolphin Project harassment zones during pile removal and installation. HPMS also requests Level B harassment of seven species (humpback whales, killer whales, gray whales, minke whales, harbor porpoises, harbor seals, and Steller sea lions) that may occur in the Halibut Point Marine Services North Dolphin Project harassment zones during pile removal and installation.

The activities outlined in Section 1 have the potential to take marine mammals by exposure to in-water sound. Both Level A and Level B take of the species listed above will potentially result from noise associated with vibratory pile removal and installation, impact pile installation and anchor drilling.

HPMS requests an IHA for incidental take of marine mammals described within this application for 1 year effective March 1, 2020. HPMS is not requesting a Letter of Authorization (LOA) at this time because the activities described herein are expected to be completed within 1 year from the date of authorization and are not expected to rise to the level of serious injury or mortality, which would require a LOA.

6 Take Estimates for Marine Mammals

The number of marine mammals (by species) that may be taken by each type of taking identified in Section 5, and the number of times such takings by each type of taking are likely to occur.

6.1 ESTIMATED TAKE

Incidental take is estimated for each species considering: 1) Acoustic thresholds above which NMFS believes marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; 2) the size of the action area (the area of water that will be ensonified above acoustic thresholds in a day); 3) the density or occurrence of marine mammals in the action area; and, 4) the number of days or hours of pile driving and removal activity.

Because density data are not available for the action area, group sighting are used as an indicator of how often marine mammals may be present in the action area and typical groups size estimates are used as an indicator of how many animals may be present in each group. Level B take calculations are based on typical group size multiplied by the number of days of estimated pile driving.

The estimated species occurrence in the action area and the take calculation is show in Table 6.

> *Estimated take=Number of animals in group x number of groups each day x days animals are expected in action area during pile driving activity by type (Table 5).*

Table 5 - Estimated Species Occurrence in Action Area and Take Calculation

Species	Estimated frequency of Sightings	Estimated Typical Group Size	Estimated Max Group Size	Level B Take Calculation
Humpback Whale[1]	Daily	1-2	4	2 animals per group x 4 groups per day x 19 days = 152
Killer Whale[2]	Weekly	4-8	8	8 animals in a group × 1 group each week x 3 weeks = 24
Harbor Porpoise[3]	Daily	1-5	8	5 animals in a group x 1 group each day × 19 days = 95
Harbor Seal[4]	Daily	1,2-3	3	3 animals in a group x 3 groups per day x 19 days = 171
Steller Sea Lion[5]	Daily	1-8	8	8 animals in a group x 2 groups x 19 days = 304
Minke Whale[7]	Monthly	3	3	3 animals in a group x 1 group x 1 month = 3

Species	Estimated frequency of Sightings	Estimated Typical Group Size	Estimated Max Group Size	Level A Take Calculation
Gray Whale[6]	Monthly	3	3	3 animals in a group x 1 group x 1 month = 3
Harbor Porpoise	½ Project Days	1-5	8	5 animals in a group x 1 group per day × 10 days = 50
Harbor Seal	½ Project Days	1,2-3	2	2 animals in a group x 1 groups per day x 10 days = 20

[1] Most humpback whales observed in the area were solitary. Straley's survey data reports a typical group size of 2-4 whales (Straley et al 2017). During work on GPIP Dock, groups of 5 and 10 individuals were seen a few times, but most of the time, single whales were observed near the mouth of Silver Bay (Turnagain 2017).
[2] Straley's survey data indicates a typical killer whale group size between 4 and 8 and a maximum group size of 8 whales in the area (Straley et al. 2017). A pod of three killer whales were observed during monitoring for the Petro Marine Dock. (Windward 2017; Turnagain 2018).
[3] Straley's survey data indicates a typical group size of 5 harbor porpoises and a maximum group size of 8 harbor porpoises. No harbor porpoises were seen during the Petro Marine Dock construction monitoring in January 2017 or during monitoring for the GPIP dock between October of November of 2017 (Windward 2017 and Turnagain 2017). They were also not observed near the O'Connell Bridge Lightering Float in September 2018 or Biorka Island between June through September 2018 (Turnagain 2018).
[4] Straley et al.'s data indicates a typical group size between 1 and 2 harbor seals, and a maximum group size of 2 seals. Observations near Sitka Channel recorded only individual seals, and observations for GPIP dock observed mostly individuals, however, a few groups with up to 3 seals were observed.
[5] During Straley's surveys, Steller sea lions were often seen in groups of 2 to solitary or in groups of 2; however, a group of more than 100 was sighted on at least one occasion (Straley et al. 2017). During GPIP dock construction, Steller sea lions were observed in groups of 1 to 8 individuals. During Petro Marine Dock construction monitors observed solitary sea lions (Windward 2017).
[6]Straley's surveys indicated a group of 3 gray whales were observed between 1995 and 2002 (Straley et al. 2017)..
[7] During the Biorka Island Dock Replacement Project two minke whales were taken (Biorka Island Dock)

6.1.1 Humpback Whale

Humpback whales frequent the action area and could be encountered during any given day of pile driving/removal activities. In the project vicinity, humpback whales typically occur in groups of 1 to 2 animals, with an estimated maximum group size of 4 animals. Given the size of the level B harassment zone HPMS conservatively estimates that a 4 groups of 2 humpback whales may occur within the Level B harassment zone every day of the 19-day construction window during active pile driving (2 animals in a group x 4 groups each day × 19 days = 152 animals). Therefore, the HPMS requests authorization for 152 Level B takes of humpback whales. No Level A take of humpback whales is requested.

Based on Wade et al. (2016; Section 4.1), the probability is that 93.9 percent of the humpback whales taken would be from the Hawaii DPS (not listed under ESA) and 6.1 percent of the humpback whales taken would be from the ESA-listed threatened Mexico DPS.

HPMS's request for 152 Level B takes of humpback whale, has a probability of 143 Level B takes of the Hawaii DPS humpback whale and 9 Level B takes of the Mexico DPS humpback whale.

6.1.2 Killer Whales

Killer whales pass through the action area and could be encountered during any given day of pile removal and installation. However it is very unlikely that killer whales would be seen multiple days in a row in the project vicinity. In the project vicinity, typical killer whale pod sizes vary from between 4-8 individuals, with an estimated maximum group size of 8 animals (Straley and Pendell 2017). HPMS conservatively estimates that a group of 8 killer whales may occur within the Level B harassment zone one day per week of during active pile driving (8 animals in a group × 1 group each week x 3 weeks = 24 animals). Therefore, the HPMS requests authorization for 24 Level B takes of killer whales. (To clarify, this request is for 24 takes from all stocks combined, not 24 takes from each stock.) No Level A take of killer whales is requested.

6.1.3 Harbor Porpoise

Harbor porpoises are seen infrequently in the action area, but they could be encountered during any given day of pile replacement activities. In the project vicinity, harbor porpoises typically occur in groups of 1-5 animals, with an estimated maximum group size of 8 animals. HPMS conservatively estimates that a group of 5 harbor porpoise may occur within the Level B harassment zone once each day during the 19-day construction window during active pile driving (5 animals in a group x 1 group each day × 19 days = 95 animals). Therefore, the HPMS conservatively requests authorization for 95 Level B takes of harbor porpoises.

Due to the small size of the harbor porpoise and the larger area that level A harassment could occur, a small quantity of level A take is being requested. It is anticipated that 1 group of 5 animals could be observed on half of the project days. (5 animals in a group x 1 group per day x 10 days = 50 animals)

6.1.4 Harbor Seals

Harbor seals are common in the action area and are expected to be encountered during pile replacement activities. In the action area harbor seals typically occur in groups of 1-3 animals, with an estimated maximum group size of 3 animals. Harbor seals can occur in the project's action area every day. HPMS conservatively estimates that 3 groups of 3 harbor seals may occur within the Level B harassment zone every day that pile driving occurs, and pile driving is estimated to occur on 19 days (3 animals in a group x 3 groups per day x 19 days = 171 animals). Therefore, the HPMS requests authorization for 171 Level B takes of harbor seals.

Due to the small size of the harbor seal and the larger area that level A harassment could occur, a small quantity of level A take is being requested. It is anticipated that 1 group of 2 animals could be observed on half of the project days. (2 animals in a group x 1 group per day x 10 days = 20 animals)

6.1.5 Steller Sea Lions

Steller sea lions are common in the action area and are expected to be encountered during pile removal and driving. In the project vicinity Steller sea lions typically occur in groups of 1-8 animals (Turnagain 2017 and Windward 2017), with an estimated maximum group size of 100

animals (Straley and Pendell 2017). Steller sea lions can occur in the action area every day during construction. HPMS conservatively estimates that a 2 groups of 8 Steller sea lions may occur within the Level B harassment zone every day that pile driving may occur, and pile driving is estimated to occur on 19 days (8 animals in a group x 2 groups x 19 days = 304 animal). Therefore, HPMS request authorization for 304 Level B takes of Steller sea lions. No Level A take of Steller sea lions is requested.

6.1.6 Minke Whale

Minke whales are not common in the project area, however 3 minke whales were observed during the Biorka Island Dock Replacement project in 2017 which is also located in Sitka Sound (Biorka Island Dock). Based on this is possible that a group of 3 minke whales could be observed in the project area. HPMS conservatively estimates that 1 group of 3 minke whales may occur within the Level B harassment zone during the project duration. (3 animals in a group x 1 groups x 1 month = 3 animal). Therefore, HPMS request authorization for 3 Level B takes of minke whales. No Level A take of minke whales is requested.

6.1.7 Gray Whale

Gray whales are not common in the project area, however 3 gray whales were observed during marine mammal observations over an 8 year period from 2015-2002 in Sitka Sound (Straley and Pendell 2017). Based on this Gray Whales could be observed in the project area. HPMS conservatively estimates that 1 group of 3 gray whales may occur within the Level B harassment zone during the project duration. (3 animals in a group x 1 groups x 1 month = 3 animal). Therefore, HPMS request authorization for 3 Level B takes of gray whales. No Level A take of gray whales is requested.

6.2 All Marine Mammal Takes Requested

This analysis for the Halibut Point Marine Services North Dolphin Project predicts 152 potential takes of humpback whales, 24 potential takes of killer whales, 95 potential takes of harbor porpoises, 171 potential takes of harbor seals, 3 takes of minke whales, 3 takes of gray whales and 304 potential takes of Steller sea lions classified as Level B harassment and 50 potential takes of harbor porpoises and 20 potential takes of harbor seals classified as Level A harassment under the MMPA; (Table 6). To mitigate for the large action area and potential periods of limited visibility, the takes requested include extrapolated take. The calculation for extrapolating take is described in Section 11.3.

Table 6 - Take Requests for Marine Mammals and Percent of Stock

Species	**Stock (NEST)[a]**	**Level A**	**Level B**	**Percent of Stock**
Humpback Whale	Hawaii DPS (11,398)[c]	0	143[b]	1.25
Humpback Whale	Mexico DPS (3,264)[c]	0	9 [b]	0.2
Killer Whale	West Coast Transient (243)	0	24	9.8[c] 1.02[c]

	Alaska Resident (2,347) Northern Resident (261)			9.1[c]
Harbor Porpoise	Southeast Alaska (11,146)	50	95	0.85
Gray Whale	Eastern North Pacific (19000)	0	3	0.015
Minke Whale	N/A	0	3	N/A
Harbor Seal	Sitka/Chatham Strait (14,855)	20	171	1.15
Steller Sea Lion	Eastern DPS (49,497)	0	304	0.61[d]
	Western DPS (50,983)	0		0.59[d]

[a] Stock estimate from Muto, M. M. et al. 2016. NOAA Technical Memorandum NMFS-AFSC-355 Alaska Marine Mammal Stock Assessments, 2016 http://www.nmfs.noaa.gov/pr/sars/pdf/ak_2016_final_sars_june.pdf and Appendix 2. Stock Summary Table (last revised December 30, 2016). http://www.nmfs.noaa.gov/pr/sars/pdf/ak_2016_sars_appendix_2.pdf

[b] Under the MMPA humpback whales are considered a single stock (Central North Pacific); however, here they are divided to account for DPSs listed under the ESA. Based on calculations in Wade et al. 2016, 93.9% of the humpback whales in Southeast Alaska are expected to be from the Hawaii DPS and 6.1% are expected to be from the Mexico DPS.

[c] These percentages assume all 18 takes come from each individual stock, thus the percentage are inflated if multiple stocks are actually impacted.

7 Anticipated Impact of the Activity

The anticipated impact of the activity to the species or stock of marine mammal.

HPMS is requesting authorization for Level A and Level B take of marine mammals as listed in Table 6 which shows take requests in relation to the overall stock size of each species. Incidental takes of Steller sea lions and harbor seals will likely be multiple takes of individuals, rather than single takes of unique individuals. The stock take calculations in Table 5 and 6 assume takes of individual animals, instead of repeated takes of a smaller number of individuals; therefore, the stock take percentage calculations are conservative.

Incidental Level B take is expected to result primarily in short-term changes in behavior, such as avoidance of the project area, changes in swimming speed or direction, and changes in foraging behavior. Level B exposure could occur on 19 days when pile driving and removal occurs. Because of the limited time that marine mammals could be exposed to Level B harassment, dolphin installation activities at the Halibut Point Marine Services dock facility would be unlikely to have any impact on stock recruitment or survival, and therefore, would have a negligible impact on the stocks of these species.

HPMS is requesting minimal Level A take that may occur for harbor porpoises and harbor seals during pile driving. Incidental Level A take can cause injury including permanent, partial, or full hearing loss if marine mammals are exposed to underwater sounds exceeding the injury threshold, which vary by species. Marine mammals exposed to high received sound levels may experience non-auditory physiological effect such as increased stress, neurological effects, bubble formation, resonance effects, and other types of organ or tissue damage.

Because of the limited area and time over which harbor porpoises and harbor seals could experience Level A harassment it is not expected that there would be any impact on stock recruitment or survival, and therefore, there would be no impact on the stocks of these species.

8 Anticipated Impacts on Subsistence Uses

The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence users.

The Alaska Department of Fish and Game (Wolfe et al. 2013) has regularly conducted surveys of harbor seal and Steller sea lion subsistence harvest in Alaska. During 2012, the estimated subsistence take of harbor seals in southeast Alaska was 595 seals with 49 of these taken near Sitka (Wolfe et al. 2013). This is the lowest number of seals taken since 1992 (Wolfe et al. 2013) and is attributed to the decline in subsistence hunting pressure over the years as well as a decrease in efficiency per hunter (Wolf et al.2013). Significantly, the peak hunting season in southeast Alaska occurs during the month of November and again over the March to April time frame (Wolfe et al. 2013). This corresponds to times when seals are aggregated in shoal areas as they prey on forage species such as herring, making them easier to find and hunt. The proposed Project is in an area where subsistence hunting for harbor seals or sea lions could occur (Wolfe et al. 2013), but the location is not preferred for hunting. There is little to no hunting documented in the vicinity and there are no harvest quotas for non-listed marine mammals. For these reasons and the fact that Project activities would occur outside of the primary subsistence hunting seasons, there would be no impact on subsistence activities or on the availability of marine mammals for subsistence use.

HPMS has reached out to Jeff Feldpausch, tribal biologist for the Sitka Tribe of Alaska, on potential impacts to subsistence activities and/or the stock from which these activities rely on. Mr. Feldpausch represents subsistence on the Sitka Regional Advisory Committee and has staffed the Sitka Tribe of Alaska's Cultural, Customary, and Traditional Committee for several years. Mr. Feldpausch has not brought forward any concerns regarding potential impacts to the subsistence stock in the area around the Halibut Point Dock to date.

9 Anticipated Impacts on Habitat

9.1 Impacts to Physical Habitat

9.1.1 Project Footprint

Although the expansion of Halibut Point Marine Dock facilities would have some permanent removal of habitat available to marine mammals, the area lost would be very small and the quality of the habitat lost would be low. Most of the project footprint would be within an active marine commercial and industrial area.

9.1.2 Turbidity/Sedimentation

During the estimated 42.5 hours of pile driving, a temporary and localized increase in turbidity near the seafloor would occur in the immediate area surrounding the area where piles are removed and placed. The sediments on the sea floor will be disturbed during pile driving; however, suspension will be brief and very localized and is unlikely to measurably affect marine mammals or their prey in the area.

9.2 Effects of Project Activities on Marine Mammal Habitat

9.2.1 Animal Avoidance or Abandonment

All of these species discussed in this application could experience a temporary loss of suitable habitat, depending on the degree that they use the area, within the action area if elevated noise levels associated with in-water construction result in their displacement from the area. However, displacement of species by noise is expected to be temporary and will not result in long-term effects to the local populations.

9.2.2 Effects of Project Activities on Marine Mammal Prey Habitat

The action area supports marine habitat for prey species including:

- Large populations of anadromous fish including Pacific salmon (five species), cutthroat and steelhead trout, and Dolly Varden (ADFG 2017);
- other species of marine fish such as halibut, lingcod, Pacific cod, greenling, herring, eulachon, and rockfish (ADFG 2017, NMFS 2012); and,
- euphausiids (krill) (NMFS 2012).

Many anadromous streams flow into nearby Sitka Sound including Granite Creek, No Name Creek, and Stargavin Creek however, there are no anadromous fish steams at the project site (ADFG 2017).

Fish populations in the project area that serve as marine mammal prey could be affected by noise from in-water pile-driving. High underwater sound pressure levels have been documented to alter behavior, cause hearing loss, and injure or kill individual fish by causing serious internal injury (Hastings and Popper 2005).

In addition, generally, impacts to marine mammal prey species are expected to be minor and temporary. The area impacted by the project is very small compared to the available habitat around Sitka. The most likely impact to prey will be temporary behavioral avoidance of the

immediate area. During pile driving it is expected that fish and marine mammals would temporarily move to nearby locations and return to the area following cessation of in-water construction activities. Therefore, indirect effects on marine mammal prey during the construction are not expected to be substantial.

10 ANTICIPATED EFFECTS OF HABITAT IMPACTS ON MARINE MAMMALS

The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved.

The most likely effects on marine mammal habitat from the proposed project would be temporary, short duration in-water noise, temporary prey (fish) disturbance, and localized, temporary water quality effects. The direct loss of habitat available to marine mammals during construction due to noise, water quality impacts, and other construction activity is expected to be short-term and minimal.

10.1 Loss of Marine Mammal Habitat Due to Noise

One potential impact on marine mammals associated with the project could be a temporary loss of habitat because of elevated noise levels. Displacement of marine mammals by construction noise is not expected to be permanent nor is it anticipated to have long-term effects on the species. Project activities are not expected to have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations, because pile driving and other construction-related noise sources will be temporary and intermittent.

10.2 Loss of Marine Mammal Habitat Due to Turbidity

Another potential impact on marine mammals associated with the project could be temporary sediment suspension and increased turbidity associated with pile driving and removal in Icy Strait. The temporary and localized turbidity associated with the expansion project is unlikely to measurably affect marine mammals or their prey in the area.

10.3 Disturbance or Loss of Prey Species

As stated in Section 9, fish populations in the project area that serve as marine mammal prey could be affected by noise from in-water pile-driving. It is expected that most fish will be able to move away from the proposed activity to avoid harm and will still be available to marine mammals as a food source. The quantity, quality, and availability of adequate food resources are therefore not likely to be reduced (due to the small area affected, mobility of fish, anticipated recolonization, and the temporary nature of the project).

11 Mitigation Measures

The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Mitigation measures and construction techniques will be employed to minimize effects to marine mammal species and habitat. These measures are described below and presented in detail in the Halibut Point North Dolphin Expansion Project 4MP (Appendix C).

11.1 Mitigation Measures Designed to Reduce Project Impacts

The project uses the most compact design possible, while meeting the demands of the vessels that would use the facility.

- The project uses a design that does not require dredging, blasting, or fill.
- The project uses a design that incorporates the smallest-diameter piles practicable while still minimizing the overall number of piles.
- The project uses a design that places the cruise ship berth and piles at or beyond the 50-foot contour to avoid impacts to the nearshore zone and disturbance to important ecological resources such as submerged aquatic vegetation and diverse substrate composition.
- Floats or barges will not be grounded at any tidal stage.

11.2 Pile Driving and Removal Mitigation Measures

- To minimize noise during impact pile driving, pile caps (pile softening material) will be used. Much of the noise generated during pile installation comes from contact between the pile being driven and the steel template used to hold the pile in place. The contractor will use high-density polyethylene (HDPE) or ultra-high-molecular-weight polyethylene (UHMW) softening material on all templates to eliminate steel on steel noise generation.

- There will be a nominal 10-meter shutdown zone for construction-related activity where acoustic injury is not an issue. This type of work could include (but is not limited to) the following activities: (1) movement of the barge to the pile location; (2) positioning of the pile on the substrate via a crane (i.e., stabbing the pile); (3) removal of the pile from the water column/substrate via a crane (i.e., deadpull); or (4) the placement of sound attenuation devices around the piles. For these activities, monitoring would take place from 15 minutes prior to initiation until the action is complete.

- Qualified Protected Species Observers (PSOs) will be present in the action area during all vibratory pile removal and vibratory, impact, socketing, and anchoring installation. The Marine Mammal Monitoring and Mitigation Plan for the proposed project is included as Appendix C.

- To ensure that the action area has been surveyed for marine mammal presence, pile driving/removal would not begin until a PSO has given a notice to proceed.

- To minimize impact to marine mammals a "soft start" technique would be used when impact pile driving with an initial set of three strikes from the impact hammer at 40 percent energy, followed by a one-minute waiting period, then two subsequent 3-strike sets.

- Prior to pile driving, the action area would be surveyed for marine mammal presence for 30 minutes. If any marine mammal is sighted within a shutdown zone during this 30-minute survey period prior to pile driving, or during the soft-start, HPMS would delay pile driving/removal until the animal(s) is confirmed to have moved outside of and on a path away from the area or if 15 minutes (for pinnipeds or small cetaceans) or 30 minutes (for large cetaceans) have elapsed since the last sighting of the marine mammal within the shutdown zone.

- Shutdowns would be implemented if a marine mammal appears likely to enter a shutdown zone (Section 11.3).

- The U.S. Fish and Wildlife Service (USFWS) manages northern sea otters (*Enhydra lutris kenyoni*) and lists them as a species that can occur in the action area (USFWS 2014). A separate IHA request is being submitted to USFWS concurrently with this application to obtain permission to take sea otters.

11.3 Shutdown and Monitoring Zones

HPMS is requesting Level B take for humpback whale, killer whale, harbor porpoise, harbor seal, and Steller sea lion. HPMS is not requesting take for any other marine mammal. Shutdown and monitoring zones are described in the following sub-sections.

11.3.1 Level A Shutdown and Monitoring Zones

There will be a nominal 10-meter shutdown zone for construction-related activity where acoustic injury is not an issue. This type of work could include (but is not limited to) the following activities:

- Movement of the barge to pile locations;
- Positioning of the pile on the substrate via crane (i.e., stabbing the pile); or
- The placement of sound attenuation devices around the piles.

For these activities, monitoring would take place from 15 minutes prior to initiation until the action is complete.

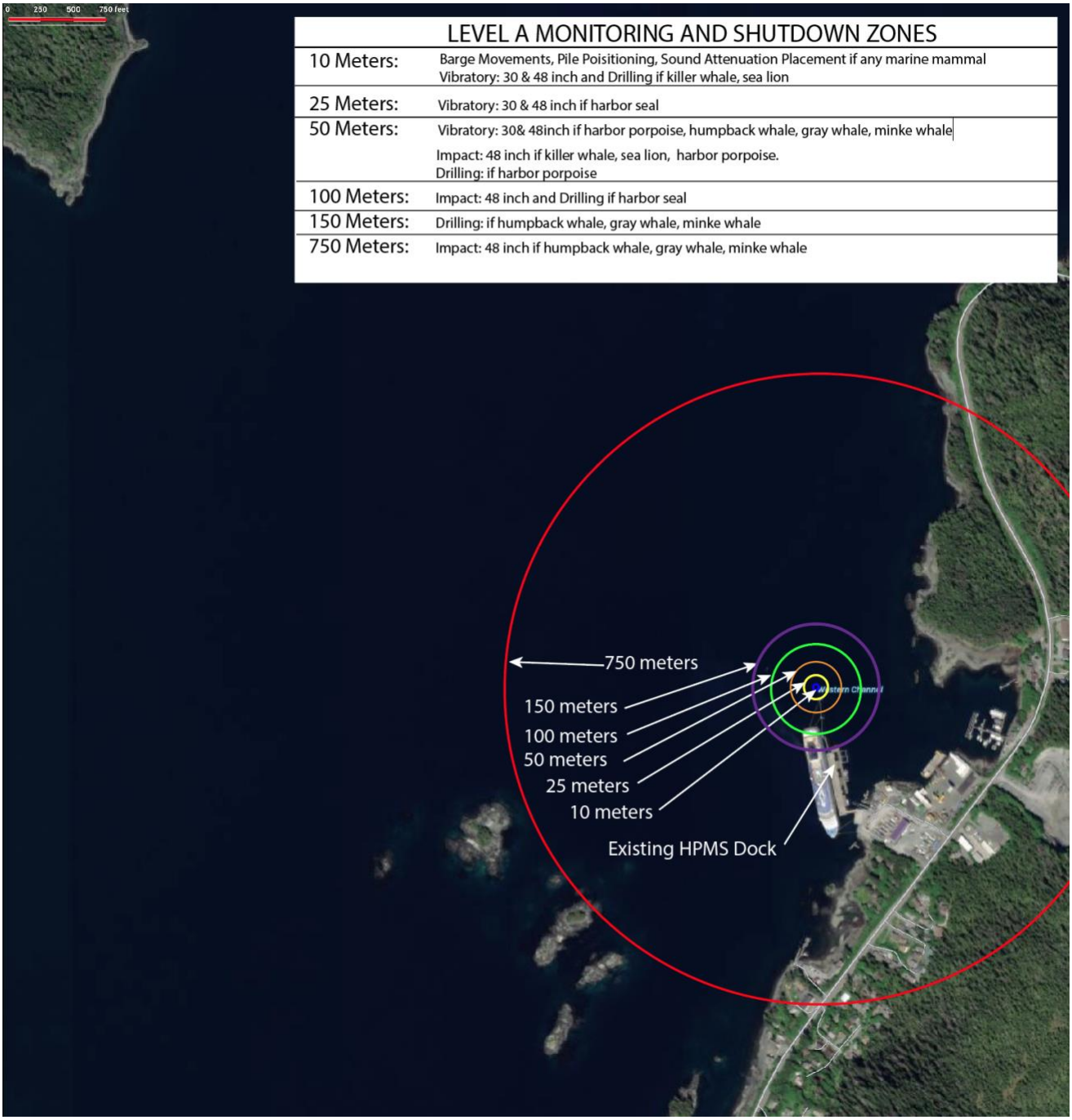
HPMS proposes the following shutdown zones as outlined in Table 7 and Figure 6. These zones will be thoroughly monitored, and, as indicated in the 4MP for this project (Appendix C),

shutdown procedures will be implemented (construction activities suspended) if a marine mammal is observed likely to enter a shutdown zone.

Table 7 - Level A Shutdown and Monitoring Distances

Source	Shutdown Zones in Meters				
	Low-Frequency Cetaceans (humpback whale gray whale, minke whale)	Mid-Frequency Cetaceans (killer whale)	High-Frequency Cetaceans (harbor porpoise)	Phocid (harbor seal)	Otariid (sea lion)
In Water Construction Activities*					
Barge movements, pile positioning, sound attenuation placement*	10	10	10	10	10
Vibratory Pile Driving/Removal					
30-inch steel temporary installation (8 piles; 1 hour per day on 4 days)	50	10	50	25	10
30-inch steel removal (8 piles; 40 min on 2 day)	50	10	50	25	10
48-inch steel permanent installation (10 piles; ~2 hours per day on 5 days)	50	10	50	25	10
Impact Pile Driving					
48-inch steel permanent installation (10 piles; ~6 minutes per day on 5 days)	750	50	50	100	50
Anchor Drilling					
33-inch drilled Anchor Shaft (8 Piles –4 hours per pile)	150	10	50	100	10

Figure 6 - Level A Shutdown Zones



11.3.2 Level B Monitoring Zones

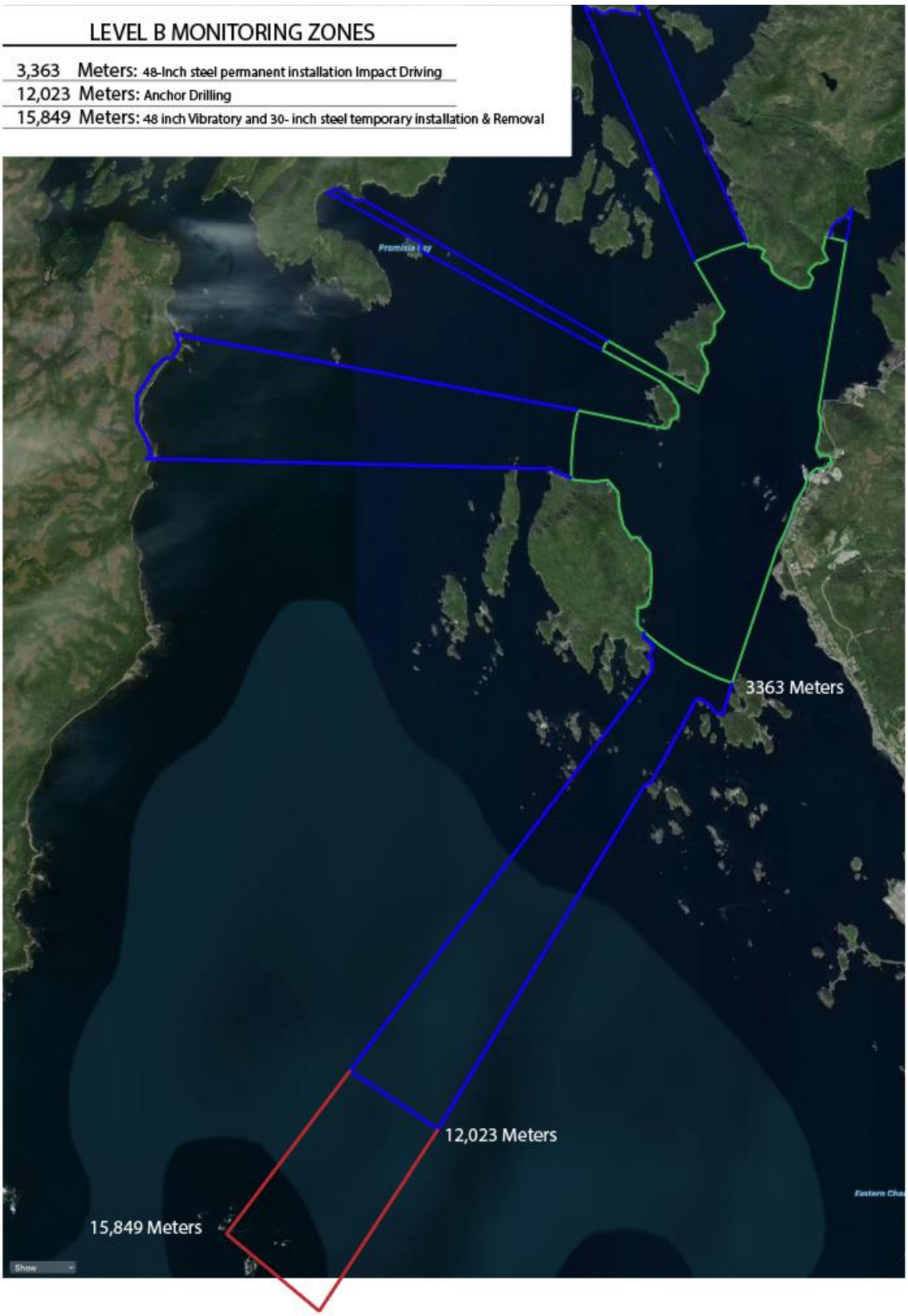
HPMS is requesting Level B take of humpback whale, killer whale, minke whale, gray whale, harbor porpoise, harbor seal, and Steller sea lion incidental to constructing HPMS North Dolphin Addition and shutdowns associated with Level B harassment of these species are not proposed. The monitoring zones associated with Level B disturbance are outlined in Table 8 and Figures 7.

No other Level B take is authorized, and pile driving would be shut down as summarized in Table 8 and Figure 7 to avoid Level B take in the unlikely event that a marine mammal species, other than those listed and discussed in this document, were to enter the action area.

Table 8 - Level B Monitoring Zones

Source	Monitoring Zone (m)*
30-inch steel temporary installation (8 piles; 1 hour per day on 4 days)	15,849
30-inch steel removal (8 piles; 40 min on 2 days)	15,849
48-inch steel permanent installation (10 piles; ~2 hours per day on 5 days)	15,849
Impact Pile Driving	
48-inch steel permanent installation (10 piles; ~6 minutes per day on 5 days)	3,363
Anchor Drilling	
33-inch Anchor Shaft Drilling (8 piles; ~ 8 hours per day on 4 days)	12,023

Figure 7 - Level B Monitoring Zones



12 Arctic Plan of Coordination

Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, submit either a plan of cooperation or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses. (This requirement is applicable only for activities that occur in Alaskan waters north of 60° North latitude.)

Although the action area is located south of 60° north, the latitude NMFS regulations consider Arctic waters and no activities will take place in or near traditional Arctic subsistence hunting areas, there are subsistence uses of marine mammals in Southeast Alaska including the community of Sitka. Alaska Natives have traditionally harvested subsistence resources, including sea lions and harbor seals, in Southeast Alaska for hundreds of years.
Section 11 describes mitigation measures designed to reduce project impacts and Section 8 details subsistence information and consultations with subsistence users in the project vicinity.

13 MONITORING AND REPORTING

The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding.

13.1 Monitoring Protocols

To minimize impacts of project activities on marine mammals, a detailed Marine Mammal Monitoring and Mitigation Plan has been developed for the project and is included as Appendix C. Project shutdown and monitoring zones as outlined in Appendix C and Section 11.3 would be implemented during any in-water pile driving activities associated with the project. If the number of animals of a species exposed to Level A or B harassment approaches the number of takes allowed by the IHA, HPMS will notify NMFS and seek further consultation.

13.2 Monitoring Report

HPMS will submit a draft report to NMFS not later than 90 days following the end of construction activities or 60 days prior to the issuance of any subsequent IHA for the project. HPMS will provide a final report within 30 days following resolution of NMFS' comments on the draft report. Reports will contain, at a minimum the following:

- Date and time that monitored activity begins and ends for each day conducted (monitoring period);
- Construction activities occurring during each daily observation period, including how many and what type of piles driven;
- Deviation from initial proposal in pile numbers, pile types, average driving times, etc.
- Weather parameters in each monitoring period (e.g., wind speed, percent cloud cover, visibility);
- Water conditions in each monitoring period (e.g., sea state, tide state);
- For each marine mammal sighting:
    - Species, numbers, and if possible, sex 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;
    - Type of construction activity that was taking place at the time of sighting;
    - Location and distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
    - Reason why shutdown was implemented (if needed)
    - If shutdown was implemented, behavior reaction noted and if they occurred before or after shutdown.
    - Estimated amount of time that animals remained in Level A or B Zone.

- Description of implementation of mitigation measures within each monitoring period (e.g., shutdown or delay);
- Other human activity in the area within each monitoring period;
- A summary of the following:
    - Total number of individuals of each species detected within Level B Zone, and estimated as taken if correction factor appropriate.
    - Total number of individuals of each species detected within Level A Zone and the average amount of time they remained in that Zone.
    - Daily average number of individuals of each species detected within the Level B Zone, and estimated as taken, if appropriate.

HPMS will also immediately report injured or dead marine mammals to NMFS, and, if the specified activity clearly causes the take of marine mammals in a manner prohibited by the IHA (e.g. serious injury or mortality), HPMS will immediately cease pile activities and report the incident to NMFS by calling the NOAA Fisheries statewide 24-hour Stranding Hotline (877) 925-7773.

14 SUGGESTED MEANS OF COORDINATION

Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.
In-water and in-air noise generated by vibratory and impact pile driving at the Halibut Point Dolphin Expansion Project is the primary issue of concern to local marine mammals during this project. Potential impacts on marine mammals have been studied, with the results used to establish the noise criteria for evaluating take.

The data recorded during marine mammal monitoring for the proposed project will be provided to NMFS in the monitoring report (Section 13.2). The report will provide information on marine mammals' use of Sitka Sound, including numbers before, during, and after pile driving activities. The monitoring data may also inform NMFS and future permit applicants generally about the behavior of marine mammals during pile installation and removal for future projects of a similar nature.

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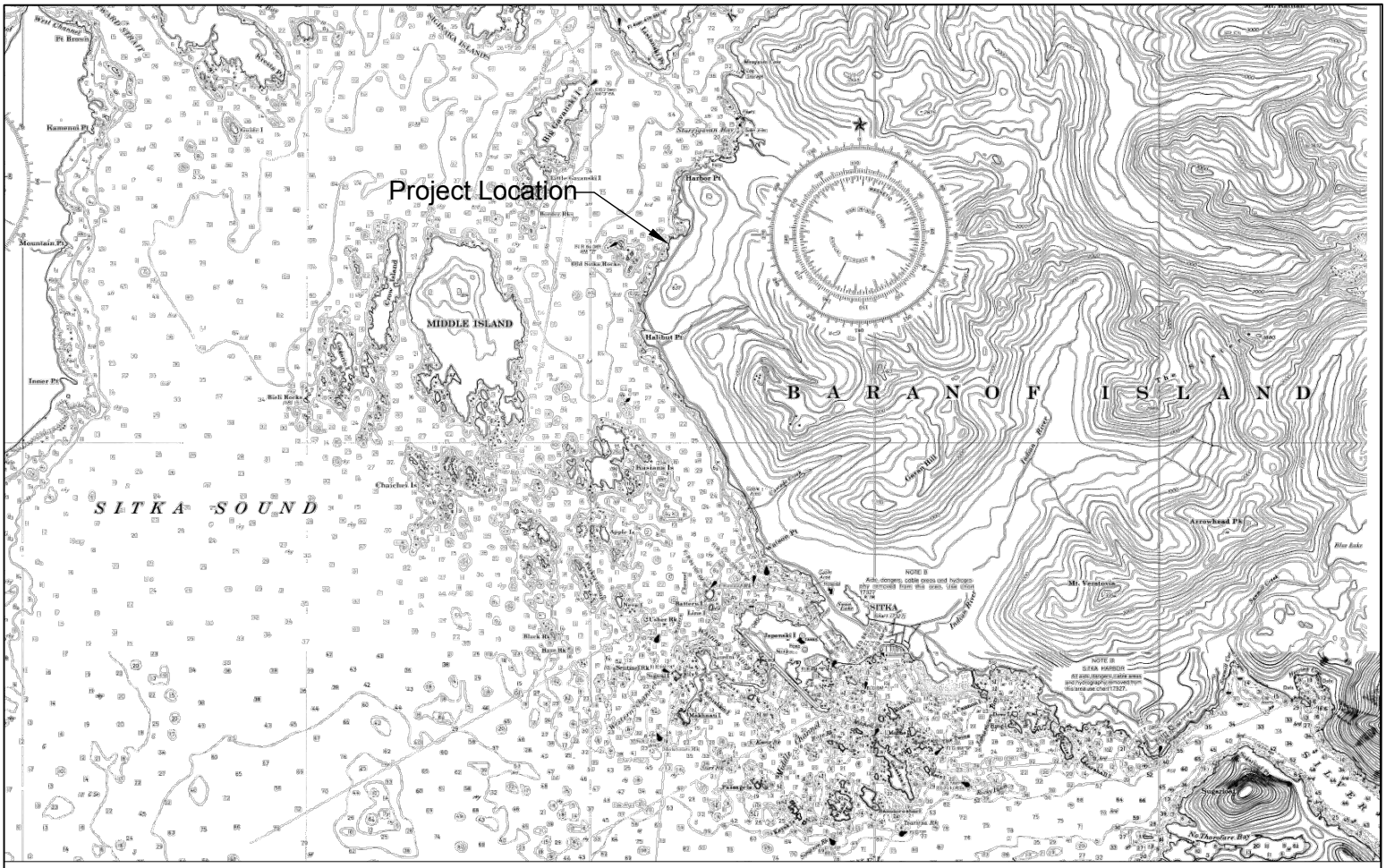
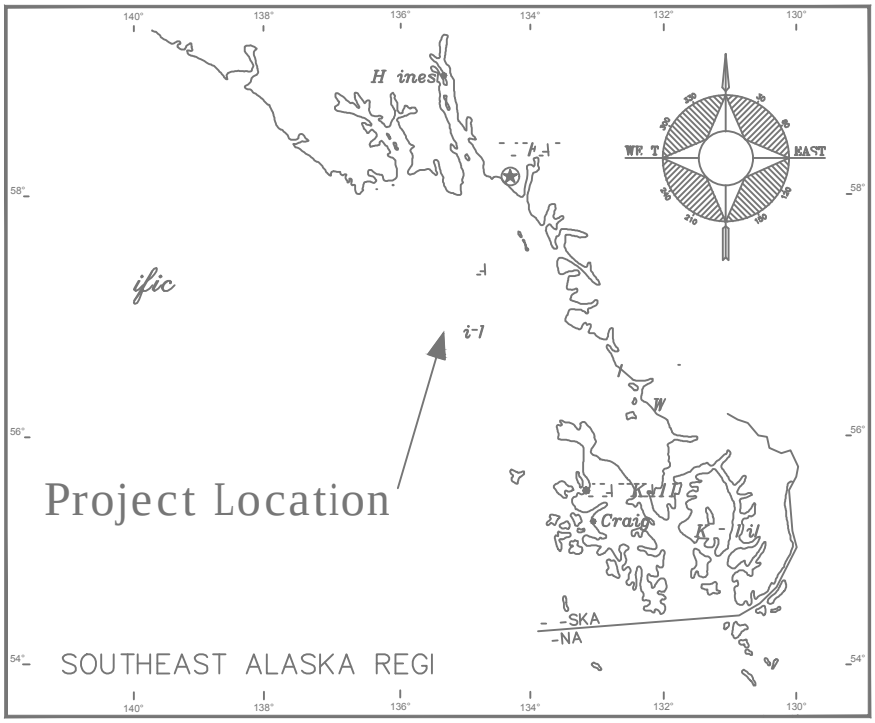
Appendix A. Project Permit Drawings





Purpose: Expansion of Existing Deep Water Dock to Accommodate Larger Ships

Sec: 9 Township: 55 South, Range: 63 East

Copper River Meridian

Location: Sitka Sound

Local Government: City and Borough of Sitka, Alaska

Datum: 0.0' M.L.L.W

Old Sitka Dock
North Mooring Dolphin

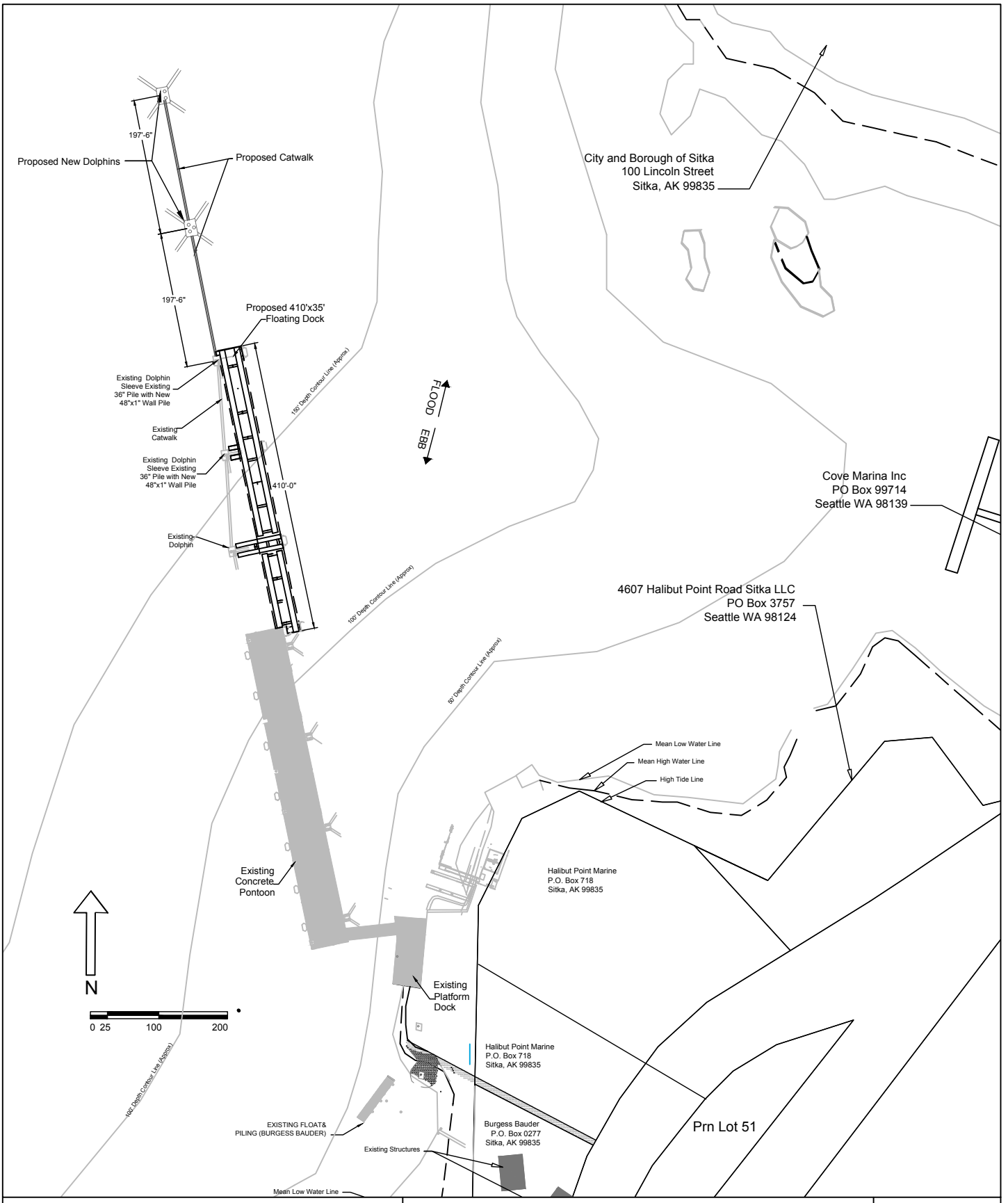
PROJECT LOCATION

Application By
Halibut Point Marine Services

Sitka, AK 99835

MLLW: 0.0'
MHW: 9.1'
HTL:12.7'
Lat 57 06' 55"
Lon 135 23' 34"

Revision:
Date: 7-12-19



Purpose: Expansion of Existing Deep Water Dock to Accommodate Larger Ships

Sec: 9 Township: 55 South, Range: 63 East

Copper River Meridian

Location: Sitka Sound

Local Government: City and Borough of Sitka, Alaska

Datum: 0.0' M.L.L.W

Old Sitka Dock
North Mooring Dolphin

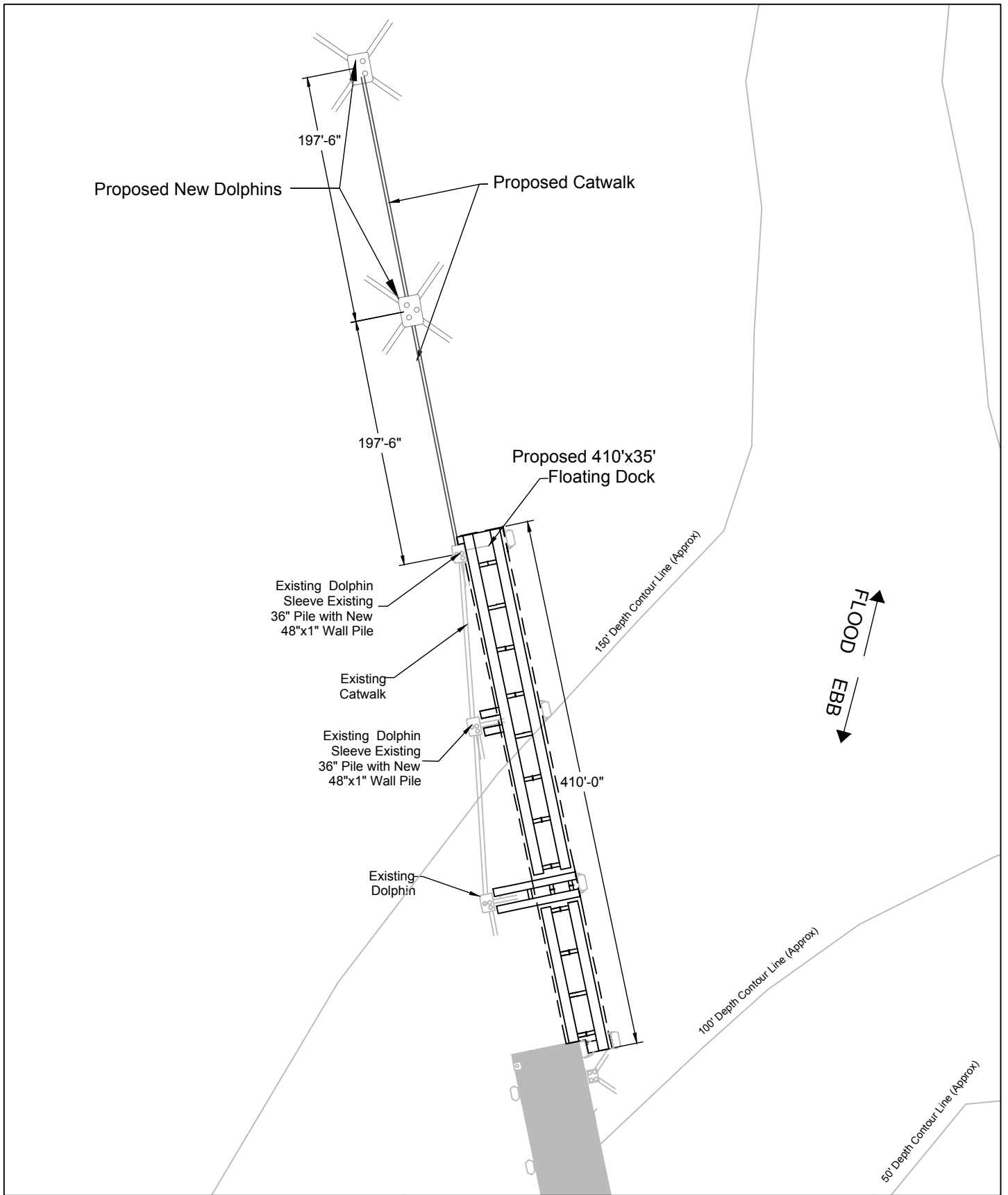
PROJECT OVERVIEW

Application By
Halibut Point Marine Services

Sitka, AK 99835

MLLW: 0.0'
MHW: 9.1'
HTL:12.7'
Lat 57 06' 55"
Lon 135 23' 34"

Revision:
Date: 7-12-19



Purpose: Expansion of Existing Deep Water Dock to Accommodate Larger Ships

Sec: 9 Township: 55 South, Range: 63 East

Copper River Meridian

Location: Sitka Sound

Local Government: City and Borough of Sitka, Alaska

Datum: 0.0' M.L.L.W

Old Sitka Dock
North Mooring Dolphin

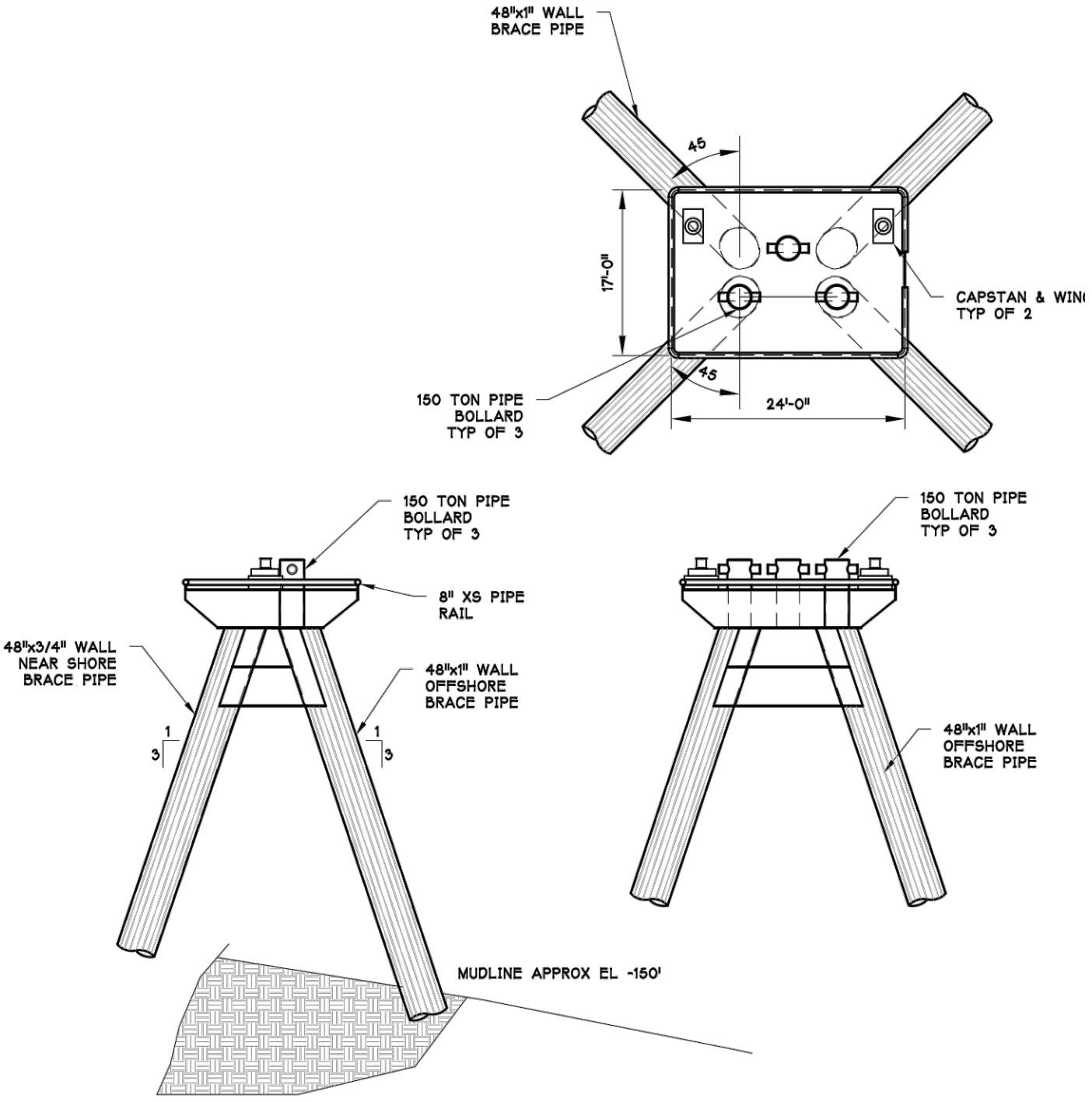
PLAN VIEW

Application By
Halibut Point Marine Services

Sitka, AK 99835

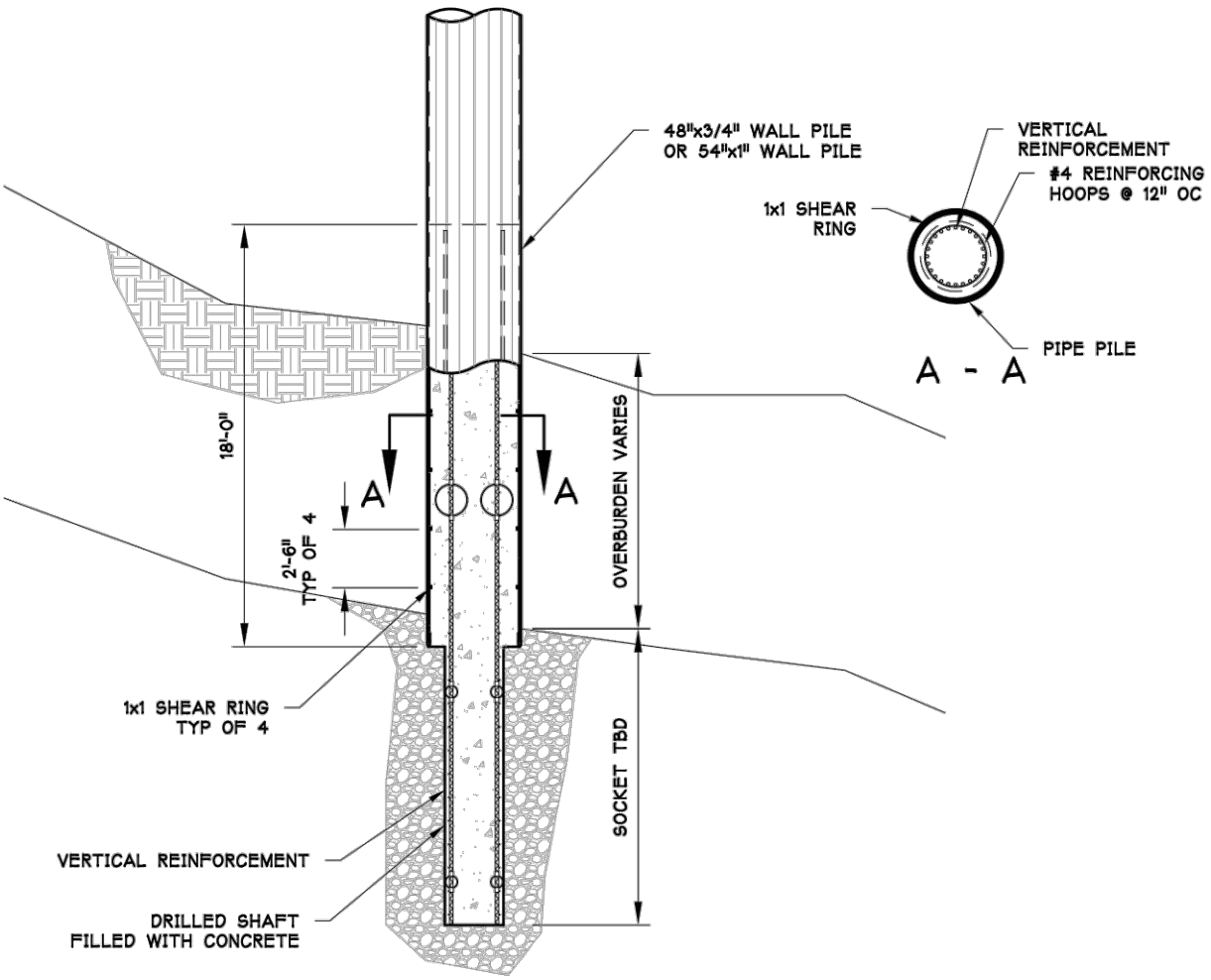
MLLW: 0.0'
MHW: 9.1'
HTL:12.7'
Lat 57 06' 55"
Lon 135 23' 34"

Revision:
Date: 7-12-19



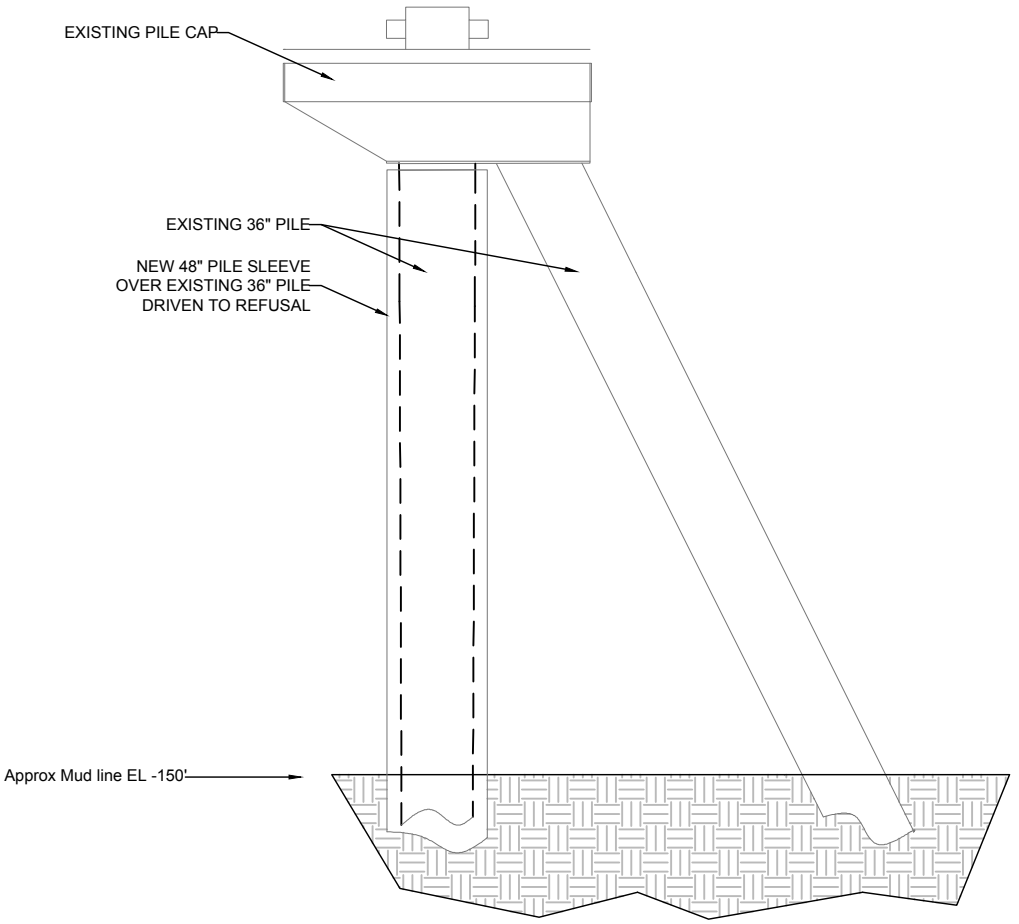
DETAIL AT NORTH MOORING DOLPHIN

Purpose: Expansion of Existing Deep Water Dock to Accommodate Larger Ships Sec: 9 Township: 55 South, Range: 63 East Copper River Meridian Location: Sitka Sound Local Government: City and Borough of Sitka, Alaska Datum: 0.0' M.L.L.W	Old Sitka Dock North Mooring Dolphin DOLPHIN DETAIL Application By Halibut Point Marine Services Sitka, AK 99835	MLLW: 0.0' MHW: 9.1' HTL:12.7' Lat 57 06' 55" Lon 135 23' 34" Revision: Date: 2-4-19 Sheet 4 of 7



TYPICAL ELEVATION AT ROCK ANCHOR

Purpose: Expansion of Existing Deep Water Dock to Accommodate Larger Ships Sec: 9 Township: 55 South, Range: 63 East Copper River Meridian Location: Sitka Sound Local Government: City and Borough of Sitka, Alaska Datum: 0.0' M.L.L.W	Old Sitka Dock North Mooring Dolphins PILE ANCHOR DETAIL Application By Halibut Point Marine Services Sitka, AK 99835	MLLW: 0.0' MHW: 9.1' HTL:12.7' Lat 57 06' 55" Lon 135 23' 34" Revision: Date: 7-12-19 Sheet 5 of 7



Purpose: Expansion of Existing Deep Water Dock to Accommodate Larger Ships

Sec: 9 Township: 55 South, Range: 63 East

Copper River Meridian

Location: Sitka Sound

Local Government: City and Borough of Sitka, Alaska

Datum: 0.0' M.L.L.W

Old Sitka Dock
North Mooring Dolphins

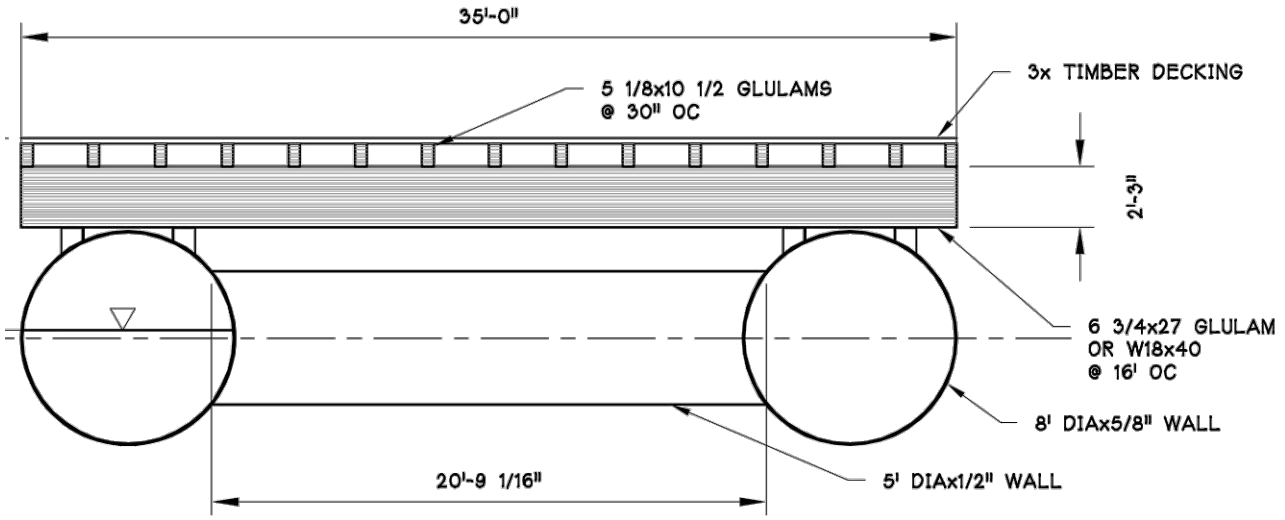
PILE SLEEVE DETAIL

Application By
Halibut Point Marine Services

Sitka, AK 99835

MLLW: 0.0'
MHW: 9.1'
HTL:12.7'
Lat 57 06' 55"
Lon 135 23' 34"

Revision:
Date: 7-12-19



Typical Float Section

Purpose: Expansion of Existing Deep Water Dock to Accommodate Larger Ships Sec: 9 Township: 55 South, Range: 63 East Copper River Meridian Location: Sitka Sound Local Government: City and Borough of Sitka, Alaska Datum: 0.0' M.L.L.W	Old Sitka Dock North Mooring Dolphins TYPICAL FLOAT SECTION Application By Halibut Point Marine Services Sitka, AK 99835	MLLW: 0.0' MHW: 9.1' HTL:12.7' Lat 57 06' 55" Lon 135 23' 34" Revision: Date: 7-12-19 Sheet 7 of 7

Appendix B. Threshold Calculation Spreadsheets

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.0: 2018

KEY

	User Provided Information
	NMFS Provided Information (Technical Guidance)
	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	Old Sitka Dock North Dolphins Expansion
PROJECT/SOURCE INFORMATION	48" Vibrating Source. The 48- in ch diameter source levels for vibratory driving are (from IP5 in Table 8 Austin et al.2016 report). Information provided by NMFS to HPMS

Please include any assumptions

PROJECT CONTACT	Chris McGraw chris@halibutpointmarine.com

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)¥	2.5	

¥Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

*** BROADBAND Sources: Cannot use WFA higher than maximum applicable frequency (See GRAY tab for more information on WFA applicable frequencies)**

STEP 3: SOURCE-SPECIFIC INFORMATION

Source Level (RMS SPL)	168
Number of piles within 24-h period	2
Duration to drive a single pile (minutes)	60
Duration of Sound Production within 24-h period (seconds)	7200
10 Log (duration of sound production)	38.57
Propagation (xLogR)	15
Distance from source level measurement (meters)*	10

*Unless otherwise specified, source levels are referenced 1 m from the source.

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring

requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**31.8**	**2.8**	**46.9**	**19.3**	**1.4**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.0: 2018

KEY

	User Provided Information
	NMFS Provided Information (Technical Guidance)
	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	Old Sitka Dock North Dolphins Expansion
PROJECT/SOURCE INFORMATION	Drilling Vibrating Source. The source levels for anchor shaft drilling are from table 49, Denes et al. 2016. Information provided by NMFS to HPMS

Please include any assumptions

PROJECT CONTACT	Chris McGraw chris@halibutpointmarine.com

STEP 2: WEIGHTING FACTOR ADJUSTMENT

Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value

Weighting Factor Adjustment (kHz)¥	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

*** BROADBAND Sources: Cannot use WFA higher than maximum applicable frequency (See GRAY tab for more information on WFA applicable frequencies)**

STEP 3: SOURCE-SPECIFIC INFORMATION

Source Level (RMS SPL)	166.2
Number of piles within 24-h period	2
Duration to drive a single pile (minutes)	240
Duration of Sound Production within 24-h period (seconds)	28800
10 Log (duration of sound production)	44.59
Propagation (xLogR)	15
Distance from source level measurement (meters)*	10

*Unless otherwise specified, source levels are referenced 1 m from the source.

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring

requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**60.7**	**5.4**	**89.7**	**36.9**	**2.6**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.0: 2018

KEY

	User Provided Information
	NMFS Provided Information (Technical Guidance)
	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	Old Sitka Dock North Dolphins Expansion
PROJECT/SOURCE INFORMATION	30" Vibrating Source. The 30- in ch diameter source levels for vibratory driving are from piles driven at Auke Bay from the Denes et al. (2016) report. Information provided by NMFS to HPMS

Please include any assumptions

PROJECT CONTACT	Chris McGraw chris@halibutpointmarine.com

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)¥	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

*** BROADBAND Sources: Cannot use WFA higher than maximum applicable frequency (See GRAY tab for more information on WFA applicable frequencies)**

STEP 3: SOURCE-SPECIFIC INFORMATION

Source Level (RMS SPL)	168
Number of piles within 24-h period	2
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	3600
10 Log (duration of sound production)	35.56
Propagation (xLogR)	15
Distance from source level measurement (meters)*	10

*Unless otherwise specified, source levels are referenced 1 m from the source.

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring

requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**20.0**	**1.8**	**29.6**	**12.2**	**0.9**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

GENERAL PROJECT INFORMATION

PROJECT TITLE	Old Sitka Dock North Dolphins Expansion Project
PROJECT/SOURCE INFORMATION	48" Impact Source. The 48- in ch diameter source levels for impact driving are (from IP5 in Table 8 Austin et al.2016 report). Information provided by NMFS to HPMS
PROJECT CONTACT	Chris McGraw chris@halibutpointmarine.com

Measured Pressue	Peak	RMS
SPL =		197.9
Distance =		10

Spreading Model		Marine Mamal Meters to Threshold RMS 180 dB	RMS 160 dB	RMS 120 dB
Practical Spreading	dB = 15*log(R1/R2)	156	3363	1560750

GENERAL PROJECT INFORMATION

PROJECT TITLE	Old Sitka Dock North Dolphins Expansion Project
PROJECT/SOURCE INFORMATION	Anchor Shaft Drilling Source: Source Level from Table 49, Denes et al 2016. Information provided by NMFS to HPMS
PROJECT CONTACT	Chris McGraw chris@halibutpointmarine.com

Measured Pressue	Peak	RMS
SPL =		166.2
Distance =		10

Spreading Model		Marine Mamal Meters to Threshold RMS 180 dB	RMS 160 dB	RMS 120 dB
Practical Spreading	dB = 15*log(R1/R2)	1	26	12023

GENERAL PROJECT INFORMATION

PROJECT TITLE	Old Sitka Dock North Dolphins Expansion Project
PROJECT/SOURCE INFORMATION	30" Vibrating Source. The 30- in ch diameter source levels for vibratory driving are from piles driven at Auke Bay from the Denes et al. (2016) report. Information provided by NMFS to HPMS
PROJECT CONTACT	Chris McGraw chris@halibutpointmarine.com

	Peak	RMS
Measured Pressue		
SPL =		168
Distance =		10

		Marine Mamal Meters to Threshold		
Spreading Model		RMS 180 dB	RMS 160 dB	RMS 120 dB
Practical Spreading	dB = 15*log(R1/R2)	2	34	15849

Appendix C. Marine Mammal Monitoring and Mitigation Plan

Marine Mammal Monitoring and Mitigation Plan

Halibut Point Marine Services, LLC
Old Sitka Dock North Dolphins Expansion Project
Sitka Sound, Sitka, Alaska

July 2019
Revision #1 September 2019
Revision #2 October 2019
Revision #3 November 2019

Prepared for and by:

Halibut Point Marine Services, LLC
PO Box 718
4513 Halibut Point Road
Sitka, Alaska 9983

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1 INTRODUCTION

Halibut Point Marine Services LLC (HPMS) proposes the following Marine Mammal Monitoring and Mitigation Plan (4MP) for use during in-water construction to Old Sitka Dock North Dolphins Expansion Project in Sitka Sound.

The project is in Waters of the U.S, within the range of Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) listed marine mammals and has the potential to generate noise that could exceed Level A and B harassment thresholds established by the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS).
The purpose of this plan is to minimize impacts to marine mammals by prescribing how mitigation measures and construction techniques will be employed, outlining the duties of the Protected Species Observers (PSOs), and summarizing reporting requirements. The plan uses of a combination of marine mammal monitoring, soft-starts, shutdowns (if needed), and species data collection and reporting to comply with the permits and authorizations required to construct this project.

Figure 1 - Project Location

2 PERMITS AND AUTHORIZATIONS

A number of permits and authorizations are required for this project. The project shall comply with the terms and conditions outlined in the following requested permits and authorizations:

- U.S Army of Engineers (USACE) Permit (requested);
- NMFS Office of Protected Resources (OPR) Incidental Harassment Authorization (IHA) (requested);
- USFWS Marine Mammal Management (MMM) IHA (request to be submitted);
- NMFS Alaska Region Protect Resources Division Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Incidental Take Statement (ITS);

3 EXPECTED SPECIES AND TAKE REQUESTED

The species that are most common in the project area are listed in Table 1. A NMFS IHA has been requested for this project and the species for which Level B take has been requested, and the number and type of take are shown in Table 1. In addition, a small number of Level A take has been requested which are also shown in Table 1.

Table 1 – Species Most Likely to Occur

Species Most Likely to Occur	Level B Take	Level A Take
Humpback Whale (*Megaptera novaeangliae*)	143	
Killer Whale (*Orcinus orca*)	16	
Harbor Porpoise (*Phocoena phocoena*)	95	50
Harbor Seal (*Phoca vitulina*)	171	20
Steller Sea Lion (*Eumatopia jubatus)*	304	
Minke whale (*Balaenoptera acutorostrata*)	3	
Gray whale (*Eschrichtius robustus*),	3	

4 METHODS SUMMARY

HPMS, the contractor, and qualified PSOs will work together to carry out construction methods that minimize impacts to marine mammals, marine mammal monitoring, and reporting.
The contractor will employ construction mitigation measures including the vibratory hammer at reduced energy settings, driving all piles with a vibratory hammer to the maximum extent possible prior to using an impact hammer, operating the impact hammer at reduced energy settings, and using soft-starts and pile caps for pile driving.

PSOs will be employed for marine mammal monitoring and will be present during all in-water work. PSOs will be onsite before, during, and after all in-water construction activities. The PSO(s) will perform monitoring and data collection and will relay data to the contractor and HPMS for reporting.

PSO(s) will be located at sites that allow them to view the Level A and B harassment zones. PSOs will continuously scan the Level A and B monitoring zones and ensure shutdown zones are clear of marine mammals prior to in-water construction. PSOs will collect data including environmental conditions, marine mammal sightings and behavior, construction activity at the time of sightings, and take. If a marine mammal is observed approaching a shutdown zone the PSOs will contact the contractor to shutdown construction activity.

Because of the large size of some of the Level B monitoring zones, Level B take may be extrapolated. PSOs may observe a smaller area than the entire Level B zone and extrapolate project take from that area. For example, if the PSOs could confidently monitor 50 percent of the Level B zone, and 10 seals were observed during pile driving, then the total extrapolated number of takes would be 20.

PSOs will maintain verbal communication with construction personnel to implement appropriate mitigation measures (detailed in Section 5). If the number of species observed within the B zones during noise-producing project activities approaches the number of takes authorized in the ITS, HPMS will notify NMFS and USFWS and reinitiate consultation.

HPMS will be responsible for preparing and submitting marine mammal monitoring reports. The following sections of this plan describe mitigation, monitoring protocols, monitoring and shutdown zones, and reporting in detail.

5 MITIGATION MEASURES

A number of proposed mitigation measures and construction techniques will be employed to minimize effects to marine mammal species. Mitigation measures for the project include general construction mitigation measures, mitigation measures during pile removal and installation, and marine mammal shutdown zones. These measures are detailed below.

5.1 General Construction Mitigation Measures

- The project uses the most compact design possible, while meeting the demands of the vessels that would use the facility.
- Wood that has been surface or pressure-treated with creosote or treated with pentachlorophenol will not be used. If treated wood must be used, any wood that comes in contact with water will be treated with waterborne preservatives in accordance with Best Management Practices developed by the Western Wood

Preservers Institute. Treated wood will be inspected before installation to ensure that no superficial deposits of preservative material remain on the wood.
- The project uses a design that does not require dredging, blasting, or fill.
- Plans for avoiding, minimizing, and responding to releases of sediments, contaminants, fuels, oil, and other pollutants will be developed and implemented.
- Spill response equipment will be kept on-site during construction and operation.
- Floats or barges will not be grounded at any tidal stage.

5.2 Pile Driving and Removal Mitigation Measures

- Pile driving softening material will be used to minimize noise during vibratory and impact pile driving. Much of the noise generated during pile installation comes from contact between the pile being driven and the steel template used to hold the pile in place. The contractor will use high-density polyethylene (HDPE) or ultra-high-molecular-weight polyethylene (UHMW) softening material on all templates to eliminate steel on steel noise generation.
- Soft start procedures will be used prior to pile removal and installation, to allow marine mammals to leave the area prior to exposure to maximum noise levels. For vibratory hammers and down hole drills, the soft-start technique will initiate noise from the hammer for 15 seconds at a reduced energy level, followed by a 1-minute waiting period and will repeat the procedure 2 additional times. For impact hammers, the soft-start technique will initiate 3 strikes at a reduced energy level, followed by a 30-second waiting period. This procedure would also be repeated two additional times.

5.3 Protected Species Observers

Qualified PSOs will be employed for marine mammal monitoring and will be present during all in-water work. PSOs will maintain verbal communication with the construction personnel to implement the appropriate mitigation measures listed below.

5.4 PSO Qualifications

As prescribed by NMFS, PSOs must meet the following criteria:

- Independent PSOs will be used (i.e., not construction personnel).
- HPMS must submit to NMFS OPR (name to be determined) the curriculum vitae (CV) of all observers prior to monitoring.
- At least one PSO must have prior experience working as a marine mammal observer during construction activities.
- Other PSOs may substitute education (degree in biological science or related field) or training for experience.
- When using a team of three or more observers, one observer will be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as an observer.
- HPMS will ensure that, and observers must have, the following additional qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times and reasons for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior;
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary; and
- Sufficient training, orientation, or experience with the construction operations to provide for personal safety during observations.

5.5 Marine Mammal Monitoring Protocols

The following marine mammal monitoring protocols will be implemented during pile driving and removal activities to help prevent and document acoustic effects on marine mammals.

1. The PSO will have no other primary duties than watching for and reporting on events related to marine mammals.
2. The PSO will have the tools necessary to aid in determining the location of observed listed species, to take action if listed species are likely to enter a shutdown zone, and to record these events. These tools may include:
    a. Binoculars
    b. spotting scope
    c. range finder
    d. GPS
    e. Compass
    f. two-way radio communication with construction foreman/superintendent
    g. log book of all activities, which will be made available to U.S. Army Corps of Engineers and NMFS upon request
3. Prior to in-water pile driving and removal, monitoring and shutdown zones will be field verified.
4. Pile driving and removal will not be conducted when weather conditions or darkness restrict clear, visible observation of all waters within and surrounding the shutdown zone.
5. Each day prior to commencing in-water work the PSO will conduct a radio check with the construction foreman or superintendent. The PSO will brief the foreman or

supervisor as to the shutdown procedures if any of the listed species are observed likely to enter or within a shutdown zone, and will have the foreman brief the crew, requesting that the crew notify the PSO when a listed species is spotted.

6. The PSO will work in shifts lasting no longer than 4 hours with at least a 1-hour break between shifts, and will not perform duties as an PSO for more than 12 hours in a 24-hr period (to reduce PSO fatigue).
7. The PSO will remain onsite during in-water pile driving/removal.
8. The PSO will scan the monitoring zone for the presence of listed species for 30 minutes before any pile driving or removal activities take place, or if pile driving has not occurred for over one hour, specifically to ensure the monitoring zone are clear before construction begins.
9. Throughout all pile-driving activity, the PSO will continuously scan the shutdown and monitoring zone that apply to the construction methods being used to ensure that listed species do not enter them.
    a. If any listed species enter, or appear likely to enter, the shutdown zone during pile-driving activities, all driving activity will cease immediately. Pile -driving may resume when the animal(s) has been observed leaving the area on its own accord. If the animal(s) is not observed leaving the area, pile-driving activity may begin 15 min (for pinnipeds and sea otters) or 30 min (for cetaceans) after the animal is last observed in the area.
10. Once the shutdown zone has been cleared, ramp-up procedures will be applied prior to beginning pile driving activities each day and/or when pile driving hammers have been idle for more than 30 min:
    a. For impact pile-driving, contractors will be required to provide an initial set of three strikes from the hammer at 40 percent energy, followed by a 30-sec waiting period. This procedure will be repeated two additional times.
11. A data sheet will be used to record the species, behavior, date, and time of any marine mammal sightings. This data will be used to prepare a PSO report.

5.6 Number and Location of PSOs

Three PSO's will be utilized at various monitoring locations. These locations will be selected to provide an unobstructed view of all water within the shutdown zone and as much of the Level A and B harassment zone as possible for pile driving activities.

- Three PSOs will monitor during all vibratory pile driving activities at the project site, with locations as follows:
    - PSO #1: stationed at or near the site of pile driving;
    - PSO #2: stationed on the north end of Big Gavanski Island and positioned to be able to view north into Olga Strait and south east towards the project area;
    - PSO #3: stationed on the north end of Middle Island and positioned to be able to view west towards Kruzoff Island and east towards the project area;
- Three PSOs will monitor during all impact pile driving activities at the project site, with locations as follows:
    - PSO #1: stationed at or near the site of pile driving;

- PSO #2: stationed on the east side of Big Gavanski Island and positioned to be able to view north towards Olga Strait and south towards the project area;
- PSO #3: stationed on the east side of Middle Island and positioned to be able to view south towards Sitka Channel and east towards the project area;

6 MONITORING AND SHUTDOWN ZONES

Because species are impacted by noise in different ways, species-specific monitoring and shutdown zone have been calculated for this project. These monitoring and shutdown zones are listed in Tables 2, 3, and summarized in Table 4. The zones are shown in Figures 2, and 3.

Further, there will be a nominal 10-meter shutdown zone for all species during construction-related activity where acoustic injury is not the primary concern. This type of work could include (but is not limited to) the following activities: (1) movement of the barge to the pile location; (2) positioning of the pile on the substrate via a crane (i.e., stabbing the pile); (3) removal of the pile from the water column/substrate via a crane (i.e., deadpull). For these activities, monitoring would take place from 15 minutes prior to initiation until the action is complete.

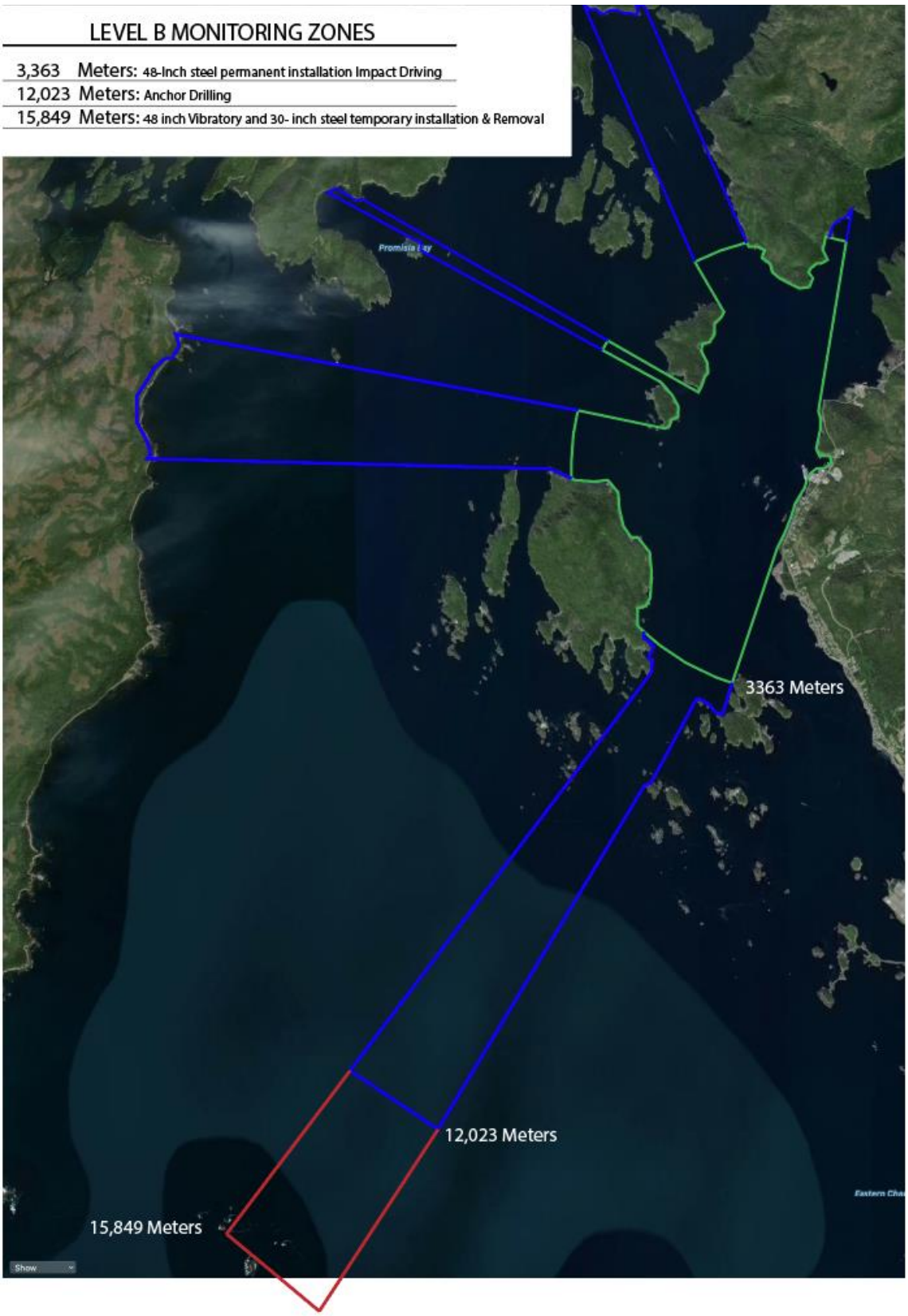
6.1 Level B Monitoring Zones

If a marine mammal species for which Level B take is authorized (humpback whale, killer whale, harbor porpoise, harbor seal, Steller sea lion) is observed within the Level B monitoring zones outlined in Table 2 during the activity specified, presence in that zone would be considered a Level B take. If a marine mammal species for which take has not been requested were to approach the action area, in-water construction would be shutdown.

Table 2 - Level B Monitoring Zones

Source	Monitoring Zone (m)*
30-inch steel temporary installation (8 piles; 1 hour per day on 4 days)	15,849
30-inch steel removal (8 piles; 40 min on 2 days)	15,849
48-inch steel permanent installation (10 piles; ~2 hours per day on 5 days)	15,849
Impact Pile Driving	
48-inch steel permanent installation (10 piles; ~6 minutes per day on 5 days)	3,363
Anchor Drilling	
33-inch Anchor Shaft Drilling (8 piles; ~2.5 hours per day on 8 days)	12,023

Figure 2- Level B Monitoring Zones



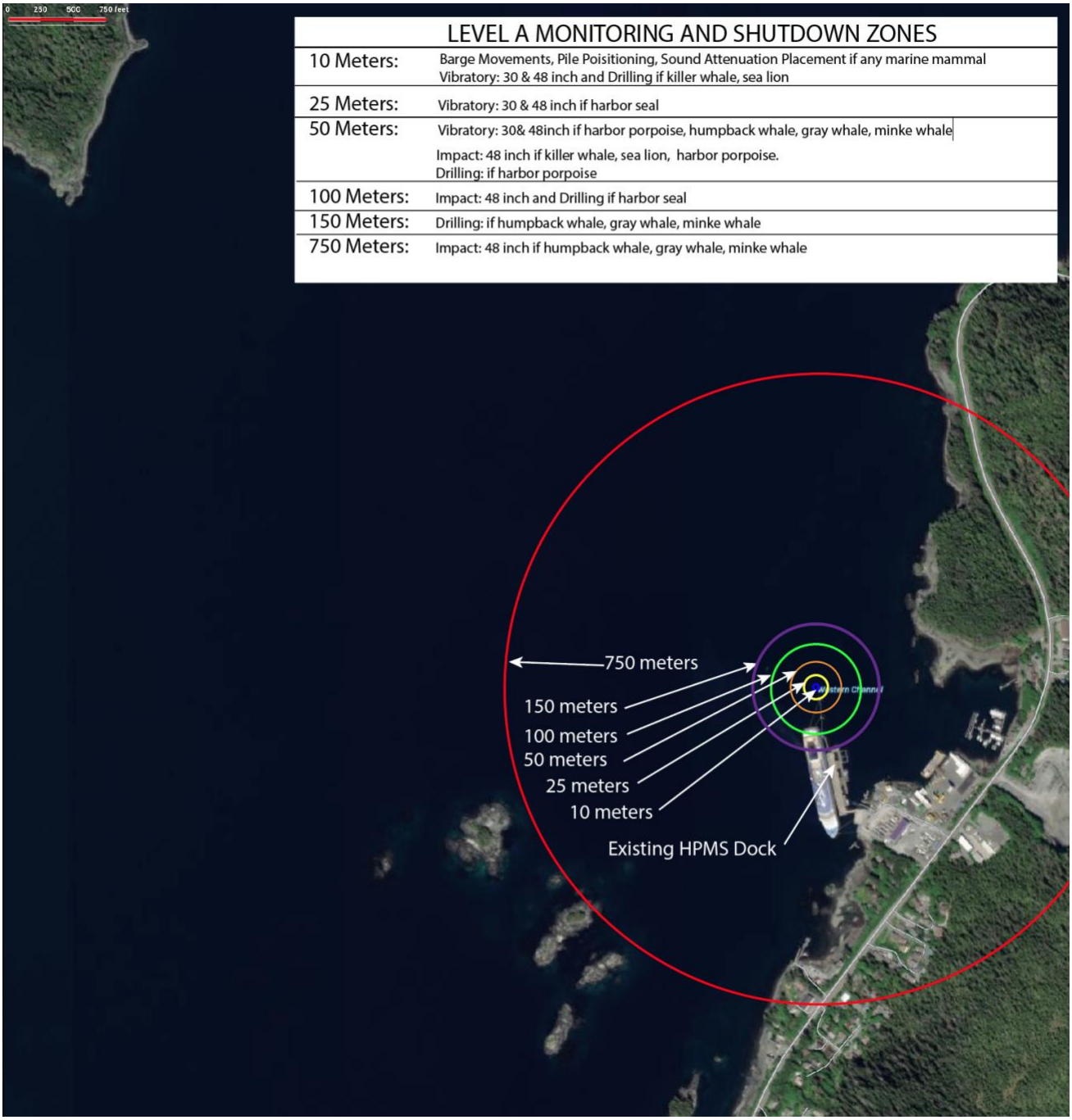
6.2 Level A Shutdown Zones

If a specified marine mammal is observed within the shutdown zones outlined in Table 3 during the activity specified, presence in that zone would be considered a Level A take. To prevent Level A take, shutdowns will be employed if a species approaches or is present within the following shutdown zones.

Table 3 - Level A Shutdown Zones

Source	Shutdown Zones in Meters				
	Low-Frequency Cetaceans (humpback whale)	Mid-Frequency Cetaceans (killer whale)	High-Frequency Cetaceans (harbor porpoise)	Phocid (harbor seal)	Otariid (sea lion)
In Water Construction Activities*					
Barge movements, pile positioning, sound attenuation placement*	10	10	10	10	10
Vibratory Pile Driving/Removal					
30-inch steel temporary installation (8 piles; 1 hour per day on 4 days)	50	10	50	25	10
30-inch steel removal (8 piles; 40 min on 2 day)	50	10	50	25	10
48-inch steel permanent installation (10 piles; ~2 hours per day on 5 days)	50	10	50	25	10
Impact Pile Driving					
48-inch steel permanent installation (10 piles; ~6 minutes per day on 5 days)	750	50	50	100	50
Anchor Drilling					
33-inch drilled Anchor Shaft (8 Piles – 2.5 hour per pile)	150	10	50	100	10

Figure 3 - Level A Shutdown Zones



7 REPORTING

A compliance certification form is due to the USACE after project completion, and comprehensive marine mammal reports are due to USFWS MMM regarding sea otters and to NMFS AK and NMFS OPR regarding all marine mammals. The sections below provide an overview of reporting requirements for this project. Refer to the requested DA Permit, the requested NMFS and USFWS IHAs and NMFS BO for detailed terms and conditions.

7.1 USACE

Within 60 days of completion of the work authorized by this permit, the HPMS shall complete the "Self-Certification Statement of Compliance" form (attached to the DA Permit) and submit it to the USACE.

7.2 USFWS

All observation records will be made available to the USFWS at the end of each calendar month and a summary report will be provided to the USFWS by December 1 each year. The contact for these reports is to be determined.

7.3 NMFS AK

A final monitoring report will be provided to NMFS Alaska Region (name to be determined) within 90 days of completion of pile driving. In general, reporting may include:

- Numbers of days of observations.
- Lengths of observation periods.
- Locations of observation stations and dates used.
- Numbers, species, dates, group sizes, and locations of marine mammals observed.
- Descriptions of work activities, categorized by type of work taking place while marine mammals were being observed.
- Distances to marine mammal sightings, including closest approach to construction activities.
- Descriptions of any observable marine mammal behavior in the Level A and Level B harassment zones.
- Actions performed to minimize impacts to marine mammals.
- Times of shutdown events including when work was stopped and resumed due to the presence of marine mammals or other reasons.
- Refined take estimates based on the numbers of humpback whales, killer whales, Pacific white-sided dolphin, harbor porpoises, harbor seals, and Steller sea lions observed during the course of pile installation and removal activities.
- Descriptions of the type and duration of any noise-generating work occurring and ramp-up procedures used while marine mammals were being observed.
- Details of all shutdown events, and whether they were due to presence of marine mammals, inability to clear the hazard area due to low visibility, or other reasons.
- Tables, text, and maps to clarify observations.

- Full documentation of monitoring methods, an electronic copy of the data spreadsheets, and a summary of results will also be included in the report.
- Final reports and reports of unauthorized take will be submitted to: NMFS Alaska Protected Resources Division and NMFS Office of Protected Resources.

7.4 NMFS OPR

Submit a draft report to NMFS (name to be determined) on all monitoring conducted under the requested IHA within ninety calendar days of the completion of marine mammal monitoring. A final report shall be prepared and submitted within thirty days following resolution of comments on the draft report from NMFS. This report must contain the informational elements below:

- Detailed information about any implementation of shutdowns, including the distance of animals to pile driving and removal and description of specific actions that ensued and resulting behavior of the animal, if any.
- Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take (i.e., multiple exposures of the same animal).

7.5 Reporting of Injured or Dead Marine Mammals

If it is clear that project activity has caused the take of a marine mammal in a manner prohibited by the (requested) IHA, such as unauthorized Level A harassment, serious injury, or mortality, HPMS shall immediately cease the specified activities and report the incident to NMFS OPR, the NMFS Alaska Region Protected Resources Division, and the NOAA Fisheries statewide 24-hour Stranding Hotline (877) 925-7773.

The report must include the following:

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

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

In the event that HPMS discovers an injured or dead marine mammal within the action area, 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), HPMS will immediately

report the incident to the NMFS OPR, and the NMFS Alaska Regional Stranding Coordinator or Hotline.

The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with HPMS to determine whether additional mitigation measures or modifications to the activities are appropriate.

In the event that HPMS 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), HPMS must report the incident to the NMFS OPR and the NMFS Alaska Regional Stranding Coordinator or Hotline within 24 hours of the discovery. HPMS will provide photographs, video footage (if available), or other documentation of the stranded animal sighting to NMFS.

7.6 Reporting of Take of ESA-Listed Species

If take of humpback whales or Steller sea lions approaches the number of takes authorized in the ITS, the HPMS will notify NMFS AK representative (Name to be determined)

Appendix A.
Marine Mammal Sighting Forms

Marine Mammal Sighting Form

Project: **Location:** **Sighting #:**
(1st sighting of the day is Sighting#: 1)

Date: **Observer(s):**

Time *(military)*		**Species** *(circle)*	**Distance** *(animal to activity)*		**Number of Animals**		**Number of Animals in Each Class**			
Initial Sighting Time		Steller Sea Lion	Initial Distance		Min Count		Adults		Calves/ Pups	
Final Sighting Time		Harbor Seal	Closest Distance		Max Count		Juveniles		Unkn. Age	
Time Entered H-Zone B		Harbor Porpoise	Final Distance		Best Count					
Time Exited H-Zone B		Killer Whale					Male		Female	
Time Entered H-Zone A		Sea Otter					Unknown Sex			
Time Exited H-Zone A		other: _____								

Behavior of Marine Mammal check all observed behaviors; place a **1** next to primary, 2 next to secondary activity):
Indicate any changes in behavior in the Additional Information section

__ Travel __ Fight __ Mill Other:_____
__ Disoriented __ Play __ Dive
__ Slap __ Spyhop __ Unknown
__ Feeding Observed __ Swimming Toward Site __ Swimming Away from Site

Group Cohesion (Orientation of animals within the group and the approx. distance between animals) :

Project Activities and Harassment Zone

Entered Harassment Zone A? Y or N **Entered Harassment Zone B?** Y or N

In-Water Work was occuring at initial sighting? Y or N **List In-water Activites:**_____

SHUT DOWN or **DELAYED** from _____ to _____ (time)

NO SHUT DOWN, *EXPLANATION REQUIRED* :

Describe Commerical Activities (# and type of vessels offloading at sea food processing dock, traveling by, refueling at dock):

Additional Information (include more detailed information on behavior):

Draw locations on hardcopy map

Daily Environmental Conditions, Construction, and Communication Activity Log

Page _____ of _____

Project:_____ Location:_____ Observer(s):_____ Date: _____

Environmental Conditions (Recorded every 30 minutes or as conditions change)									Construction and Communication Activities (Include all start up and shut-down activities and all communication to construction crew)		
Time	Weather Conditions	Wind Speed	Wind Direction	Beaufort Sea State	Glare (%)	Visibility (m)	Cloud Cover (%)	Comments	Time	Type of Construction Activity (Ramp up, Startup, shutdown, type of pile driving)	Communication/Comments

Weather Conditions: (S) Sunny, (PC) Partly Cloudy, (L) Light Rain, (R) Steady Rain, (F) Fog, (OC)Overcast, (LS) Light Snow, (SN) Snow
Beaufort Scale: (0) Calm (1) ripples- up to 4 in (2) small wavelets- up to 8 in (3) large wavelets- up to 2 ft, (4) small waves- up to 3 ft (5) moderate waves- up to 6 ft (6) large waves- up to 9 ft

Marine Mammal Sighting Form Version 2

Marine Mammal Sightings During Pile Driving

Date: _____ **Observer:** _____

General Weather AM _____ **Daily Start Time:** _____

PM _____ **Daily End Time:** _____

Was the Entire Exclusion Zone Visible During Pile Driving Operations (Y/N)? _____

If No, Please Explain _____

	Time of initial observation	Species Code	No. of Indiv. HO	No. of Indiv. Water	Age Class	Sex	Within Exclusion Zone (Y/N)	Resight (Y/N/UNK)	Beh. 1°	Beh. 2°	Pile Number	Activity Type	Notes/Abnormal Behaviors/Other
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Sheet _____ of _____

Data Codes

Species Code

Steller Sea Lion = **SSL**
Ringed Seal = **RS**
Bearded Seal = **BS**
Spotted Seal = **SS**
Harbor Seal= **HS**
Fur Seal = **FS**
Bowhead Whale = **BW**
Beluga Whale = **BE**
Humpback Whale = **HW**
Fin Whale = **FW**
Killer Whale = **KW**
Gray Whale = **GW**
Unidentified Phocid = **PH**
Unidentified Pinniped = **UP**
Unidentified Whale = **UW**

Age Classifications

Unknown Age = **UA**
Adults
Juveniles
Calves/Pups

Sex

Female = **F**
Male = **M**
Mixed
Unknown = **U**

Primary Behavior Codes

Dive = **DV**
Travelling = **TR**
Mating Suspected = **MS**
Milling = **MI**
Resting = **RE**
Feeding = **FE**
Tail Slap = **TS**
Enter Water = **EN**
Exit Water = **EX**
Hauled Out = **HO**
Look = **LO**

Secondary Behavior Codes

Directional Change = **DC**
Increased Breathing Rate = **IB**
Increased Swimming Rate = **IS**
Surface Active = **SA**
Flush = **FL**

Activity Type

No Activity = 0
Soft start = 1
Impact Pile Driving = 2
Vibratory Pile Driving = 3
Shutdown = 4