Marine Mammal Monitoring and Mitigation Plan

City of Hoonah

Hoonah Marine Industrial Complex Cargo Dock Project

Port Frederick, Hoonah, Alaska

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Submitted to:
National Marine Fisheries Service
and
U.S. Fish and Wildlife Service

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ACRONYMS AND ABBREVIATIONS

4MP	Marine Mammal Monitoring and Mitigation Plan
BO	Biological Opinion
COH	City of Hoonah
DPS	distinct population segment
DTH	down the hole drilling (or socketing)
ESA	Endangered Species Act
HDPE	high-density polyethylene
HMIC	Hoonah Marine Industrial Complex
IHA	Incidental Harassment Authorization
ITS	Incidental Take Statement
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
NMFS AKR	National Marine Fisheries Service Alaska Region
OPR	Office of Protected Resources (NMFS)
PSO	protected species observer
rms	root mean square
SPL	sound pressure level
UHMW	ultra-high-molecular-weight polyethylene
USACE	U.S. Army Corp of Engineers
USFWS	U.S. Fish and Wildlife Service
WDPS	Western Distinct Population Segment

INTRODUCTION

The City of Hoonah (COH) proposes the following Marine Mammal Monitoring and Mitigation Plan (4MP) for use during pile installation during construction of the Hoonah Marine Industrial Complex (HMIC) Cargo Dock near Hoonah, Alaska (Figure 1). The project is in water 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). This 4MP was developed in support of the Incidental Harassment Authorization (IHA) application under the MMPA, Section 101(a)(5)(D) permitting. Monitoring and shutdown zones will be implemented to reduce Level A and Level B impacts to marine mammals.

The overall goal of this 4MP is to ensure compliance with the ESA and the MMPA when the 4MP is implemented by the protected species observers (PSOs) at the project site. The project will comply with the terms and conditions outlined in the following requested permits and authorizations:

- U.S. Army Corp of Engineers (USACE) Permit POA-1985-696, Port Frederick for activities in Waters of the U.S. (Authorized through September 30, 2021)
- NMFS Office of Protected Resources (OPR) Incidental Harassment Authorization (IHA) (requested)

Figure 1. Project Location

PROJECT DESCRIPTION

The COH proposes to complete the cargo dock phase of the HMIC adjacent to downtown Hoonah on the eastern side of Port Frederick, Alaska to safely accommodate barges that deliver essential goods to the community.

Completion of the cargo dock phase will include constructing a sheet pile bulk head cargo dock (will require fill), three breasting dolphins, and the addition of fender piles to the new cargo dock (Table 1). The project would occur in and over waters of the United States. No blasting is proposed as a part of this project.

Table 1. HMIC Cargo Dock Project Pile Size, Quantity, and Installation Method

Description	Project Component					
	Temporary Pile Installation	Temporary Pile Removal	Permanent Pile Installation			
Vibratory Hammer						
Diameter of Steel Pile (inches)	30	30	36	H-piles	Sheets	20
# of Piles	50	50	9	12	500 (130 lf)	6
Impact Hammer						
Diameter of Steel Pile (inches)	-	-	36	H-piles	Sheets	20
# of Piles	-	-	9	12	500 (130 lf)	6
Down the Hole (DTH)/Socketing						
Diameter of Steel Pile (inches)	-	-	36	H-Piles	-	20
Total Quantity	-	-	9	12	-	6
Anchor Diameter	-	-	33	20	-	20

SPECIES COVERED UNDER THE IHA

Nine species of marine mammals are expected to be within the project area. Take has been requested for species known to frequent the area (Table 2).

The shutdown of work will occur if any other marine mammal enters the project area. Other species that may occur include to northern sea otters (*Enhydra lutris kenyoni*).

Table 2. Species Most Likely to Occur in Project Area and Requested Take Numbers, by Species and Manner of Take

Species	Level A	Level B
Minke Whale (*Balaenoptera acutorostrata)*	0	12
Humpback Whale (*Megaptera novaeangliae*)	0	880
Gray Whale (*Eschrichtius robustus*)	0	4
Killer Whale (*Orcinus orca*)	0	316
Pacific White-Sided Dolphin (*Lagenorhynchus obliquidens*)	0	328
Dall's Porpoise (*Phocoenoides dalli*)	8	366
Harbor Porpoise (*Phocoena phocoena*)	16	440
Harbor Seal (*Phoca vitulina*)	60	660
Steller Sea Lion (*Eumetopias jubatus)*	0	550

MONITORING AND SHUTDOWN ZONES

The harassment zones will be monitored throughout the permitted in-water or over-water construction activity. The following mitigation measure will be taken based upon species, activity, and distance from the project location:

- If a permitted marine mammal (Table 2) enters a monitoring zone, an exposure will be recorded and animal behaviors documented. However, permitted construction activities would continue without cessation unless the animal approaches or enters the shutdown zone.
- If a non-permitted marine mammal approaches or enters a Level A shutdown zone, all permitted construction activities will be immediately halted until the marine mammal has left the shutdown zone or has not been sighted for the appropriate amount of time .
- If a non-permitted marine mammal approaches or enters a Level B zone, all permitted construction activities will be immediately halted until the marine mammal has left the shutdown zone or has not been sighted for the appropriate amount of time.
- If a Dall's porpoise, harbor porpoise, or harbor seal enters their respective Level A zone, but are not within their respective Level A shutdown zone, an exposure will be recorded and animal behaviors documented. However, permitted construction activities would continue without cessation unless the animal approaches or enters the shutdown zone. (See Table 4 and Figures 3 and 4 for an explanation of these zones.)
- Take, in the form of Level A or Level B harassment, of marine mammals other than permitted species is not authorized and will be avoided by shutting down construction activities before individuals of these species enter the Level B harassment zone

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

Monitoring Zones

The COH has established and will observe different Level B monitoring zones depending on the type of pile driving activity that is occurring. Level B monitoring zones represent areas where the SPLs generated from pile driving activities meet or exceed 120 dB root mean square (rms) during vibratory pile driving and 160 dB rms during impact pile driving. These monitoring zones serve as an area within which to document instances of marine mammal harassment (if permitted), and enable PSOs to be aware of the presence of marine mammals near the project's shutdown zone and prepare for communication of required shutdowns.

Level B monitoring zones for the project are presented in Table 3 below and shown in Figure 2.

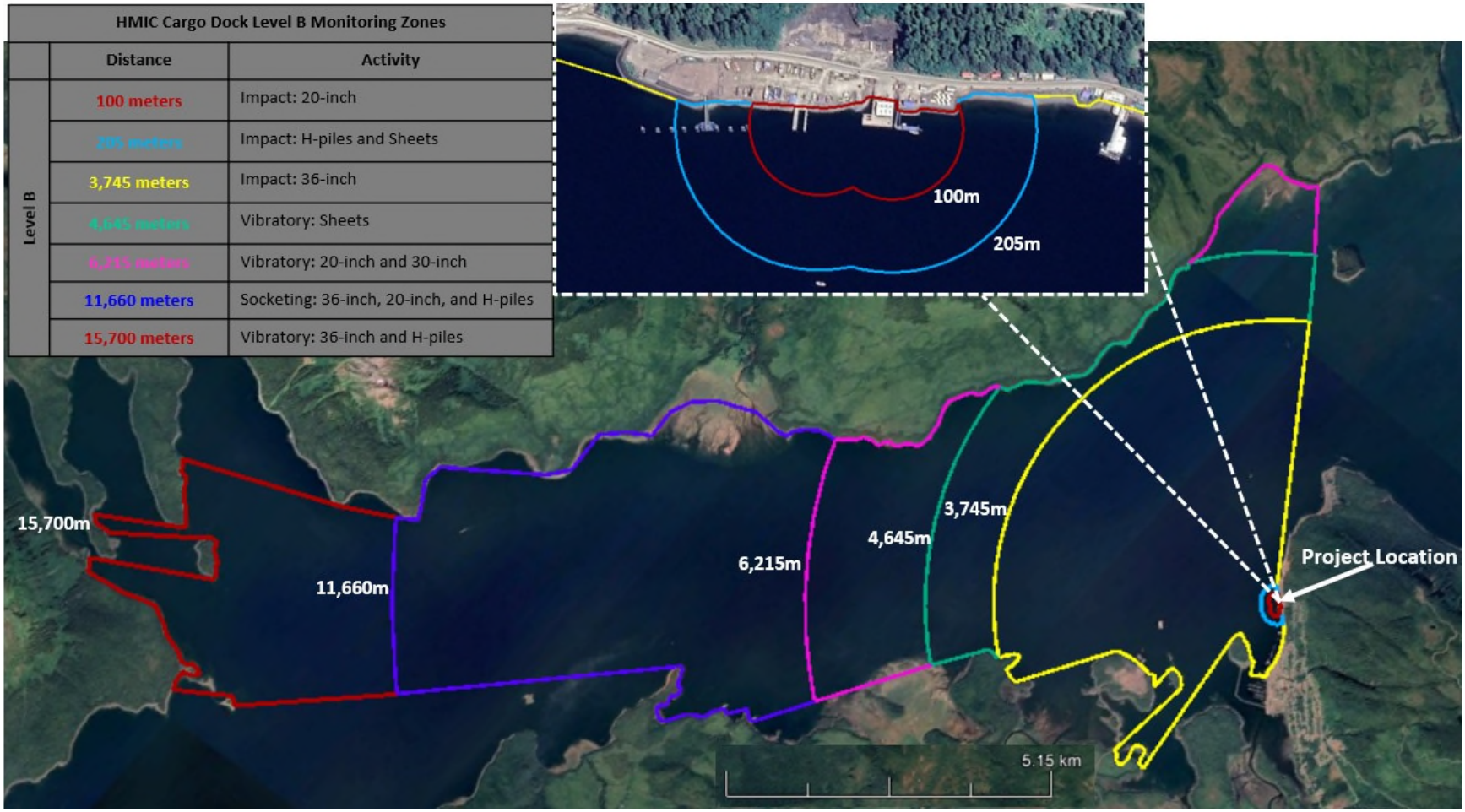
Table 3. HMIC Cargo Dock Project Level B Monitoring Zones

Source	Monitoring Zones (meters)*
Vibratory Pile Driving/Removal	
20-inch steel fender pile (6 piles; ~45 mins per day on 2 days)	6,215
30-inch steel temporary installation (50 piles; ~1 hour per day on 12.5 days)	6,215
30-inch steel removal (50 piles; ~1 hour per day on 12.5 days)	6,215
36-inch steel permanent installation (9 piles; ~1 hour per day on 2.25 days)	15,700 *(16,345)*
Sheets (500 sheets; ~7.5 hours per day on 17 days)	4,645
H-piles (12 piles; ~1 hour per day on 3 days)	15,700 *(17,435)*
Impact Pile Driving	
20-inch steel fender piles (6 piles; ~10 mins per day on 3 days)	100
36-inch steel (9 piles; ~30 minutes per day on 4.5 days)	3,745
Sheets (500 sheets; ~25 mins per day on 25 days)	205
H-piles (12 piles; ~20 mins per day on 3 days)	205
DTH/Socketed Pile Installation	
20-inch steel fender piles (6 piles; ~12 hours max per day on 3 days)	11,660
36-inch steel permanent installation (9 piles; ~12 hours max per day on 5 days)	11,660
H-piles (12 piles; ~12 hours max per day on 12 days)	11,660

[a] These monitoring zones apply to all marine mammal species with authorized level B take.

[b] Although the calculated distance to Level B thresholds extends these distances, all Level B zones are truncated at 15,700m from the source where land masses block sound transmission.

Figure 2. HMIC Cargo Dock Level B Monitoring Zones



*LF=Low-frequency Cetacean, MF=Mid-frequency Cetacean, and HF=High-Frequency Cetacean

Shutdown Zones

Shutdown zones are intended to protect marine mammals from auditory injury. They define an area in which sound pressure levels (SPLs) equal or exceed the level that would cause auditory injury to marine mammals that are present. Pile driving activity would be halted upon sighting of a marine mammal within the zone (or in anticipation of an animal entering the zone).

Because of their size, Dall's porpoise, harbor seals, and harbor porpoises can be difficult to see at great distances. During impact pile driving and DTH/socketing, their Level A harassment zone is large enough that they may be difficult to spot. Level A take has been requested for Dall's porpoise, harbor porpoises, and harbor seals in those instances in which they occur within the Level A harassment zone but outside of the shutdown zone *or* if they were to occur within the shutdown zone and were not visualized in time for the project to be shut down (Figure 4).

Further, there will be a nominal 10-meter shutdown zone for 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); and (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. This can be monitored by the vessel operator when a PSO is not present. Radial distances to Level A shutdown zone boundaries are defined in Table 4 and shown in Figure 3.

Table 4. HMIC Cargo Dock Project Distances to NMFS Level A Monitoring and Shutdown Zones

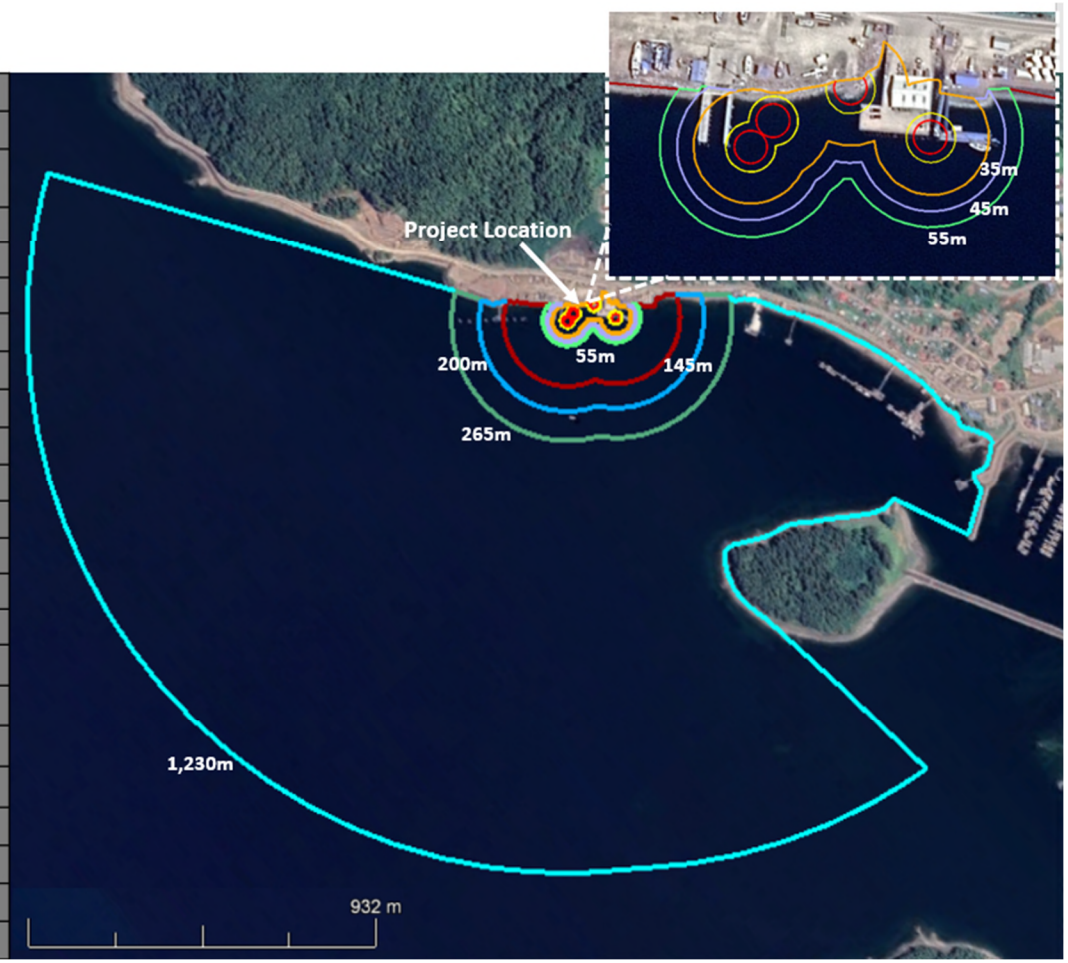
Activity	Distance (in meters, m) to Level A				
	Level A				
	Low-Frequency Cetaceans (humpback whale, gray whale, minke whale)	**Mid-Frequency Cetaceans** (killer whale, Pacific white-sided dolphin)	**High-Frequency Cetaceans** (Dall's porpoise, harbor porpoise)	**Phocid** (harbor seal)	**Otariid** (Steller 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 (50 piles; ~1 hour per day on 12.5 days)	10	10	15	10	10
30-inch steel removal (50 piles; ~1 hour per day on 12.5 days)	10	10	15	10	10
36-inch steel permanent installation (9 piles; ~1 hour per day on 2.25 days)	35	10	35	15	10
20-inch fender pile installation (6 piles; ~45 mins per day on 2 days)	10	10	15	10	10
H-pile installation (12 piles; ~1 hour per day on 3 days)	35	10	35	15	10
Sheet pile installation (500 sheets; ~7.5 hours per day on 17 days)	35	10	35	15	10
Impact Pile Driving					
36-inch steel permanent installation (9 piles; ~30 mins per day on 4.5 days)	605	35	720 *(Monitoring)* 200 *(Shutdown)*	325 *(Monitoring)* 200 *(Shutdown)*	35
20-inch fender pile installation (6 piles; ~10 mins per day on 3 days)	15	10	15	10	10
H-pile installation (12 piles; ~20 mins per day on 3 days)	55	10	55	35	10
Sheet pile installation (500 sheets; ~25 mins per day on 25 days)	55	10	55	35	10
DTH/Socketed Pile Installation					
36-inch steel permanent installation (9 piles; ~12 hours max per day on 5 days)	1,230	45	1,460 *(Monitoring)* 200 *(Shutdown)*	660 *(Monitoring)* 200 *(Shutdown)*	55
20-inch fender pile installation (6 piles; ~12 hours max per day on 3 days)	265	10	315 *(Monitoring)* 200 *(Shutdown)*	145	15
H-pile installation (12 piles; ~12 hours max per day on 12 days)	265	10	315 *(Monitoring)* 200 *(Shutdown)*	145	15

Shutdown zone distances refer to the maximum radius of the zone and are rounded.

*Although acoustic injury is not the primary concern with these activities, shutdowns will be implemented to avoid impacts to species.

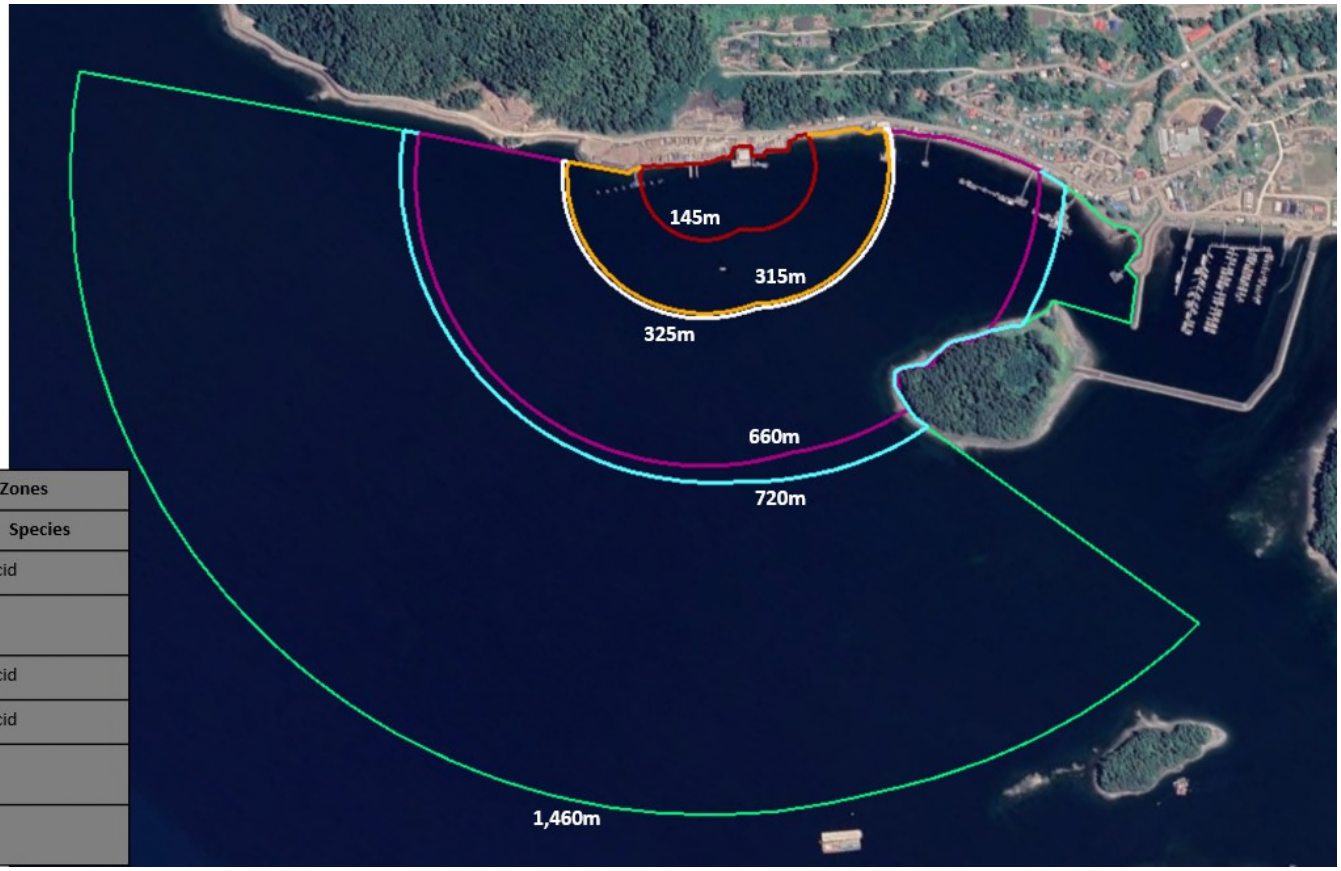
Figure 3. HMIC Cargo Dock NMFS Distances to Level A Shutdown Zones

HMIC Cargo Dock Level A Shutdown Zones		
Distance	**Activity**	**Species**
10 meters	Vibratory: 20-inch and 30-inch	LF, MF, Phocids, and Otariid
	Vibratory: 36-inch, H-piles, and Sheets	MF and Otariids
	Impact: 20-inch	MF, Phocids, Otariids
	Impact: H-piles and Sheets	MF and Otariids
	Socketing: H-piles and Sheets	MF
15 meters	Vibratory: 20-inch and 30-inch	HF
	Vibratory: 36-inch, H-piles, and Sheets	Phocid
	Impact: 20-inch	LF and HF
	Socketing: 20-inch and H-piles	Phocid
35 meters	Vibratory: 36-inch, H-piles, and Sheets	LF and HF
	Impact: 36-inch	MF and Phocid
	Impact: H-piles and Sheets	Phocid
45 meters	Socketing: 36-inch	MF
55 meters	Impact: H-piles and Sheets	LF and HF
	Socketing: 36-inch	Otariids
145 meters	Socketing: 20-inch and H-piles	Phocid
200 meters	Impact: 36-inch	HF and Phocid
	Socketing: 20-inch and H-piles	HF
	Socketing: 36-inch	HF and Phocid
265 meters	Socketing: 20-inch and H-piles	LF
1,230 meters	Socketing: 36-inch	LF



*LF=Low-frequency Cetacean, MF=Mid-frequency Cetacean, and HF=High-Frequency Cetacean

Figure 4. HMIC Cargo Dock NMFS Distances to Level A Monitoring Zones



HMIC Cargo Dock Level A Monitoring Zones		
Distance	**Activity**	**Species**
145 meters	Impact: 20-inch	Phocid
315 meters	Impact: H-piles and Sheets	HF
325 meters	Impact: 36-inch	Phocid
660 meters	Vibratory: Sheets	Phocid
720 meters	Vibratory: 20-inch and 30-inch	HF
1,460 meters	Socketing: 36-inch, 20-inch, and H-piles	HF

*LF=Low-frequency Cetacean, MF=Mid-frequency Cetacean, and HF=High-Frequency Cetacean

MITIGATION MEASURES

The basic premise of a marine mammal monitoring plan is to observe for marine mammals in the defined area of potential sound effects. Stop or do not start work if a marine mammal is sighted in the monitoring area. Do not start work again until the marine mammal has moved out of the monitoring area on its own accord.

In order to limit impacts to marine mammals, including ESA-listed species, the COH would implement the following mitigation measures during pile driving activities.

General Conditions and Requirements

- 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.
- COH is required to conduct briefings for construction supervisors and crews, the monitoring team, and COH staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.
- COH is required to employ PSOs during all in-water construction activities.
- Marine mammal monitoring must take place from 30 minutes prior to initiation of pile driving activity through 30 minutes post-completion of pile driving activity. Pile driving may commence when observers have declared the shutdown zone clear of marine mammals. In the event of a delay or shutdown of activity resulting from marine mammals in the shutdown zone (Table 4), their behavior must be monitored and documented until they leave of their own volition, at which point the activity may begin.
- If a marine mammal is entering or is observed within an established shutdown zone (Table 4), pile driving must be halted or delayed. Pile driving may not commence or resume until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone; 15 minutes have passed without subsequent detections of small cetaceans and pinnipeds; or 15/30 minutes have passed without subsequent detections of large cetaceans. NMFS may adjust the shutdown zones pending review and approval of an acoustic monitoring report.
- COH must use soft start techniques when impact pile driving.
- If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the monitoring zone (Table 3 or 4), pile driving and removal activities must shut down immediately using delay and shut-down procedures. Activities must not resume until the animal has been confirmed to have left the area or the observation time period, as indicated in the conditions above, has elapsed.

- Should light or environmental conditions deteriorate such that marine mammals within the entire shutdown zone would not be visible (e.g., fog, heavy rain), pile driving and removal must be delayed until the PSO is confident marine mammals within the shutdown zone could be detected.
- PSOs will work in shifts lasting no longer than 4 hours with at least a 1-hour break between shifts, and will not perform duties as a PSO for more than 12 hours in a 24-hour period (to reduce PSO fatigue).

Observer Qualifications and Requirements

- Visual acuity in both eyes (correction is permissible) sufficient to discern moving targets at the water's surface with ability to estimate target size and distance. Use of binoculars or spotting scope may be necessary to correctly identify the target.
- Advanced education in biological science, wildlife management, mammalogy or related fields (Bachelor's degree or higher is preferred), or equivalent Alaska Native traditional knowledge (PSOs may substitute education or training for experience).
- 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 (cetaceans and pinnipeds).
- Sufficient training, orientation or experience with vessel operation and pile driving operations to provide for personal safety during observations.
- Writing skills sufficient to prepare a report of observations. Reports should include such information as the number, type, and location of marine mammals observed; the behavior of marine mammals in the area of potential sound effects during construction; dates and times when observations and in-water construction activities were conducted; dates and times when in-water construction activities were suspended because of marine mammals, etc.
- 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 needed.
- Independent PSOs (*i.e.*, not construction personnel) who have no other assigned tasks during monitoring periods must be used.
- Where a team of three or more PSOs are required, a lead observer or monitoring coordinator must be designated. The lead observer must have prior experience working as a marine mammal observer during construction.
- COH must submit PSO CVs for approval by NMFS prior to the onset of pile driving.

Data Collection

Environmental Conditions and Construction Activities

PSOs will use the environmental conditions and construction activities log to document the following (Appendix A):

- Environmental Conditions
    - Environmental conditions will be recorded at the beginning and end of every monitoring period or as conditions change.
    - Include PSO names, location of the observation station, time and date of the observation, weather conditions, air temperature, sea state, cloud cover, visibility, glare, tide, and ice coverage (if applicable).
- Construction Activities:
    - PSOs will record the time that observations begin and end as well as the durations of shutdowns.
    - PSOs will document the reason for stopping work, time of shutdown, and type of pile installation or other in-water work taking place
    - PSOs will document other, non-project-related activities that could disturb marine mammals in the area, such as the presence of large and small vessels

PSOs will record all communications with the construction crew. The environmental conditions and construction activities log will be checked for quality assurance and quality control (QA/QC) by the lead PSO for submission at the end of every monitoring day. Upon request, the data will be submitted to NMFS along with the final report.

Sightings

Observers will use a National Marine Fisheries Service (NMFS)-approved Marine Mammal Sighting Form (Appendix A) which will be completed by each observer for each survey day and location. Sighting forms will be used by observers to record the following:

- Date and time that permitted construction activity begins or ends;
- Weather parameters (e.g., percent cloud cover, percent glare, visibility) and sea state (the Beaufort Wind Force Scale will be used to determine sea-state);
- Species, numbers, and, if possible, sex and age class of observed marine mammals;
- Construction activities occurring during each sighting;
- Marine mammal behavior patterns observed, including bearing and direction of travel;
- Specific focus should be paid to behavioral reactions just prior to, or during, soft-start and shutdown procedures;
- Location of marine mammal, distance from observer to the marine mammal, and distance from pile removal activities to marine mammals;
- Record of whether an observation required the implementation of mitigation measures, including shutdown procedures and the duration of each shutdown.
- Observer rotations with time of rotation and incoming observer initials

The observation record forms will be checked for quality assurance and quality control (QA/QC) by the lead PSO for submission at the end of every monitoring day. Upon request, the data will be submitted to NMFS along with the final report.

Equipment

The following equipment will be required to conduct observations for this project:

- Appropriate Personal Protective Equipment;
- Portable VHF radios for the observers to communicate with the pile driving supervisor and other observers;
- Cellular phone as backup for radio communication;
- Contact information for the other observers, pile driving supervisor, and NMFS point of contact;
- Daily tide tables for the project area;
- Binoculars (quality 7 x 50 or better) and rangefinder;
- Hand-held GPS unit, map and compass, or grid map to record locations of marine mammals;
- Copies of 4MP, IHA, and/or other relevant permit requirement specifications in sealed clear plastic cover;
- Notebook with pre-standardized monitoring Observation Record forms and Grid Maps (Appendix A)

Number and Location of PSOs

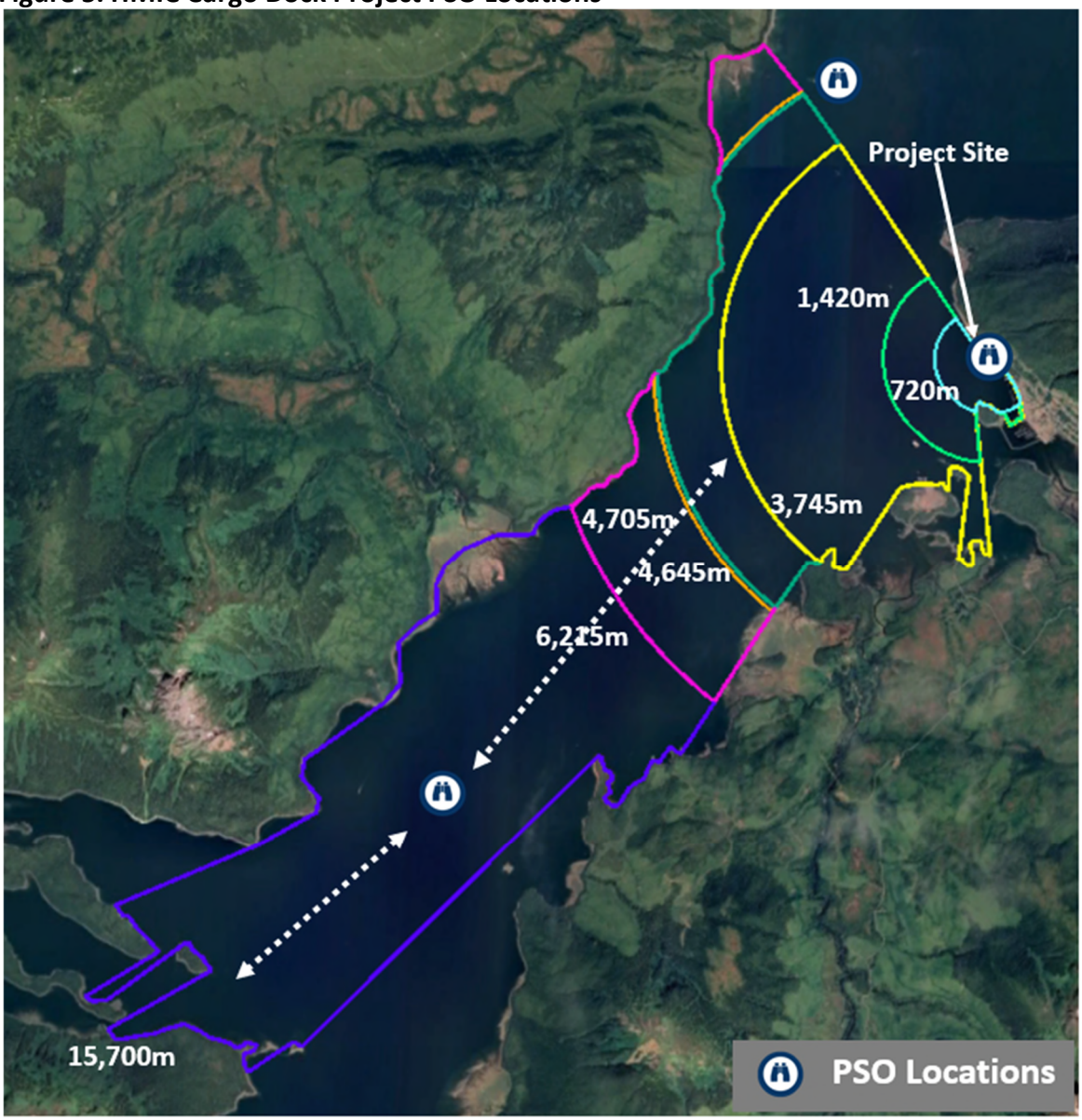
Observers and their positions are designed to ensure that there is full coverage of the entire action area during all in-water activities. Locations are chosen based upon accessibility and field of view.

Three PSOs will be onsite during all in-water activities associated with the HMIC Cargo Dock Project, with locations as follows (Figure 5):

- PSO 1: stationed at the pile site on the existing City Dock
- PSO 2: stationed on Halibut Island facing south
- PSO 3: stationed on a vessel running a transect through southern portion of the action area in Port Frederick[1]

[1] A separate individual will serve as a boat captain. The boat captain can also be approved as a PSO to rotate with the vessel-based PSO to ensure mitigation measures to prevent observer fatigue are followed.

Figure 5. HMIC Cargo Dock Project PSO Locations



Strike Avoidance

Vessels will adhere to the Alaska Humpback Whale Approach Regulations when transiting to and from the project site (see 50 CFR §§ 216.18, 223.214, and 224.103(b)). These regulations require that all vessels:

- Not approach within 100 yards of a humpback whale, or cause a vessel or other object to approach within 100 yards of a humpback whale,
- Not place vessel in the path of oncoming humpback whales causing them to surface within 100 yards of vessel,
- Not disrupt the normal behavior or prior activity of a whale, and
- Operate at a slow, safe speed when near a humpback whale (safe speed is defined in regulation (see 33 CFR § 83.06)).

Vessels will also follow the NMFS Marine Mammal Code of Conduct for other species of marine mammals, which recommend maintaining a minimum distance of 100 yards; not encircling, or trapping marine mammals between boats, or boats and shore; and putting engines in neutral if approached by a whale or other marine mammal to allow the animals(s) to pass.

Monitoring Techniques

Pre-Activity Monitoring

The following monitoring methodology will be implemented prior to commencing permitted activities:

- At the start of each day the Lead PSO and Contractor Superintendent will meet to discuss planned construction activities for the day and to conduct a radio/phone check.
- Prior to the start of permitted activities, observers will conduct a 30-minute pre-watch of the shutdown and monitoring zones. They will ensure that no marine mammals are present within the shutdown zone before permitted activities begin.
- The shutdown zone will be cleared when marine mammals have not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zone, a soft-start cannot proceed until the animal has left the zone or has not been observed for 15 minutes (for pinnipeds) and 30 minutes (for cetaceans).
- When all applicable exclusion zones are clear, the observers will radio the pile driving supervisor. Permitted activities will not commence until the pile driving supervisor receives verbal confirmation the zones are clear.
- If permitted species are present within the monitoring zone, work will not be delayed, but observers will monitor and document the behavior of individuals that remain in the monitoring zone.
- In case of fog or reduced visibility, observers must be able to see the entirety of the largest shutdown zone before permitted activities can be initiated.

Soft Start Procedures

Soft start procedures will be used prior to periods of vibratory and impact driving to allow marine mammals to leave the area prior to exposure to maximum noise levels.

- For vibratory hammers, the contractor shall run the vibratory hammer for no more than 30 seconds followed by a quiet period of at least 60 seconds without vibratory removal of piles. The process shall be repeated twice more within 10 minutes before beginning vibratory removal operations that last longer than 30 seconds.
- For impact hammers, the soft start technique must initiate approximately three strikes at a reduced energy level, followed by a 30-second waiting period. This procedure would also be repeated two additional times.
- If work ceases for more than 30 minutes, soft start procedures must recommence prior to performing additional work.

During Activity Monitoring

The following monitoring methodology will be implemented during permitted activities:

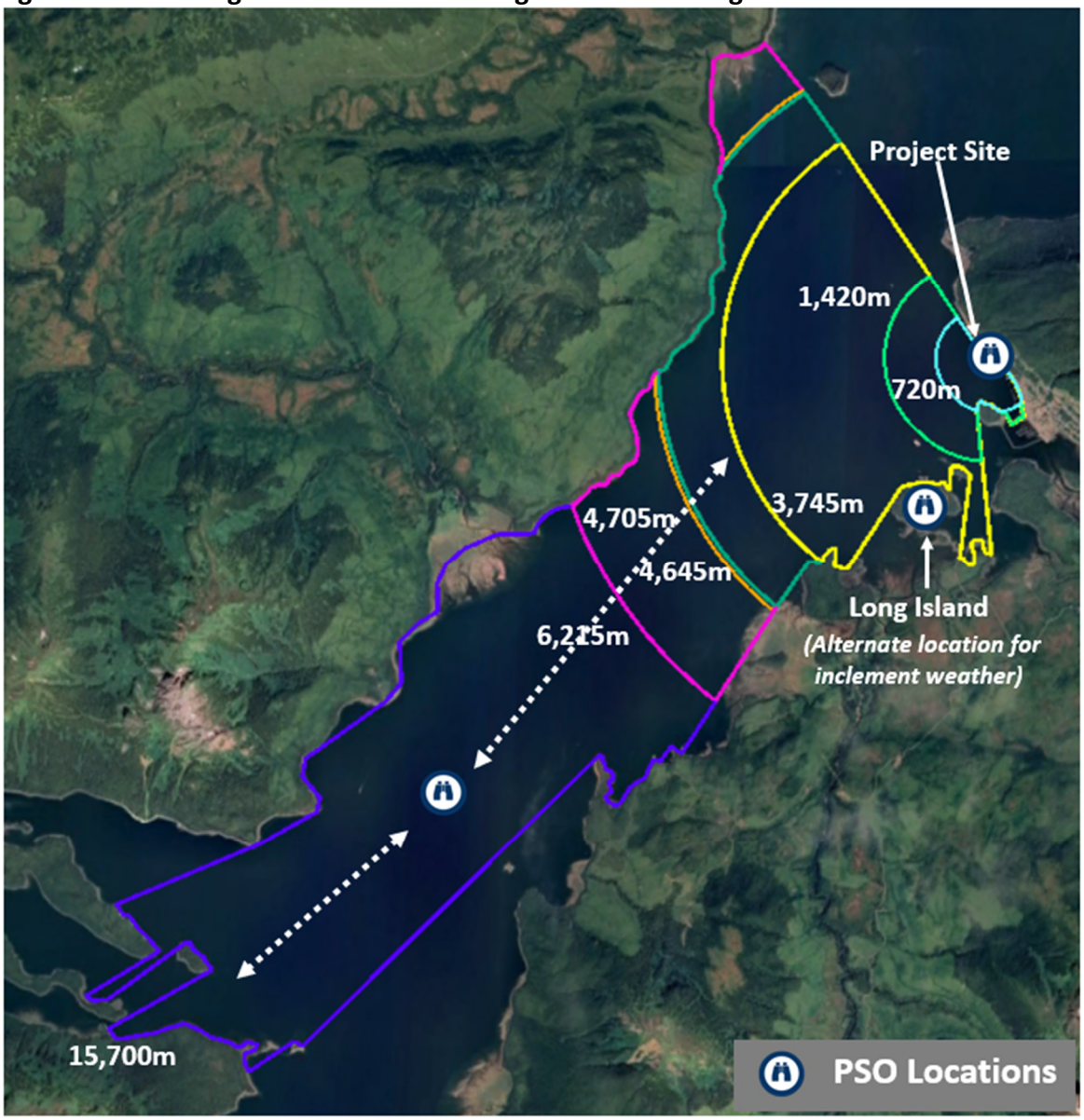
- If permitted species are observed within the monitoring zone during permitted activities, an exposure will be recorded and behaviors documented. Work will not stop unless an animal enters or appears likely to enter the shutdown zone.

Inclement Weather

During inclement weather, periods of limited visibility, or increased sea state that restricts the observers' ability to make observations within the marine mammal shutdown zone, pile driving activities will cease. Pile driving activities will not be initiated or continue until the entire largest shutdown zone for the activity is visible.

Icy Strait often experiences increased sea states and more frequent inclement weather compared to the relatively protected Port Frederick Inlet. Halibut Island’s exposure to Icy Strait may make it unsafe to place an observer at this location during increased sea state events. If this occurs, Long Island may be used as an alternate location for that monitoring period (Figure 5). The lead PSO will document the change and takes will be extrapolated.

Figure 6. HMIC Cargo Dock PSO Monitoring Locations During Inclement Weather



Shutdowns

If a marine mammal enters or appears likely to enter the shutdown zone:

- The observers shall immediately radio or call to alert the pile driving supervisor.
- All permitted activities will be immediately halted.
- In the event of a shutdown of pile installation or removal operations, permitted activities may resume only when:
    - The animal(s) within or approaching the shutdown zone has been visually confirmed beyond or heading away from the shutdown zone, or 15 minutes (for pinnipeds) or 30 minutes (for cetaceans) have passed without re-detection of the animal;
    - Observers will then radio or call the pile driving supervisor that activities can re-commence.

Breaks in Work

During an in-water construction delay, the shutdown and monitoring zones will continue to be monitored. No exposures will be recorded for permitted species in the monitoring zone if there are no concurrent permitted construction activities.

If permitted activities cease for more than 30 minutes and monitoring has not continued, pre-activity monitoring and soft start procedures must recommence. This includes breaks due to scheduled or unforeseen construction practices or breaks due to permit-required shutdown. Work can begin following the 30-minute pre-watch monitoring protocols. Work cannot begin if an animal is within the shutdown zone or if visibility is not clear throughout the shutdown and monitoring zones.

Post Activity Monitoring

Monitoring of the shutdown and monitoring zones will continue for 30 minutes following completion of in-water activities. During this post-watch period PSOs will continue to record observations, focusing on observing and reporting unusual or abnormal behavior of marine mammals.

If construction were to resume during the post-watch period, PSOs will follow pre-watch protocols to ensure that that the shutdown and monitoring zones are clear prior to work resuming.

REPORTING

Notification of Intent to Commence Construction

COH will inform NMFS OPR and the NMFS Alaska Region Protected Resources Division one week prior to commencing construction activities (name to be determined).

Weekly Sighting Counts

At the conclusion of each week of construction activity (Friday evening) a summary of the following will be submitted to COH and the contractor:

- Completed monitoring forms for the week
- Completed environmental conditions and construction activity logs for the week
- Preliminary counts of sightings and takes per species

Interim Monthly Reports

During construction, COH will submit brief, monthly reports to the NMFS Alaska Region Protected Resources Division that summarize PSO observations and recorded takes. Monthly reporting will allow NMFS to track the amount of take (including extrapolated takes), to allow reinitiation of consultation in a timely manner, if necessary. The monthly reports will be submitted by email to akr.section7@noaa.gov.

The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by close of business on the tenth day of the month following the end of the reporting period (e.g., the monthly report covering March 1–31, 2021, would be submitted to the NMFS by close of business on April 14, 2021).

Final Report

COH will submit a draft final report by email to akr.section7@noaa.gov no later than 90 days following the end of construction activities. COH will provide a final report within 30 days following resolution of NMFS's comments on the draft report. If no comments are received from NMFS within 30 days, the draft final report will be considered the final report.

The final reports will contain, at minimum, the following information:

- Summary of construction activities, including beginning and completion dates
- Description of any deviation from initial proposal in pile numbers, pile types, average driving times, etc.
- Table summarizing all marine mammal sightings during the construction period including:
    - dates, times, species, number, location, and behavior of any observed ESA-listed marine mammals, including all observed humpback whales and Steller sea lions
    - daily average number of individuals of each species (differentiated by month as appropriate) detected within the Level A and Level B zones, and estimated as taken, if appropriate
    - number of shut-downs throughout all monitoring activities
- Brief description of any impediments to obtaining reliable observations during construction period
- Description of any impediments to complying with these mitigation measures
- Appendices containing all PSO daily logs and marine mammal sighting forms

Reporting 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, COH 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 COH to determine what measures are necessary to minimize the likelihood of further unauthorized take and ensure ESA and MMPA compliance. COH may not resume their activities until notified by NMFS.

In the event that COH 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), COH 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 COH to determine whether additional mitigation measures or modifications to the activities are appropriate.

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

Appendix A. Marine Mammal Sighting Forms and Grid

MARINE MAMMAL OBSERVATION RECORD

Project Name: ____________

Monitoring Location: ____________

Date: ____________

Time Effort Initiated: ____________

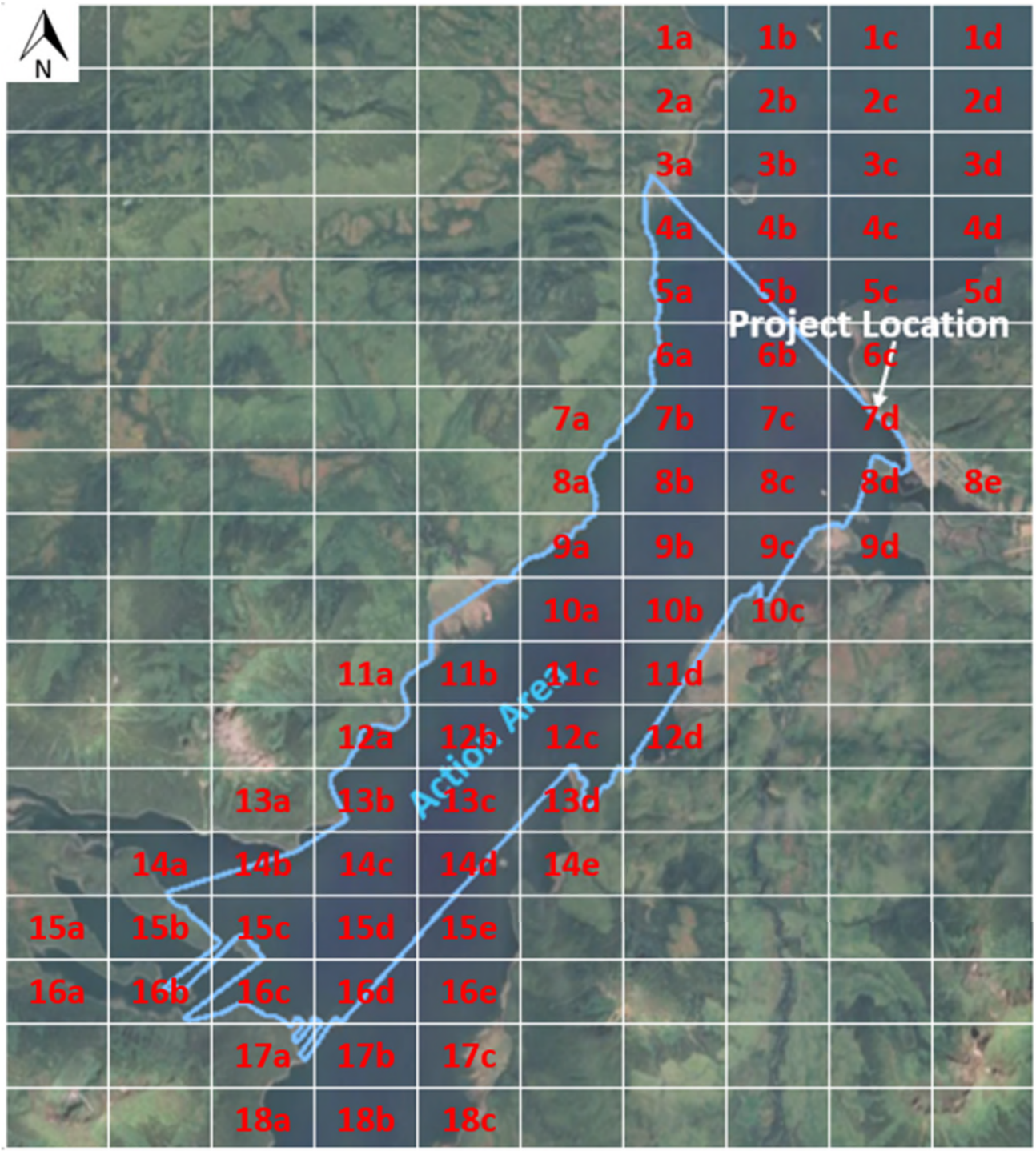
Time Effort Completed: ____________

Page ______ of ______

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W
:	B – P – M – G – E	%	S – PC – L – R – F – OC – SN – HR	Lt/Mod/Hvy		N S E W	N S E W

Event Code	Sight # (1 or 1.1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Distance from Pile	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON S M OR E OFF		: :	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DD FL OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DD FL OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DD FL OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DD FL OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DD FL OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DD FL OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DD FL OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		: :	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DD FL OWC NOWC NONE	DE SD None		

Marine Mammal Sighting Form: Project Area Grid Map



Filling Out Sighting Forms	
Data Columns	**Definition and How to Record Data**
General Information *(Top of Form)*	
Project Name	HMIC Cargo Dock
Monitoring Location	City Dock, Halibut Island, Long Island, or Vessel
Date	MM/DD/YYYY
Time effort initiated and completed	Time started pre-watch and time post-watch ended (military time). If there is more than one monitoring period in a day, start a new form for each period.
Environmental Conditions	
Environmental Conditions	Record at the start of monitoring period, when changes, and at the end of monitoring period.
Visibility	B-bad, P-poor, M-moderate, G-good, and E-excellent
Glare	Amount of water obstructed by glare (0–100%) and direction of glare (from south, north, or another direction)
Weather conditions	Dominant weather conditions: sunny (S), partly cloudy (PC), light rain (LR), steady rain (R), fog (F), overcast (OC), light snow (LS), snow (SN)
Wave Height	Lt-light, Mod-moderate, Hvy-heavy
Wind and Swell direction	From the north (N), northeast (NE), east (E), southeast (SE), south (S), southwest (SW), west (W), northwest (NW)
Beaufort Sea State	Scale 1-12. See BSS sheet.
Sightings	
Event Code	Indicates what events are happening at the time of the sighting, what events may have occurred due to the sighting, and observer rotations.
Time/Duration	Time first sighted and time of last sighting (military time).
Sighting Number	Chronological (1,2,3, etc.) If the same marine mammal is resighted at a distances greater than 25 meters from the original sighting location record as a resight (Ex. 1.1- same marine mammal as sighting 1, but sighted for a second time in different location)
WP/Grid #/DIR of Travel	Grid number that marine mammal was sighted in and direction of travel
Distance from pile	Distance in meters from in-water work
Observer (Obs.)	Initials of the Observer who sighted the marine mammal or who is coming on shift during a rotation
Sighting Cue	How was the marine mammal sighted
Species	Appropriate species abbreviation from code sheet

Group Size	Record the minimum and maximum number of individuals that were sighted. Then determine and record the best number of individuals.
Behavior	Behaviors observed using appropriate abbreviations from code sheet
Construction Type	Circle construction type that is actively occurring at the time and for the duration of the sighting.
Mitigation Type	Circle mitigation type, if any. Based upon monitoring and shutdown zones does a delay of work (pre-watch and post-watch) or a shutdown (monitoring period) need to occur.
Exposure	If a marine mammal enters its Level A or Level B distance and work is actively occurring it will be an exposure indicate yes (Y). If no work is actively occurring indicate no (N)

Marine Mammal Observation Record – Sighting Codes

Behavior Codes

Code	Behavior	Definition
BR	Breaching	Leaps clear of water
CD	Change Direction	Suddenly changes direction of travel
CH	Chuff	Makes loud, forceful exhalation of air at surface
DI	Dive	Forward dives below surface
DE	Dead	Shows decomposition or is confirmed as dead by investigation
DS	Disorientation	An individual displaying multiple behaviors that have no clear direction or purpose
FI	Fight	Agonistic interactions between two or more individuals
FO	Foraging	Confirmed by food seen in mouth
MI	Milling	Moving slowly at surface, changing direction often, not moving in any particular direction
PL	Play	Behavior that does not seem to be directed towards a particular goal; may involve one, two or more individuals
PO	Porpoising	Moving rapidly with body breaking surface of water
SL	Slap	Vigorously slaps surface of water with body, flippers, tail etc.
SP	Spyhopping	Rises vertically in the water to "look" above the water
SW	Swimming	General progress in a direction. Note general direction of travel when last seen [Example: "SW (N)" for swimming north]
TR	Traveling	Traveling in an obvious direction. Note direction of travel when last seen [Example: "TR (N)" for traveling north]
UN	Unknown	Behavior of animal undetermined, does not fit into another behavior
AWA	Approach Work	
LWA	Leave Work Area	
Pinniped only		
EW	Enter Water (from haul out)	Enters water from a haul-out for no obvious reason
FL	Flush (from haul out)	Enters water in response to disturbance
HO	Haul out (from water)	Hauls out on land
RE	Resting	Resting onshore or on surface of water
LO	Look	Is upright in water "looking" in several directions or at a single focus
SI	Sink	Sinks out of sight below surface without obvious effort (usually from an upright position)
VO	Vocalizing	Animal emits barks, squeals, etc.
Cetacean only		
LG	Logging	Resting on surface of water with no obvious signs of movement

Sea State and Wave Height: Use Beaufort Sea State Scale for Sea State. This refers to the surface layer and whether it is glassy in appearance or full of white caps. In the open ocean, it also considers the wave height or swell, but in inland waters the wave height (swells) may never reach the levels that correspond to the correct surface white cap number. Therefore, include wave height for clarity.

Glare: Percent glare should be the total glare of observers' area of responsibility. Determine if observer coverage is covering 90 degrees or 180 degrees and document daily. Then assess total glare for that area. This will provide needed information on what percentage of the field of view was poor due to glare.

Swell Direction: Swell direction should be where the swell is coming from (S for coming from the south). If possible, record direction relative to fixed location (pier). Choose this location at beginning of monitoring project.

Wind Direction: Wind direction should also be where the wind is coming from.

Event

Code	Activity Type
E ON	Effort On
E OFF	Effort Off
PRE	Pre-Construction Watch
POST	Post-Construction Watch
CON	Construction (see types)
S	Sighting
M	Mitigation (see types)
OR	Observer Rotation

Sighting Cues

Code	Distance Visible
BL	Blow
BO	Body
BR	Breach
DF	Dorsal Fin
SA	Surface Activity
OTHR	Other

Marine Mammal Species

Code	Marine Mammal Species
HSEA	Harbor Seal
STSL	Steller Sea Lion
HPBK	Humpback Whale
HAPO	Harbor Porpoise
DAPO	Dall's Porpoise
MINK	Minke Whale
ORCA	Killer Whale

Construction Type

Code	Activity Type
V	Vibratory Pile Driving
I	Impact Pile Driving
ST	Stabbing
DR	Drilling
OWC	Over-Water Construction
NOWC	No Over-Water Construction
NONE	No Construction

Mitigation Codes

Code	Activity Type
SS	Soft Start
BC	Bubble Curtain
DE	Delay onset of In-Water Work
SD	Shut down In-Water Work

Visibility

Code	Distance Visible
B	Bad (<0.5km)
P	Poor (0.5 – 0.9km)
M	Moderate (0.9 – 3km)
G	Good (3 - 10km)
E	Excellent (>10km)

Weather Conditions

Code	Weather Condition
S	Sunny
PC	Partly Cloudy
L	Light Rain
R	Steady Rain
F	Fog
OC	Overcast
SN	Snow
HR	Heavy Rain

Wave Height

Code	Wave Height
Light	0 – 3 ft
Moderate	4 – 6 ft
Heavy	>6 ft

Estimating Wind Speed and Sea State with Visual Clues

Beaufort number	Wind Description	Wind Speed	Wave Height	Visual Clues
0	Calm	0 knots	0 feet	Sea is like a mirror. Smoke rises vertically.
1	Light Air	1-3 kts	< 1/2	Ripples with the appearance of scales are formed, but without foam crests. Smoke drifts from funnel.
2	Light breeze	4-6 kts	1/2 ft (max 1)	Small wavelets, still short but more pronounced, crests have glassy appearance and do not break. Wind felt on face. Smoke rises at about 80 degrees.
3	Gentle Breeze	7-10 kts	2 ft (max 3)	Large wavelets, crests begin to break. Foam of glassy appearance. Perhaps scattered white horses (white caps). Wind extends light flag and pennants. Smoke rises at about 70 deg.
4	Moderate Breeze	11-16 kts	3 ft (max 5)	Small waves, becoming longer. Fairly frequent white horses (white caps). Wind raises dust and loose paper on deck. Smoke rises at about 50 deg. No noticeable sound in the rigging. Slack halyards curve and sway. Heavy flag flaps limply.
5	Fresh Breeze	17-21kts	6 ft (max 8)	Moderate waves, taking more pronounced long form. Many white horses (white caps) are formed (chance of some spray). Wind felt strongly on face. Smoke rises at about 30 deg. Slack halyards whip while bending continuously to leeward. Taut halyards maintain slightly bent position. Low whistle in the rigging. Heavy flag doesn't extended but flaps over entire length.
6	Strong Breeze	22-27 kts	9 ft (max 12)	Large waves begin to form. White foam crests are more extensive everywhere (probably some spray). Wind stings face in temperatures below 35 deg F (2C). Slight effort in maintaining balance against wind. Smoke rises at about 15 deg. Both slack and taut halyards whip slightly in bent position. Low moaning, rather than whistle, in the rigging. Heavy flag extends and flaps more vigorous.
7	Near Gale	28-33 kts	13 ft (max 19)	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of wind. Necessary to lean slightly into the wind to maintain balance. Smoke rises at about 5 to 10 deg. Higher pitched moaning and whistling heard from rigging. Halyards still whip slightly. Heavy flag extends fully and flaps only at the end. Oilskins and loose clothing inflate and pull against the body.
8	Gale	34-40 kts	18 ft (max 25)	Moderately high waves of greater length. Edges of crests begin to break into the spindrift. The foam is blown in well-marked streaks along the direction of the wind. Head pushed back by the force of the wind if allowed to relax. Oilskins and loose clothing inflate and pull strongly. Halyards rigidly bent. Loud whistle from rigging. Heavy flag straight out and whipping.
9	Strong Gale	41-47 kts	23 ft (max 32)	High waves. Dense streaks of foam along direction of wind. Crests of waves begin to topple, tumble and roll over. Spray may affect visibility.
10	Storm	48-55 kts	29 ft (max 41)	Very high waves with long overhanging crests. The resulting foam, in great patches is blown in dense streaks along the direction of the wind. On the whole, the sea takes on a whitish appearance. Tumbling of the sea becomes heavy and shock-like. Visibility affected.
11	Violent Storm	56-63 kts	37 ft (max 52)	Exceptionally high waves (small and medium-sized ships might be for time lost to view behind the waves). The sea is completely covered with long white patches of foam lying along the direction of the wind. Everywhere, the edges of the wave crests are blown into froth. Visibility greatly affected.
12	Hurricane	64+ kts	45+ ft	The air is filled with foam and spray. The sea is completely white with driving spray. Visibility is seriously affected.

Appendix B. Construction Activity and Communication Log

Construction Activity and Communication Log

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

Time	Pile Size	Pile Type	Construction Type	Obs.	Construction Personnel	Communication/Comments

Filling Out Construction Activity and Communication Logs	
Data Columns	**Definition and How to Record**
General Information *(top of form)*	
Project	Time that monitoring by MMOs/PSOs began and ended, without interruption (military time)
Project Name	HMIC Cargo Dock
Monitoring Location	City Dock, Halibut Island, Long Island, or Vessel
Observer	Names of Observers at that location
Date	MM/DD/YYYY
Construction and Communication Activities	
Time of event	Time that construction activities and all communications between MMOs/PSOs and construction crews take place
Type of construction activity	Type of construction activity occurring, including ramp up, startup, shutdown, type of pile installation technique, pile size, and pile type (permanent or temporary)
Communication	Information communicated between MMOs/PSOs and construction crew