



Protected Species Monitoring and Mitigation Plan

**Auke Bay East Terminal
Improvements Project**

State Project #: SAMHS00419

Updated July 2024

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Attachment 1: Example Data Forms

Acronyms and Abbreviations

BiOp	Biological Opinion
DOT&PF	Alaska Department of Transportation & Public Facilities
DPS	Distinct Population Segment
DTH	Down-the-Hole
ESA	Endangered Species Act
IHA	Incidental Harassment Authorization
MMO	Marine Mammal Observer
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
PSO	Protected Species Observer
QA	Quality Assurance
QC	Quality Control
SSWS	Sea Star Wasting Syndrome



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1 INTRODUCTION

The purpose of this Protected Species Monitoring and Mitigation Plan is to describe monitoring procedures for affected marine species and mitigation actions that will be implemented by the Alaska Department of Transportation & Public Facilities (DOT&PF) during pile installation and removal associated with the Auke Bay East Terminal Improvements Project (Project; see Figure 1-1 and Figure 1-2). This Protected Species Monitoring and Mitigation Plan was prepared as part of the application for an Incidental Harassment Authorization (IHA) under the Marine Mammal Protection Act (MMPA) and in support of formal consultation with the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act (ESA).

On March 16, 2023, NMFS proposed listing the sunflower sea star (*Pycnopodia helianthoides*) as threatened under the ESA (88 FR 16212). The sunflower sea star has been included in this PSMMP because of its status as a proposed threatened species (71 FR 61022) as it could potentially occur within the Project area.

The overall goal of the Protected Species Monitoring and Mitigation Plan is to comply with the Project IHA and Biological Opinion (BiOp) during in-water pile installation and removal by monitoring the Project area and documenting all marine mammals potentially exposed to noise at or above established thresholds; minimizing impacts on marine mammals and sunflower sea stars through mitigation measures; and collecting data on sunflower sea star occurrence and evidence of Sea Star Wasting Syndrome (SSWS), and marine mammal exposures (takes), occurrence, and behavior in the Project area.

1.1 Project Description

The in-water portion of the Project includes removal of existing 18-inch steel pipe piles (summarized in Table 1-1) and installation of permanent steel pipe piles to support replacement of the dock structure. Temporary steel pipe piles will be installed to support permanent pile installation and will be removed following completion of permanent pile installation. In addition, above-water construction will include replacement of the catwalk access gangway, refurbishment of the catwalks, lighting upgrades along dolphins and catwalk, and removal and replacement of electrical components as needed to perform dolphin replacement work. The marine construction associated with the Project will occur during a 4-month period in late fall 2024. An IHA was issued on 17 January 2024 for one year of work to begin on 01 October 2024 (89 Federal Register [FR] 2584). See the Project IHA application for further design and construction details.

The Project has the potential to generate elevated levels of underwater noise that could exceed Level A (auditory injury) and Level B (disturbance) harassment thresholds for marine mammals established by NMFS under the revised Technical Guidance (NMFS 2018) and the interim criteria (70 FR 1871–1875), respectively. Level A harassment means any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild. Level B harassment means any act of pursuit, torment, or annoyance that has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering, but that does not have the potential to injure a marine mammal or marine mammal stock in the wild. Additionally, placement and removal of piles have the potential to injure a sunflower sea star directly. For sunflower sea stars, a ‘take’ will follow the ESA definition, and be documented if a sunflower sea star is relocated from a pile during pile



removal. Up to one lethal take of sunflower sea stars may be assumed, if not observed, due to pile installations and sunflower sea star density.



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■ Project Location

Alaska Department of Transportation
& Public Facilities
**AMHS Auke Bay East Terminal
Improvements Project**



Map information was compiled from the best available sources.
No warranty is made for its accuracy or completeness.
Projection is NAD 83 State Plane Zone 1 - Date: 11/14/2022

Figure 1-1. Site Location and Vicinity



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Figure 1-2. Location of East Terminal Updates in Auke Bay, Alaska



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Table 1-1. Numbers and Types of Piles to be Installed and Removed for each Project Component

Pile Diameter and Type	Number of Piles	Impact Strikes per Pile (duration in minutes)	Vibratory Duration per Pile (duration in minutes)	Total Duration of Activity per Pile (hours)	Production Rate Piles per Day (Range)	Days of Installation or Removal
Pile Installation						
30" Steel Plumb Piles (Permanent; Berthing Dolphins)	10	1,000 (120)	60	3.0	1.5 (1-2)	7
30" Steel Batter Piles (Permanent; Berthing Dolphins)	10	1,000 (120)	60	3.0	1.5 (1-2)	7
24" Steel Plumb Piles (Permanent; Float Restraint)	4	1,000 (120)	60	3.0	1.5 (1-2)	3
24" Steel Batter Piles (Permanent; Float Restraint)	4	1,000 (120)	60	3.0	1.5 (1-2)	3
18" Steel Plumb Piles (Permanent; Gangway/Platform Support)	4	800 (100)	60	2.67	1.5 (1-2)	3
24" Steel Piles (Temporary)	32	500 (60)	30	1.5	3 (2-4)	11
Pile Removal						
18" Steel Plumb Piles (Existing)	47	NA	30	0.5	3 (2-4)	16
24" Steel Piles (Temporary)	32	NA	30	0.5	3 (2-4)	11
TOTALS	143					61

Note: NA = not applicable

1.2 Protected Species

Steller sea lion (*Eumetopias jubatus*), California sea lion (*Zalophus californianus*), Northern fur seal (*Callorhinus ursinus*), harbor seal (*Phoca vitulina*), Northern elephant seal (*Mirounga angustirostris*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), killer whale (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*), and humpback whale (*Megaptera novaeangliae*), including the ESA-listed Mexico Distinct Population Segment (DPS) of humpback whales and western DPS (wDPS) of Steller sea lions, may occur in the Project area; a number of Level B exposures was authorized for these marine mammal species under the MMPA (see Project IHA, NMFS 2024). Additionally, a small number of Level A exposures was authorized for harbor seals and harbor porpoises under the MMPA (NMFS 2024). Authorization for a small number of Level B exposures of the ESA-listed Mexico DPS of humpback whales and wDPS of Steller sea lions was also granted in the Project BiOp and Incidental Take Statement (NMFS 2023).

In the issued IHA (89 FR 2584), NMFS has authorized 11,066 potential exposures of marine mammals to Level B harassment and 129 potential exposures of marine mammals to Level A harassment, for a total of 11,195 potential exposures (Table 1-2). Of the issued 6,101 Level B takes for Steller sea lions, the BiOp Incidental Take Statement (ITS) has authorized approximately 1.4% of Steller sea lion take as the listed wDPS population, or 86 harassment takes. Additionally, the BiOp ITS has authorized up to 10 harassment takes (equivalent to 2% of the expected Level B take) of the listed Mexico DPS population of humpback whales.

Sunflower sea stars (*Pyncopodia helianthoides*) may also occur in the Project area. Monitoring and mitigation measures will reduce the chance of direct injury to sunflower sea stars, however, one lethal take will be assumed to occur over the length of the project due to pile placement, and the take of 141 sunflower sea stars due to handling and relocation from piles being removed was issued in the BiOp ITS (NMFS 2023).

Table 1-2. Summary of the Numbers of Marine Mammal Level A and B Takes Authorized by NMFS

Species	DPS/Stock	Authorized Number of Exposures to Level A Harassment	Authorized Number of Exposures to Level B Harassment	Total Estimated Exposures (Level A and Level B)
Humpback whale	Hawaii DPS	0	478	478
	Mexico DPS	0	10	10
Minke whale	Alaska	0	4	4
Killer whale	West Coast Transient	0	28	28
	Alaska Resident	0	82	82
Pacific white-sided dolphin	North Pacific	0	184	184
Harbor porpoise	Southeast Alaska Inland Waters	61	300	361
Dall's porpoise	Alaska	0	35	35
Steller sea lion	Eastern DPS	0	6,015	6,015
	Western DPS	0	86	86
California sea lion	U.S. Stock	0	61	61
Northern fur seal	Eastern Pacific	0	15	15
Harbor seal	Lynn Canal / Stephens Passage Stock	68	3,752	3,820
Northern elephant seal	California Breeding Stock	0	16	16
Total	N/A	129	11,066	11,195

Note: DPS = Distinct Population Segment; N/A = not applicable.

2 PROTECTED SPECIES MONITORING AND MITIGATION MEASURES

The complete list of required avoidance, minimization, and mitigation measures can be found in the Project IHA (NMFS 2024) and BiOp (NMFS 2023). Avoidance and minimization measures described here include establishment of Level A and Level B harassment zones, marine mammal and sunflower sea star monitoring, and specific mitigation measures that will be implemented during in-water pile installation and removal.

2.1 Shutdown Zones

During in-water pile installation or removal, the Contractor will monitor for sunflower sea stars on pile removals, and all marine mammals within or approaching the Level A and Level B harassment zones. Monitoring all harassment zones, including the outer margins, enables trained Protected Species Observers (PSOs; also known as Marine Mammal Observers or MMOs) to be aware of and communicate the presence of marine mammals in the Project area and thus prepare for potential shutdown of activity and documentation of potential exposures (takes).

Distances to the Level A and Level B harassment thresholds, as defined by sound isopleths, vary by marine mammal functional hearing group, pile size, duration of installation, and pile-installation method (Table 2-1). Figures illustrating the maximum anticipated Level A and anticipated Level B harassment zones for the different numbers and types of piles, as well as installation methods, are provided in Figure 2-1 through Figure 2-6. Depending on tidal stage, the harassment zones may differ from the figures.

Note that the actual pile installation and removal durations may be longer or shorter than the numbers used for calculations in Table 2-1. Estimated duration of pile installation and removal methods are used to predict harassment zone sizes and are not intended to be caps or limits on these activities. It is anticipated that the actual durations will be determined based on the engineering specifications for the Project as determined by the Contractor.

Further, a discrepancy in Level A and Level B zones exists between marine mammal species covered by the MMPA included in the IHA, and those marine mammal species that are also included in the BiOp due to their ESA-listed status. As a result, ESA-listed species have different Level A zones for all pile sizes, and different Level B zones for some pile sizes (Table 2-1). When the BiOp zones exceed those of the IHA, the BiOp zones will be used for ESA-listed marine mammal species. When IHA zones exceed those of the BiOp, the IHA zones will be used for all marine mammal species, including listed species. Should questions arise regarding which Level A or B zones apply to which species, contact the DOT&PF project engineer.

For those marine mammal species for which Level B exposures have not been requested, in-water pile installation and removal will shut down immediately when the animals are sighted approaching or within the Level B zone. If a marine mammal authorized for Level B exposure is present in the Level B harassment zone, in-water pile installation and removal may continue, and a potential Level B exposure will be recorded. Pile installation by vibratory and impact methods may occur when marine mammals for which Level B exposure has been authorized are in the Level B harassment zone, whether they entered the Level B zone from the Level A zone (if relevant) or from outside the Project area. If the number of potential Level B exposures reaches the authorized limit, pile installation will be stopped as these species approach the relevant isopleths to avoid additional exposures of these species. Additionally, PSOs will alert



the Project Engineer and DOT&PF if Level A or B exposures reach 75% of the authorized limit for any species.

A 30-meter shutdown zone will be implemented for all species and all pile installation and removal methods to prevent direct contact and injury of marine mammals with construction equipment during piling (Table 2-1). Shutdown zones shown in Table 2-1 have been rounded up to simplify management of monitoring.



Table 2-1. Calculated Distances to Level A and B Harassment Isoleths and Shutdown Zones during Pile Installation and Removal

Activity	Pile Size (in)	Minutes per Pile or Strikes per Pile	Piles Per Day	Rounded Level A Zones and Minimum Shutdown Zones (m)														Level B Zones			
				LF				MF		HF		PW		OW				ESA-Species	Non-ESA Species		
Minke Whale		Humpback Whale (ESA)		Killer Whale		Harbor Porpoise, Dall's Porpoise, Pacific White-sided Dolphin		Harbor Seal, Northern Elephant Seal		Steller Sea Lion (ESA)		California Sea Lion		No Level A Take		No Level A Take				Shutdown Zone to Avoid Take	Level A Zone
No Level A Take		No Level A Take		No Level A Take		Level A Take Authorized for Harbor Porpoise Only		Level A Take Authorized for Harbor Seal Only		No Level A Take		No Level A Take		Shutdown Zone to Avoid Take	Level A Zone	Shutdown Zone to Avoid Take	Level A Zone	Shutdown Zone to Avoid Take	Level A Zone		
Shutdown Zone to Avoid Take		Level A Zone		Shutdown Zone to Avoid Take		Level A Zone		Shutdown Zone to Avoid Take		Level A Zone		Shutdown Zone to Avoid Take								Level A Zone	
Vibratory Installation	30-inch	60 Minutes	3	75	42	75	42	30	5	75	59	30	27	30	3	30	3	11,659	9,454		
	24-inch	60 Minutes	3	75	20	75	20	30	2	75	29	30	12	30	1	30	1	7,356			
		30 Minutes	3	75	13	75	13	30	2	75	18	30	8	30	1	30	1				
	18-inch	60 Minutes	3	75	9	75	15	30	1	75	14	30	6	30	1	30	1	5,412	3,415		
Vibratory Removal	24-inch	30 Minutes	6	75	20	75	20	30	2	75	29	30	12	30	1	30	1	7,356			
	18-inch	30 Minutes	6	75	9	75	15	30	1	75	14	30	6	30	1	30	1	5,412	3,415		
Impact Installation	30-inch	1000 strikes	2	640	632	2,600	2,513	30	23	760	752	340	338	100	98	30	25	2,154	1,000*		
			1	400	398	1,600	1,583	30	15	480	474	220	213	75	62	30	16				
	24-inch	1000 strikes	3	830	827	970	965	30	30	990	985	450	443	40	38	40	33	1,585	1,000		
			2	640	632	740	736	30	23	760	752	340	338	30	29	30	25				
			1	400	398	470	464	30	15	480	474	220	213	30	19	30	16				
		500 strikes	3	530	521	610	608	30	19	630	621	280	279	30	24	30	21				
			2	400	398	470	464	30	15	480	474	220	213	30	19	30	16				
			1	260	251	300	292	30	9	300	299	140	134	30	12	30	10				
	18-inch	800 Strikes	4	640	636	750	741	30	23	760	756	340	340	30	29	30	25	631	464*		
			3	530	525	620	612	30	19	630	625	290	281	30	24	30	21				
2			410	401	470	467	30	15	480	477	220	215	30	19	30	16					
1			260	252	300	294	30	9	310	301	140	135	30	12	30	10					

*For these methods, certain Level A zones (**bolded**) exceed the Level B distance, and will be monitored to prevent Level A take

Note: Actual pile installation and removal durations may be longer or shorter. Estimated duration of pile installation and removal methods are not intended to be caps or limits on these activities. It is anticipated that the actual durations will be determined based on the engineering specifications for the Project as determined by the Contractor. HF = high frequency; LF = low frequency; MF = mid-frequency; OW = otariid in water; PW = phocid in water



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Figure 2-1. Shutdown Zones during Vibratory Pile Installation and Removal at Auke Bay East Ferry Terminal



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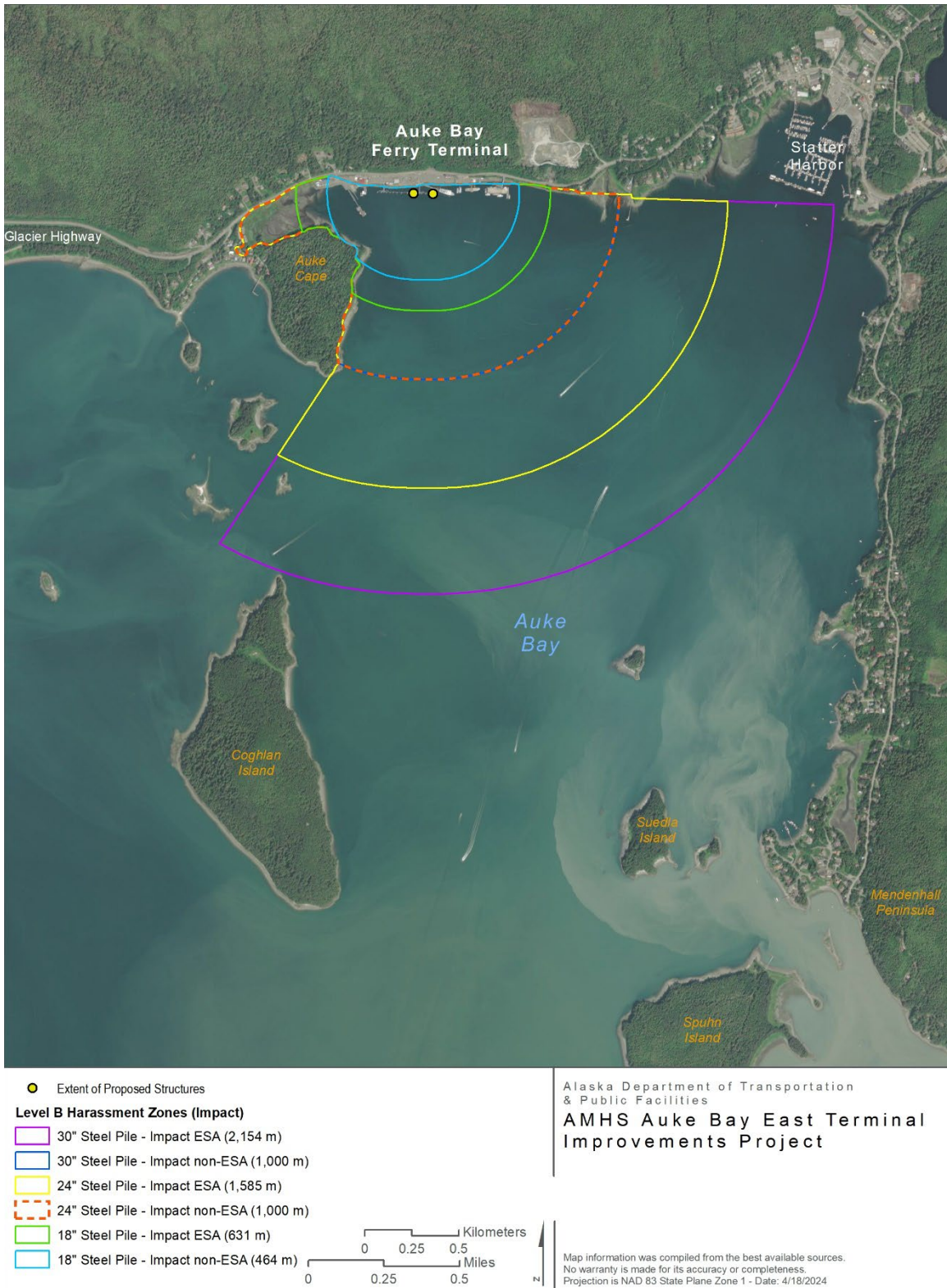


Figure 2-2. Level B Harassment Zones during Impact Pile Installation at Auke Bay Ferry Terminal



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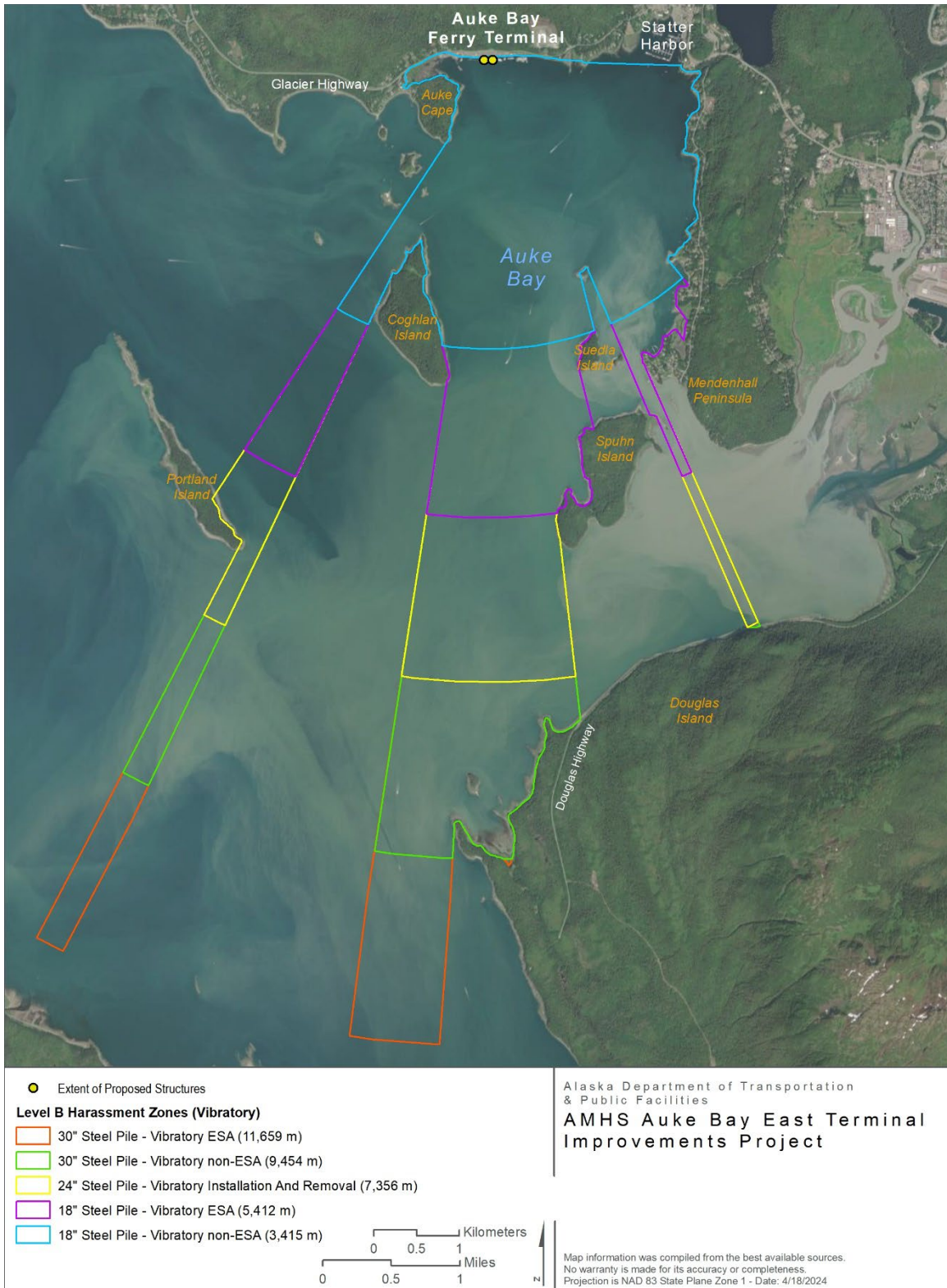


Figure 2-3. Level B Harassment Zones during Vibratory Pile Installation and Removal at Auke Bay Ferry Terminal



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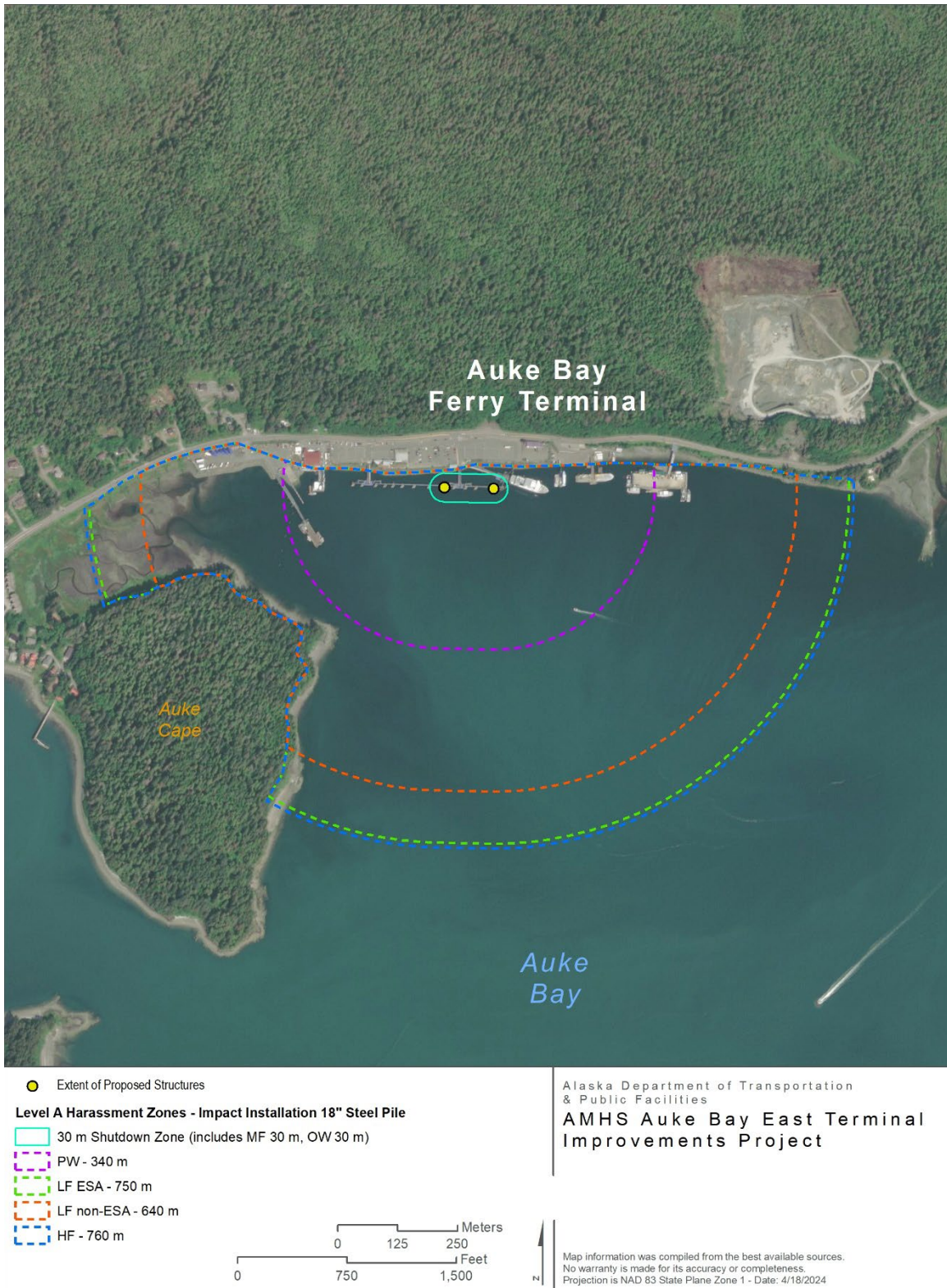


Figure 2-4. Largest Level A Harassment Zones during Impact Installation of 18-inch Steel Piles (four piles at 800 strikes each)



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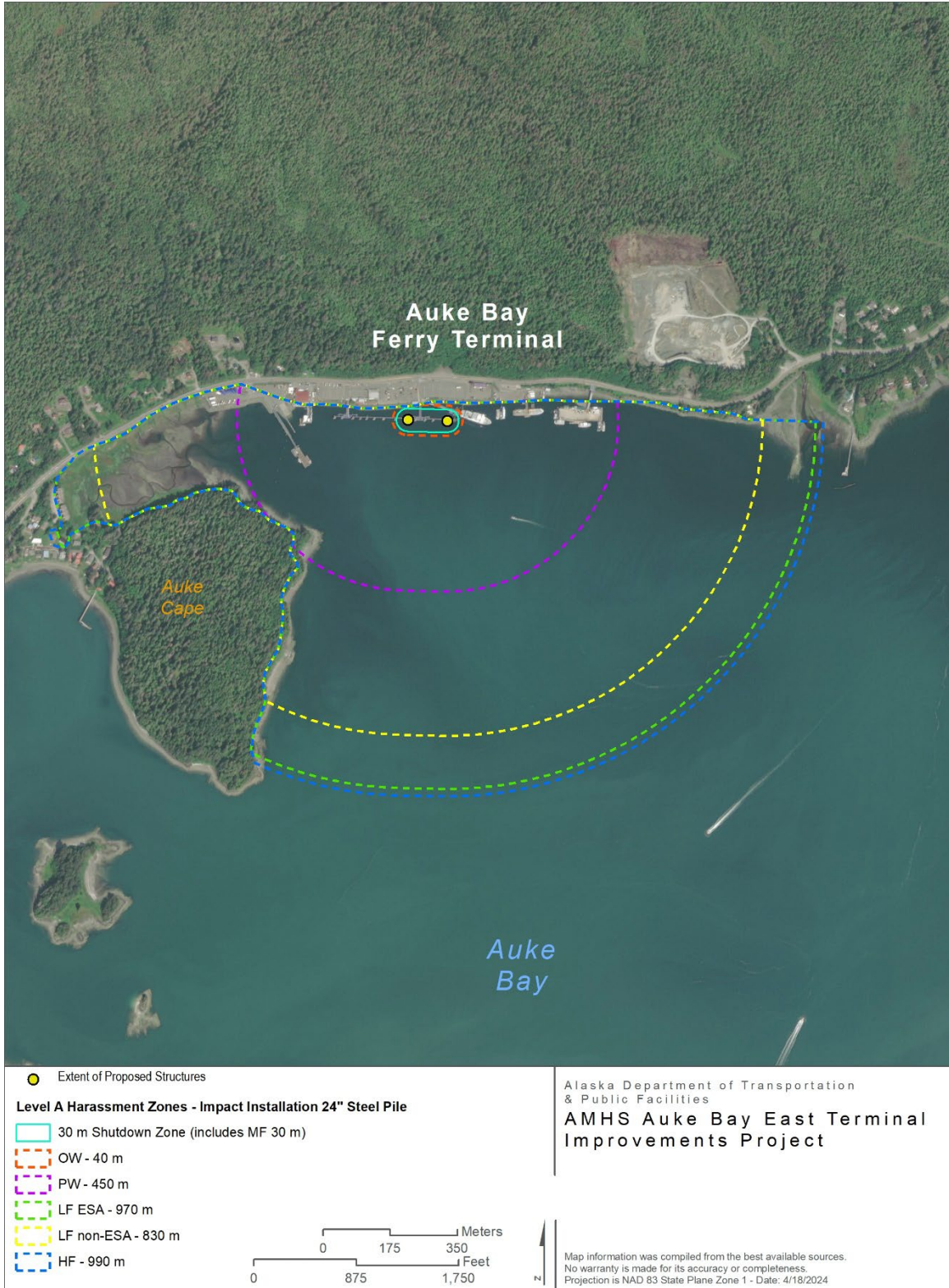


Figure 2-5. Largest Level A Harassment Zones during Impact Installation of 24-inch Steel Piles (three piles at 1,000 strikes each)



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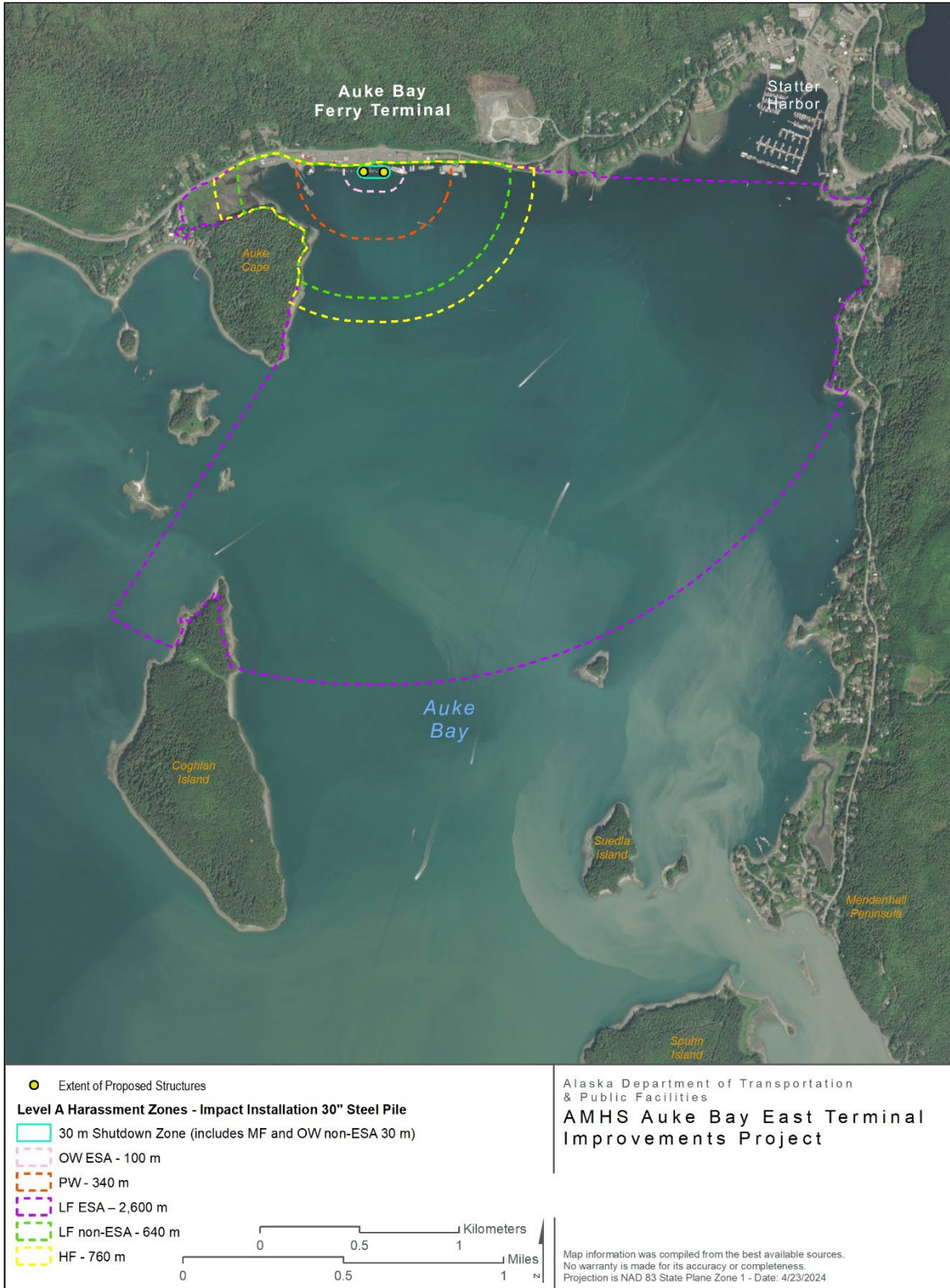


Figure 2-6. Largest Level A Harassment Areas during Impact Installation of 30-inch Steel Piles (two piles at 1,000 strikes each)



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2.2 Protected Species Monitoring

To minimize potential impacts of Project activities on marine mammals and sunflower sea stars, PSOs will be present during all in-water pile installation and removal using impact and vibratory methods. The PSOs' primary responsibilities will be to search for, monitor, document, and track marine mammals, and monitor pile removals for presence of sunflower sea stars.

PSOs will have no other construction-related tasks or responsibilities while monitoring for marine mammals. PSOs will understand their roles and responsibilities before beginning observations. A clear authorization and communication system will be in place to ensure that PSOs and construction crew members understand their respective roles and responsibilities.

2.2.1 Positioning

A minimum of two PSOs during impact installation and a minimum of three PSOs during vibratory installation/removal will monitor the construction area and will be positioned at the best practical vantage point(s). Locations from which PSOs will be able to monitor for marine mammals are readily available from publicly accessible shoreside areas at the Auke Bay Ferry Terminal and, if necessary, other public and private points along the Glacier and Douglas highways. Monitoring locations will be selected by the Contractor during pre-construction. PSOs will monitor for marine mammals entering the Level B harassment zones; the position(s) may vary based on construction activity and location of piles or equipment. At least one of the monitoring locations will have the following characteristics:

- An unobstructed view of the pile being driven, and
- An unobstructed view of the Level A harassment zones.

This central position will be staffed by the lead PSO, who will monitor the shutdown zones and communicate with construction personnel about shutdowns and management of take. Walking or otherwise moving around the general construction site may be helpful for monitoring the shutdown zones in their entirety. The other PSO(s) will watch for marine mammals entering and leaving the Level B zone(s) and will alert the lead PSO of the number and species sighted so that no unexpected marine mammals will approach the construction site. This will avoid and minimize Level A take of all species.

This central position staffed by the lead PSO will also be responsible for monitoring pile removals for the presence of sunflower sea stars physically attached to piles as the piles are removed from the water. If water depth and clarity are sufficient to allow the PSO to see the benthic substrate where piles will be placed, the lead PSO may monitor the pile placement to avoid direct placement on a sunflower sea star. Otherwise, bi-weekly surveys will be used to determine whether sunflower sea stars are in the area.

2.2.2 Daily Monitoring Protocols

At the start of each day, the Contractor(s) will hold a briefing with the Lead PSO to outline the activities planned for that day. The PSOs will begin observations 30 minutes prior to the start of pile installation/removal and continue observations for 30 minutes following completion each day. Pile installation/removal may commence when PSOs have declared the shutdown zones clear of marine mammals. In the event of a delay or shutdown resulting from marine mammals in the shutdown zones, their behavior must be monitored and documented until they leave of their own volition, at which point pile installation or removal may begin.

At least two PSOs during impact installation events and at least three PSOs during vibratory installation or removal will be available to observe during rotating shifts of no more than 4 hours without a break and no more than 12 hours each day to prevent fatigue. While the 4-hour time limit is required by NMFS, pile driving is intermittent in nature, and it is expected that PSOs on watch will be able to take frequent breaks as needed while still being able to maintain sufficient coverage of the Project area.

Specific aspects and protocols of observations will include:

- If waters exceed a sea-state that restricts the PSO's ability to make observations within the Level A harassment zone of pile driving (e.g., if there is excessive wind or fog), pile installation and removal will be halted. Pile driving will not be initiated until the entire Level A harassment zones are visible.
- If any marine mammal species not authorized for take is encountered during pile installation or removal and is likely to be exposed to Level B harassment, in-water pile installation or removal will be halted.
 - If take occurs, contact the Project Engineer immediately so that the observations can be reported to NMFS Office of Protected Resources by the Department.
- When a marine mammal is observed, its location will be determined using tools to verify distance and heading (e.g., rangefinder, reticle binoculars, GPS, compass).
- The PSOs will record any authorized cetacean or pinniped present during monitoring and the harassment zone within which it is located, if applicable. The harassment zones are described in Table 2-1 and shown on Figure 2-1 through Figure 2-6.
- Ongoing in-water pile installation/removal may be continued during periods when conditions such as low light, high sea state, fog, ice, rain, or glare prevent effective marine mammal monitoring of the entire Level B harassment zone. PSOs will continue to monitor the visible portion of the Level B harassment zone throughout pile installation and removal.
- Ongoing in-water pile installation and removal may be continued during periods when conditions such as low light, high sea state, fog, ice, rain, glare, or other conditions prevent effective marine mammal monitoring of the entire Level B harassment zone. PSOs will continue to monitor the visible portion of the Level B harassment zone throughout the duration of pile installation and removal.
- If zones are unable to be monitored for a period of 30 minutes or more due to environmental conditions, PSO breaks, or other circumstances, the 30-minute observation period prior to pile installation or removal will need to be completed again.
- Specific to sunflower sea stars, the lead PSO will monitor all pile removals and visually inspect that each pile is clear of sunflower sea stars as the pile is lofted and placed at the storage location (on-deck, on the approach, a bridge, etc.). An additional PSO may be required if monitoring of the Level A zone cannot be effectively conducted while also inspecting the pile being lofted.

2.3 Mitigation Measures for In-water Pile Installation and Removal

- Should PSOs have questions on any aspect of the PSMMP, such as implementation or applicability of specific mitigation measures or other questions, they should contact the Project Engineer/DOT&PF.

2.3.1 Marine Mammals

The DOT&PF intends to implement the general monitoring approach that was analyzed in the project BiOp and *Federal Register* Notice of Proposed IHAs. DOT&PF also intends to adhere to the monitoring and mitigation measures as outlined in the final BiOp, Incidental Take Statement, and IHA. The complete list of required avoidance, minimization, and mitigation measures can be found in the Project IHA. Avoidance and minimization measures described here include soft starts, establishment of shutdown zones, marine mammal monitoring, and sunflower sea star surveys. To minimize the effects of in-water pile installation and removal on marine mammals, the following measures will be observed:

- Pile installation, proofing, and removal will occur only during daylight hours, when visual monitoring of marine mammals can be conducted.
 - Daylight hours, for the purposes of monitoring, are defined as the time between civil dawn and civil dusk. Exact times for civil dawn and dusk for various locations can be found online.
- A 30-meter shutdown zone will be implemented for all species and all pile installation and removal methods to prevent direct contact and injury of marine mammals with construction equipment during pile driving.
- Shutting down pile installation or removal when a marine mammal is approaching or observed within a defined shutdown zone will be used to avoid exposure.
- If a marine mammal authorized for Level B exposure is present in the Level B harassment zone, in-water pile installation and removal may continue, and a Level B exposure will be recorded. Pile installation may occur when these species are in the Level B harassment zone, whether they entered the Level B zone from the Level A zone (if relevant) or from outside the Project area.
 - If the Level A harassment zone exceeds the Level B harassment zone, all mitigation measures associated with the Level A zone will be implemented for that species.
- If Level A or Level B exposure for a species reaches the authorized limit, pile installation will be stopped as individuals of this species approach the relevant zones to avoid additional exposure of this species.
 - If Level A or Level B exposure for a species reaches 80% of the authorized limit, the Project Engineer will be alerted.
 - If 75% of the total estimated days of in-water pile installation and removal area reached, the Project Engineer will be alerted.
- The Project Engineer will be alerted immediately if a potential unauthorized Level A take occurs.

- If a marine mammal is entering or is observed within an established shutdown zone, pile installation and removal 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, or 15 minutes have passed without subsequent detections of the animal (30 minutes for humpback whales).
- For impact pile installation, the Contractor will provide an initial set of three strikes from the impact hammer at reduced energy, followed by a 30-second waiting period and then two subsequent three-strike sets. This soft start or ramp-up will be applied prior to the beginning of pile installation each day or after an impact hammer has been idle for more than 30 minutes. No vibratory soft start or ramp-up is required.
- If a marine mammal is present within the Level A harassment zone, ramping up will be delayed until the animal leaves the Level A harassment zone. Ramping up and pile installation or removal will begin only after the PSO has determined, through sighting, that the animal has moved outside the Level A harassment zone.
- If a marine mammal authorized for exposure is present in the Level B harassment zone, ramping up may begin and a potential Level B exposure will be recorded. Ramping up may occur when these species are in the Level B harassment zone, whether they enter the Level B zone from the Level A zone or from outside the Project area.
- If a marine mammal is present in the Level B harassment zone, the Contractor may elect to delay ramping up to avoid a Level B exposure. To avoid a Level B exposure, ramping up will begin only after the PSO has determined, through sighting or if 15 minutes has passed without a re-sighting (30 minutes for humpback whales), that the animal has moved outside the Level B harassment zone.
- Vessels used in the proposed action will follow established transit routes and will travel at slow speeds (less than 10 knots) while in the action area.
- If a marine mammal approaches within 10 meters of a Project vessel (e.g., barge, tugboat), the vessel shall reduce speed to the minimum level required to maintain safe steerage and working conditions until the marine mammal is at least 10 meters away from the vessel.
 - Vessels will adhere to the Alaska Humpback Whale Approach Regulations while transiting to and from the Project Site, and not approach humpback whales within 91 meters (100 yards)
- PSO teams will be staffed as needed (more or fewer PSOs) to effectively monitor the exposure zones, so long as the required minimum number of PSOs is met.

2.3.2 Sunflower Sea Stars

- Prior to beginning in-water construction, a pre-construction survey of the Project area and its immediate vicinity will be conducted using a Remote Operated Vehicle (ROV), divers, or other equally effective methods.
 - Additional surveys will be completed monthly for the duration of in-water work.
- As feasible, the Contractor or DOT&PF may elect to monitor the placement of each pile with a video system or ROV in lieu of the preconstruction or monthly surveys
 - An ROV must be capable of:
 - Live video transmittal to the surface
 - Storing videos or still images for submittal to NMFS
 - Capable of illumination in low-light conditions
- The Lead PSO will monitor all pile removals for the presence of sunflower sea stars, and, when the pile is safely secured, either the lead PSO or another PSO present will gently remove and relocate any present sunflower sea stars to a nearby intertidal area as expeditiously as possible.
 - PSOs should document the release location and conditions of the sunflower sea star upon release, as well as any signs of SSWS and associated photos. Alert the Project Engineer should a sunflower sea star showing SSWS symptoms be relocated as DOT&PF will alert NMFS AKRO.

3 PROTECTED SPECIES OBSERVER QUALIFICATIONS

All PSOs will undergo project-specific training in monitoring, data collection, and mitigation procedures specific to the Project. This training will also include communication protocols.

Protected species monitoring will be conducted by two or more PSOs who meet or exceed the minimum qualifications identified by NMFS in the final IHA. These include the following:

- PSOs must be a subconsultant independent of the Construction Contractor (i.e., not construction personnel) and have no other assigned tasks during monitoring periods.
- One PSO will be designated as the lead PSO or monitoring coordinator. The lead PSO must have prior experience working as an observer during construction of a project pursuant to a NMFS-issued IHA or Letter of Concurrence.
- Other observers may substitute education (undergraduate degree in biological science or related field) or training for experience.
- PSOs must have:
 - The ability to conduct field observations and collect data according to assigned protocols.
 - Experience or training in the field identification of marine mammals, including the identification of behaviors.
 - Sufficient training, orientation, or experience with construction operations to provide for personal safety during observations.
 - Lead PSOs must have writing skills sufficient to prepare a report of observations, including, but not limited to:
 - The number, species, and behavior of marine mammals observed
 - Dates and times when in-water pile installation and removal were conducted
 - Dates and times when in-water pile installation and removal were suspended to avoid potential harassment of marine mammals observed within the harassment zones
 - The ability to communicate orally, by radio, or in person with Project personnel to provide real-time information on marine mammals or sunflower sea stars observed in the area.

A designated Lead PSO will always be on-site and will remain responsible for implementing the Monitoring Plan for in-water pile installation and removal for the Project.

The Lead PSO must have education and experience that demonstrates qualifications to serve as the lead, including the following minimum requirements:

- Education in wildlife observation techniques from a university, college, or other formal education program,
- Writing skills sufficient to prepare daily activity logs and monthly and final reports,
- Previous professional marine mammal observation experience during construction, and
- Knowledge or training in sunflower sea star identification and sea star wasting disease



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4 DATA COLLECTION

4.1 Environmental Conditions and Construction Activity

PSOs will use the environmental conditions and construction activities log to document environmental conditions, types of construction activities, and other human activity in the area (Attachment 2). Environmental conditions will be recorded at the beginning and end of every monitoring period and at every half hour or as conditions change. Data collected will 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).

PSOs will record the time that observations begin and end as well as the durations of shutdowns and delays. PSOs will document the reason(s) 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. Additionally, all communications between PSOs and the construction crew will be documented.

Data concerning environmental conditions, marine mammal or sunflower sea star sightings, and mitigation measures will be entered into a spreadsheet. Each data entry will be checked for quality assurance and quality control (QA/QC). The data will be submitted to NMFS along with the final monitoring report.

4.2 Sightings

Each marine mammal observation will be documented on a Marine Mammal Sighting Form consisting of a data page/table and a schematic map of the location of the observed animal (example in Attachment 1). Sightings data will include start and end times of each sighting; species; number of individuals; sex and age class, if possible; behavior and movement; distances from Project activities to the sighting; initial and final heading of the animal; type of in-water activity at the time of sighting; and if and when Project activities were stopped in response to the sighting (Table 4-1). PSOs will record whether no exposures occurred or a potential Level A and/or Level B exposure occurred, including the number of marine mammals and species potentially exposed. To the extent practicable, the PSOs will record behavioral observations that may make it possible to determine if the same or different individuals are exposed as a result of Project activities over the course of a single day. When marine mammals are sighted, PSOs should delegate responsibilities so that one or more PSOs continue to scan the water to identify other marine mammals that may enter the area while another PSO continues to monitor and track the first sighting.

Sightings of sunflower sea stars during pre-construction or during construction surveys will be recorded and immediately reported to the Project Engineer. Signs of sea star wasting syndrome and associated screen-captures or photos will be immediately provided to the Project Engineer in order for DOT&PF to report to NMFS AKR within two business days of the sighting. Sunflower sea star removals and relocations from a pile by a PSO during pile removal operations will be documented in the final or annual report. Sunflower sea star sightings and/or relocations should be logged on a dedicated sunflower sea star reporting form, on the daily activity log, or as directed by DOT&PF.

Table 4-1. Example Data Attributes and Definitions

Data Attribute	Attribute Definition and Units Collected
Start and end times of monitoring period	Time that monitoring by PSOs began and ended, without interruption
Environmental Conditions	
Weather conditions	Dominant weather conditions, collected every 30 minutes: sunny (S), partly cloudy (PC), light rain (LR), steady rain (R), fog (F), overcast (OC), light snow (LS), snow (SN)
Wind speed	In knots
Wind direction	From the north (N), northeast (NE), east (E), southeast (SE), south (S), southwest (SW), west (W), northwest (NW)
Wave height	Calm, ripples (up to 4 inches), small wavelets (up to 8 inches), large wavelets (up to 2 feet), small waves (up to 3 feet), moderate waves (up to 6 feet), large waves (up to 9 feet)
Cloud cover	Amount of cloud cover (0–100%)
Visibility	Maximum distance at which a marine mammal could be sighted
Glare	Amount of water obstructed by glare (0–100%) and direction of glare (from south, north, or another direction)
Tide	Predicted hourly data information gathered from National Oceanic and Atmospheric Administration will be available on-site
Construction and Communication Activities	
Time of event	Time that construction activities and all communications between PSOs and construction crews take place
Type of construction activity	Type of construction activity occurring, including startup, shutdown, and type of pile installation technique
Communication	Information communicated between PSOs and construction crew
Marine Mammal Sighting Data	
Time of initial and last sightings	Time the animals are initially and last sighted
Species	Species (use unidentified mysticete, odontocete, cetacean, or pinniped if unknown) and confidence in sighting
Number of individuals	Minimum and maximum number of animals counted; record the count the PSO believes to be the most accurate (i.e., best estimate)
Sex and age, if possible	Generally, numbers of females with pups or calves
Initial and final heading	Direction animals are headed when initially and last sighted
In-water construction activities at time of sighting	Types of construction activities occurring at time of sighting and mitigation measures implemented
Distance and bearing from marine mammal to construction activities	Distance from marine mammal to construction activities when initially sighted, at closest approach to activities, and at final sighting (include location relative to monitoring and shutdown zones and bearing from piling)
Harassment zone	Indicate which active Level A or B harassment zone the marine mammal entered, and duration it stayed within the applicable zone
Mitigation	Indicate if any mitigation measure (e.g. shutdown, delay) was enacted
Commercial activities at time of sighting	Description of nearby commercial or anthropogenic activities occurring at time of sighting not associated with the Project
Behavior	Behaviors observed; indicate primary and secondary behaviors
Change in behavior	Changes in behavior; indicate and describe
Group cohesion	Orientation of animals within the group and the distance between animals
Sunflower Sea Star Sighting Data	
Sea star wasting syndrome (SSWS) presence	Indicate if symptoms of SSWS are present on sunflower sea stars that are relocated or observed during monthly surveys, and extent of symptoms

4.3 Equipment

The following equipment and information will be required on-site for protected species monitoring:

- Portable radios for the PSOs to communicate with the Construction Contractor point of contact and other PSOs, or cellular phones and phone numbers for all PSOs and the Construction Contractor point of contact
- Daily tide tables
- Hand-held binoculars (7X or better) with built-in rangefinder or reticles
- Rangefinder
- Paper data forms or electronic data collection system (e.g., Toughbook or iPad) and backup paper forms
- Large (11- by 17-inch or similar) waterproof maps of the Project area and monitoring zones

Specific to sunflower sea star surveys, an ROV may be used. The ROV must be capable of:

- live video transmittal to surface observers,
- storing videos or still images to include in reports to NMFS, and
- being deployed in low light conditions using on-board lighting as needed.

4.4 Quality Assurance and Quality Control

Electronic data collection or paper data sheets will be QA/QC'd by the Lead PSO at the end of each monitoring day. No cells or information will be left blank. If information is not available or not applicable, the field will be populated with an "NA" or dash. The data will also be QA/QC'd once it is entered electronically.

4.5 Protected Species Monitoring Data Management

All protected species monitoring data will be entered into and stored in an electronic database or spreadsheet. The database or spreadsheet will be set up and structured for easy access and management of data and will be used to develop the marine mammal monitoring report. An electronic copy of the data spreadsheet will be available to NMFS.



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5 REPORTING

5.1 Reporting

During construction, PSOs will maintain daily activity logs that will be submitted to DOT&PF that include the following information:

- Time that each monitoring period begins and ends
- Prevailing environmental conditions
- In-water construction activities occurring during each monitoring period (including number, type, and size of piles)
- Indication of whether marine mammals were sighted, including species, numbers, and location
- Whether potential Level A or B exposures occurred, duration within harassment zones, and any mitigation measures enacted
- Numbers and conditions of sunflower sea stars relocated from pile removals

Within 90 days of the completion of the project, DOT&PF will submit to the NMFS Office of Protected Resources (Silver Spring, MD) a draft final report of all monitoring conducted during the Project. Within 30 days of receiving comments from NMFS on the draft final report, DOT&PF will submit the final report to NMFS.

To the extent practicable, the PSOs will record behavioral observations that may make it possible to determine if the same or different individuals are being “taken” (or exposed) as a result of Project activities over the course of a day.

The monitoring reports will include a description of the monitoring protocol, a summary of the data recorded during monitoring, and an estimate of the number of marine mammals that may have been harassed, including the total number extrapolated from observed animals across the entirety of relevant monitoring zones. The data will include:

- Dates and times of monitoring and total number of days and hours of observations
- Weather and water conditions during each monitoring period
- Locations of observation stations used and dates/times when each location was used
- Numbers, species, group sizes, dates/times, and locations of marine mammals observed
- Sex and age classes of marine mammals observed, if possible
- Distances to marine mammal sightings relative to construction location(s), including closest approach to construction activities
- Details of all recorded marine mammal exposures, including the species, number of individuals, date/time, location, and type of pile installation/removal occurring at the time of exposure
- Descriptions of observable marine mammal behavior in the Level A and Level B harassment zones
- Times of shutdown and delay events, including when work was stopped and resumed due to the presence of marine mammals or other reasons

- Descriptions of the type and duration of any pile installation work occurring and soft start procedures used while marine mammals were being observed
- Details of all sunflower sea star surveys, including the presence of sunflower sea stars, distance to project site, date/time, any evidence of sea star wasting syndrome, and applicable photo evidence
- Number of sunflower sea stars relocated from pile removals, and a description of the relocations to include the date/time of pile removal, relocation, any evidence of sea star wasting syndrome, and applicable photo evidence
- Results from preconstruction and biweekly sunflower sea star surveys
- Details of all shutdown and delay events and whether they were due to the presence of marine mammals, inability to clear the hazard area due to low visibility, or other reasons
- Tables, text, and maps to clarify observations

5.2 Notification of Injured or Dead Marine Mammals

In the unanticipated event that the specified activity (pile installation and removal) clearly causes the exposure of a marine mammal for which authorization has not been granted, such as a serious injury or mortality, DOT&PF will immediately cease pile installation and removal and report the incident to the NMFS Office of Protected Resources (301-427-8401), the NMFS Alaska Region Protected Resources Division (907-271-5006), and the NMFS Alaska Regional Stranding hotline (1-877-925-7773).

The report will include the following information:

- Time, date, and location (latitude/longitude) of the incident
- Detailed description of the incident
- Description of vessel involved (if applicable), including the name, type of vessel, and vessel speed before and during the incident
- Status of all sound source use in the 24 hours preceding the incident
- Environmental conditions (wind speed and direction, wave height, cloud cover, and visibility)
- Description of marine mammal observations in the 24 hours preceding the incident
- Species identification, description, condition, and fate of animal(s) involved
- Photographs or video footage of animal(s) or equipment (if available)

Pile installation and removal shall not resume until NMFS is able to review the circumstances of the prohibited exposure. NMFS shall work with DOT&PF to determine what is necessary to minimize the likelihood of further prohibited exposures and ensure MMPA compliance. DOT&PF may not resume pile installation and removal until notified by NMFS' MMPA program via letter, email, or telephone.

In the event that DOT&PF discovers an injured or dead marine mammal and the Lead PSO determines that the cause of the injury or death is unrelated to the Project, DOT&PF will immediately report the incident to the Alaska Regional Stranding hotline (877-925-7773).

The report will include any applicable information listed above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with DOT&PF to determine whether modifications to the activities are appropriate.

6 LITERATURE CITED

- NMFS (National Marine Fisheries Service). 2018. Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts, 2018 Revision. U.S. Department of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-59.
- NMFS. 2023. Endangered Species Act Section 7(a)(2) Biological Opinion for Construction of the Auke Bay East Terminal Improvements Project. NMFS Consultation Number: AKRO-2022-02777. 22 December 2023.
- NMFS. 2024. Incidental Harassment Authorization – Auke Bay East Terminal Improvement Project. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, NMFS, Silver Spring, MD. 17 January 2024.



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ATTACHMENT 1: EXAMPLE DATA FORMS



Marine Mammal Sighting Form

Project:	Location:	Sighting #: <small>(1st sighting of the day is Sighting#: 1)</small>
Date:	Observer(s):	

Time <small>(military)</small>		Species <small>(circle)</small>	Distance <small>(animal to activity)</small>		Number of Animals		Number of Animals in Each Class <small>(if possible)</small>			
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		Male		Female	
Time Exited H-Zone B		Dall's Porpoise					Unknown Sex			
Time Entered H-Zone A		Killer Whale								
Time Exited H-Zone A		Humpback								
		Fin Whale								
		Gray Whale								
		Minke Whale								
		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

- | | | | |
|---|--|--|--------------|
| <input type="checkbox"/> Travel | <input type="checkbox"/> Fight | <input type="checkbox"/> Mill | Other: _____ |
| <input type="checkbox"/> Disoriented | <input type="checkbox"/> Play | <input type="checkbox"/> Dive | |
| <input type="checkbox"/> Slap | <input type="checkbox"/> Spyhop | <input type="checkbox"/> Unknown | |
| <input type="checkbox"/> Feeding Observed | <input type="checkbox"/> Swimming Toward | <input type="checkbox"/> 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 occurring at initial sighting? **Y or N**

List In-water Activities: _____

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



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Daily Environmental Conditions, Construction, and Communication Activity Log

Page ____ of ____

Project: _____ Station: _____ Observers: _____ Day # Of Piling: _____ 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	Sea State	Glare (%)	Visibility (m)	Cloud Cover (%)	Rain (Y/N)	Ice (Y/N)	Comments	Time	Activity Type (Gen. Communication, Start: In-Water Work, End: In-water Work, Shutdown Notification, Restart: In-Water Work)	Crew Member (Initials)	Construction Type	Comments (indicate individual contacted on Construction Crew, if applicable)

Weather Conditions: (S) Sunny, (PC) Partly Cloudy, (L) Light Rain, (R) Steady Rain, (F) Fog, (OC)Overcast
Beaufort Scale: (0) mirror (1) ripples(2) small wavelets (3)whitecaps, (4) freq. whitecaps, (5) many wcp/little spray, (6) foam/airborne spray, (7) foam streaks