MARINE MAMMAL MONITORING PLAN

NAVAL MAGAZINE INDIAN ISLAND AMMUNITION WHARF

MAINTENANCE AND PILE REPLACEMENT PROGRAM

2023-2028

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1 INTRODUCTION

The United States (U.S.) Department of the Navy (Navy) proposes to replace up to 118 concrete piles with new concrete or steel piles and/or, removal and replacement of fender piles, and conduct maintenance and repair activities over a five-year period on the Ammunition Wharf at Naval Magazine (NAVMAG) Indian Island. Maintaining this structure is vital to sustaining the Navy's mission and ensuring readiness. The Navy has applied for a five-year Letter of Authorization (LOA) for the incidental harassment of marine mammals from removal and installation of concrete and steel piles at NAVMAG Indian Island.

The Ammunition Wharf was originally constructed using precast concrete piles. An unknown quantity of those pilings are susceptible to a potentially catastrophic condition called Delayed Ettringite Formation (DEF). DEF is expansion and cracking of concrete associated with the delayed formation of the mineral ettringite which is a normal product of early cement hydration. As outlined in Unified Facilities Criteria 4-150-07 Maintenance of Waterfront Facilities, the Navy schedules inspections every three years, but due to DEF at the Ammunition Wharf, inspections for that facility occur every two years.

Maintenance and repair activities could occur throughout the five-year period. General maintenance could include deck resurfacing and recoating various corroded metal components. Repair activities would be conducted on wetwell concrete spalling, piles, and quay walls. Damaged or deteriorated components would be repaired or replaced, including guide piles systems, brow floats, pile caps, safety ladders, cable straps, camel and camel connections, and lighting.

Pile removal or installation will produce underwater noise levels above behavioral harassment (Level B) and injury (Level A) thresholds for marine mammals. In order to comply with the Marine Mammal Protection Act, the National Marine Fisheries Service (NMFS) will issue an Incidental Harassment Authorization to the Navy that will require measures to minimize behavioral harassment and potential injury to marine mammals during project construction. To ensure compliance with the Incidental Harassment Authorization, this Marine Mammal Monitoring Plan (MMMP) provides a protocol for marine mammal monitoring during in-water pile driving and pile removal for the NAVMAG Indian Island Ammunition Wharf Maintenance and Pile Replacement Program. Maintenance and repair activities would not rise to the level of Level B harassment under the MMPA.

The purpose of this plan is to provide a protocol for marine mammal monitoring that will occur during in-water construction scheduled to occur annually between October 1 and January 15 over the five-year period of the LOA. Visual marine mammal monitoring will be conducted before, during, and after pile driving by experienced Marine Mammal Observers (MMOs), within zones that are estimated to encompass acoustic levels that could exceed injury or behavioral disturbance thresholds. In order to protect marine mammals, pile driving will not start, or will cease if underway, if marine mammals enter the Level A injury zone. In addition to the Level A shutdown protocol, if cetaceans are seen in the Level B monitoring zone, a pile driving shut down will ensue.

2 METHODS

2.1 Observer Qualifications

The MMOs may either be a biologist with prior training and experience to meet the qualifications in conducting marine mammal monitoring, a professional MMO with certification (i.e., Protected Species Observer), or recognized membership in a professional organization (i.e., Marine Mammal Observer Association). Either qualification will require that the MMOs have the ability to detect and correctly identify the marine mammal species of the inland waters of Washington, and accurately describe the relevant species-specific behaviors that may occur in proximity to in-water construction activities. In addition, at least one member of the MMO team will have verifiable experience with marine mammal monitoring during pile removal or installation construction. The observers will have no other construction related tasks while conducting monitoring.

A dedicated MMO coordinator will be on-site during all construction days. The MMO coordinator will oversee the MMOs and serve as the liaison between the MMOs and the construction contractor to assist in the distribution of information related to the construction schedule and marine mammal monitoring. The MMO coordinator will also serve as a liaison between the MMO team and the U.S. Department of the Navy (Navy) for reporting (see Sections 2.2, 3, and 4).

The number of MMOs used during monitoring will depend on the size of the monitoring zones, obstructions in the water (i.e., barges, vessels or pier structures), and duration of the daily monitoring period (i.e., rotation of observers to avoid observer fatigue). MMOs would be deployed so that the entire monitoring zone is in view which may require using vessels, barges, piers, or along the shore.

2.2 Data Collection

Observers will use a NMFS-approved Marine Mammal Observation Record Form (Appendix A), which will be completed daily by each MMO. The data to be collected will include the following:

- Name of MMO.
- Date of monitoring.
- Start and end times for the MMO, including the time that pile removal or installation begins and ends, type of pile activity (impact or vibratory), pile size, and type (i.e., timber, concrete, or steel).
- Type of other construction activities occurring, if relevant.
- Weather parameters (e.g., percent cover, percent glare, visibility, rain, fog). Should update every hour or when major changes in weather occur.
- Water conditions (e.g., tidal direction [flood, slack, ebb], and sea state. The Beaufort Sea State Scale (Appendix B) will be used to determine sea state.
- Species, group size, and if possible, sex and age class.
- Time of sighting.
- Marine mammal behaviors observed, including bearing from observer and direction of travel. If possible, include the correlation to construction activity for context.
    - Behavior patterns observed prior to soft starts or shutdown procedures to be included.
    - For pinnipeds, it will be noted if the animals are hauled out or in the water.

- Distance from pile removal or installation activities to the observed marine mammal and distance from the marine mammal to the observation point. The distances may be estimated as range finders rarely work sighting marine mammals directly. Estimated distances should be based on measured distances (using a laser range finder) to nearby structures, vessels, buoys etc. in the monitoring area. Daily laser range finder distances and calibrations for MMOs will be required.
- Descriptive locations of all marine mammals observed if possible (i.e., in the behavioral or injury monitoring zone, outside the monitoring zones). Local reference names will be used if possible (e.g., names of headlands, rocks, etc.).
- Other human activity in the area, with hull numbers of fishing vessels if possible. The MMO coordinator will complete a Marine Mammal Observation Summary for each day of monitoring. The summary will compile the information collected on the individual sighting forms and provide additional details, as required, about the construction activities during the daily marine mammal monitoring. The summary will be provided to the Navy the following day.

2.3 Equipment

The following equipment will be required to conduct marine mammal monitoring:

- An optional survey boat could be used and would include the following minimum equipment: a means to keep electrical equipment dry, a fixed marine radio for the Captain to communicate on marine channels independent of observers communicating on a dedicated channel, depth finder, and GPS unit that tracks the constant movement of the vessel. Vessels will comply with all Coast Guard regulations and be able to pass a Coast Guard safety inspection. The vessel will provide the MMO with an unobstructed view of the water.
- Hearing protection for MMOs and boat operators working near heavy construction equipment.
- At a minimum, portable marine radios with extra batteries and headsets for the MMOs to communicate with the monitoring coordinator, construction contractor, and other MMOs. Red and green flags can be added as back-up or in addition to the radios, if necessary.
- Cellular phones that do not have a camera and the contact information for the other MMOs, monitoring coordinator, and Navy point of contact.
- Nautical charts as relevant to the monitoring.
- Daily tide tables for the project area.
- Watch or chronometer.
- Binoculars (quality 7 x 50 or better, can have built-in compass, and rangefinders or reticles).
- Rangefinder or other means of measuring or estimating distances.
- Monitoring plan, IHA permit, and/or other relevant permit requirement specifications in sealed clear plastic cover.
- Waterproof notebook (e.g., Rite-in-the-Rain).
- Waterproof data sheets with Marine Mammal Observation Record forms on waterproof paper (e.g., Rite-in-the-Rain). The MMO will put his/her name on each form used each day.
- Marine mammal identification guides.
- Clipboard.

- Pens and pencils (pencils preferred for waterproof notebooks).
- Pencil sharpener and eraser.
- A laminated color figure of the visual monitoring zones for impact and vibratory pile installation.
- Angleboard, compass, compass protractor, or other means of determining bearings.
- Personal Protective Equipment relevant to the seasonal weather conditions and MMO location.

2.4 Pile Driving Visual Monitoring and Shutdown Zones

During all pile removal or installation activities, the Navy will ensure qualified MMOs visually monitor Injury and Behavioral Disturbance threshold distances. The Level A Injury Zones are based on the maximum calculated radius for pinnipeds and cetaceans during installation of 36-inch steel piles and 24-inch concrete piles with impact techniques, and the Level B Behavioral Response Zone for impact and vibratory pile installation. These actions serve to protect marine mammals, allow for practical implementation of the MMMP, and reduce the risk of a take. Marine mammal monitoring will be conducted as follows:

- During removal or installation activities, **Injury Threshold Monitoring Zones** shall be established and monitored to prevent injury to killer whale, harbor porpoise, baleen whales, Steller sea lion, and California sea lion; and to minimize injury to harbor seals from noise due to impact and vibratory pile driving and physical interaction with construction equipment. Injury Zones for impacting non-steel piles have a minimum Shutdown Zone of 10 meters to prevent injury to marine mammals from interaction with construction equipment. Injury to harbor seals from noise due to impact and vibratory pile driving and physical interaction with construction equipment will be minimized to the extent practicable by implementing a shutdown if the animals are observed to be swimming towards the Injury Zone. For steel pile impact driving, to the extent possible, MMOs would initiate shutdown when harbor seals enter the zone; however, because of the size of the zone and the inherent difficulty in monitoring harbor seals, a highly mobile species, it may not be practical, which is why Level A take is requested. The monitoring zone for injury is established to enable MMOs to notify construction crews of marine mammals approaching the injury threshold and shutdown zones described below.
- During all pile removal or installation activities, **Behavior Disturbance Threshold Monitoring Zones** shall be established that extends to the impulsive acoustic threshold of 160 decibels [dB] referenced at 1 micropascal (µPa) or the continuous noise acoustic threshold (120 dB re 1µPa), depending on installation technique. The far field monitoring will require the use of binoculars or spotting scopes for land based MMOs, particularly those stationed to the north of the facility. To further augment the far field monitoring, additional information will also be included, such as the use of the Orca Network sightings notifications for Hood Canal.
- The **Monitoring Zones for Impact Driving of Steel Piles** are based on the maximum calculated radius for pinnipeds and cetaceans during installation of 36-inch steel piles. The Injury Monitoring Zone will extend to a radius of 425 meters (m) for cetaceans, primarily monitoring for harbor porpoise, 200 m for harbor seals, and 20 m for sea lions during impact pile driving of steel piles (Table 2-1). Harbor seals are known to be regularly sighted in the NAVMAG Indian Island wharf area. As a result of their regular use of the Naval Facility and previous exposure to anthropogenic activities, shutdowns will be initiated for this species to the extent practicable. If the harbor seal behavior appears to remain unchanged during the pile driving, or the animals are swimming away from the in-water works, a take would be recorded rather than a shutdown.

- The **Monitoring Zones for Vibratory Pile Driving of steel piles for injury** will extend to a radius of 45 m for cetaceans, 20 m for harbor seals and sea lions during vibratory pile driving (Table 2-2). The established monitoring zone for the Behavioral Disturbance threshold distances (i.e., for vibratory driving, the zone where vibratory pile driving noise levels are estimated to be at or above 120 dB root mean square) is 5.4 km.
- The **Monitoring Zones for Concrete Jetting installation** are 10 m for cetaceans, harbor seals, and sea lions (Table 2-3). The established monitoring zone for the Behavioral Disturbance threshold distances (i.e., for vibratory driving, the zone where vibratory pile driving noise levels are estimated to be at or above 120 dB root mean square) is 2.2 km.

The radii of the monitoring zones may be adjusted if in-situ acoustic monitoring is conducted to determine actual distances to the thresholds for a pile type and installation method. Adjusted zones will be provided by the Navy to the Lead MMO.

During all pile driving, the Navy will establish **Shutdown Zones** as follows:

- **Shutdown Zones for cetaceans** will include the injury threshold and behavioral threshold distances as presented in Tables 2-1, 2-2, and 2-3. If a cetacean approaches or enters the Shutdown Zone, pile driving will cease. See Figure 2-1 for a generalized sketch of proposed zones for cetaceans. The Shutdown Zone for steel pile vibratory installation is 45 m for cetaceans, primarily monitoring for harbor porpoise, and jetting of concrete piles is 5 m for cetaceans.
- **Shutdown Zones for pinnipeds** will include the Injury Zone presented in Tables 2-1, 2-2, and 2-3. If a pinniped enters the Shutdown Zone, pile driving will cease, but if it enters only the Behavioral Disturbance Zone, a take would be recorded and behaviors documented. That pile would be completed without cessation, unless the animal approaches or enters the Shutdown Zone, at which point all pile driving activities will be halted. See Figure 2-2 for a generalized sketch of proposed zones for pinnipeds. The small Shutdown Zones for concrete pile installation for harbor seals and sea lions (5 m) would likely prevent all Level A exposures. For steel pile impact pile driving, to the extent possible, MMOs would initiate shutdown when harbor seals enter the 200 m zone because of the size of the zone and the inherent difficulty in monitoring harbor seals, a highly mobile species, it may not be practical, which is why Level A take is requested.
- If marine mammals are seen outside the Behavioral Disturbance Zone, these sightings will also be recorded (not as a take) with the location and behavior identified as much as possible.
- Distances for all monitoring zones are provided in Tables 2-1, 2-2, and 2-3 below.

Table 2-1. Calculated Behavioral and Injury Threshold Distances, and the Monitoring and Shutdown Zones Distances During Impact Driving of 24-in Concrete and 36-in Steel Piles.

Marine Mammal Group	*Behavioral Threshold (meters)[1]*	*Monitoring Zone (meters)*	*Injury Threshold (meters)1*	*Shutdown Zone (meters)*
Impact Pile Driving of Concrete Piles				
Cetaceans Harbor Porpoise	86	100	64	75
Harbor Seal	86	100	29	50
California Sea Lion	86	100	2	10
Impact Pile Driving of Steel Piles				
Cetaceans Harbor Porpoise	398	425	256	375
Harbor Seal	398	425	182	200
California Sea Lion	398	425	13	25

Table 2-2. Calculated Behavioral Threshold Distances, and Monitoring and Shutdown Zones Distances during Vibratory Pile Driving For 36 Inch Steel Piles.

Marine Mammal Group	*Behavioral Threshold (kilometers)*	*Monitoring Zone (kilometers)*	*Injury Threshold (meters)*	*Shutdown Zone (meters)*
Cetaceans Harbor Porpoise	13.6	13.6	<10	200
Harbor Seal	13.6	13.6	<10	200
California Sea Lion	13.6	13.6	<10	200

Table 2-3. Calculated Behavioral Threshold Distances, and Monitoring and Shutdown Zones Distances During Cutting of 24-Inch Concrete Piles

Marine Mammal Group	*Behavioral Threshold (kilometers)*	*Monitoring Zone (kilometers)*	*Injury Threshold (meters)*	*Shutdown Zone (meters)*
Cetaceans Harbor Porpoise	215	225	<10	10
Harbor Seal	215	225	<10	10
California Sea Lion	215	225	<10	10

Table 2-4. Calculated Behavioral Threshold Distances, and Monitoring and Shutdown Zones Distances During Jetting of 24-Inch Concrete Piles

Marine Mammal Group	*Behavioral Threshold (kilometers)*	*Monitoring Zone (kilometers)*	*Injury Threshold (meters)*	*Shutdown Zone (meters)*
Cetaceans Harbor Porpoise	681	700	<10	700
Harbor Seal	681	700	<10	700
California Sea Lion	681	700	<10	700

Table 2-5. Calculated Behavioral Threshold Distances, and Monitoring and Shutdown Zones Distances During Vibratory Installation of Fender Piles

Marine Mammal Group	*Behavioral Threshold (kilometers)*	*Monitoring Zone (kilometers)*	*Injury Threshold (meters)*	*Shutdown Zone (meters)*
Cetaceans Harbor Porpoise	398	425	<10	425
Harbor Seal	398	425	<10	425
California Sea Lion	398	425	<10	425

2.5 Observer Monitoring Locations

The number and placement of MMOs will vary depending upon the pile size, location, and number of piles being installed or removed. In order to effectively monitor the Injury and Behavioral Disturbance threshold distances and associated Monitoring and Shutdown Zones, MMOs will be positioned at the best practicable vantage points, taking into consideration security, safety, and space limitations. The MMOs will be stationed on the pier, vessel, on shore, or on the pile driving barge in a location that will provide adequate visual coverage for the Shutdown Zones listed in Tables 2-1, 2-2, and 2-3. During pile driving, one MMO will be stationed in a vessel, and at least four will be stationed on the pier, along the shore, or on the pile driving barge to maximize observation of the Injury Zones and Behavioral Disturbance Zones.

Each MMO location will have a minimum of one dedicated MMO (not including boat operators) (see Figures 2-3, 2-4, and 2-5). The exact number of MMOs and the observation locations are to be determined based upon site accessibility and line of sight for adequate coverage. It is expected that a minimum of four MMOs will be required, with additional MMOs added into the protocol as deemed necessary for effective coverage.

The Navy requires that Orca Network will be monitored and expects that the level of shore monitoring will reflect the likelihood for occurrence (e.g. if SRKW or humpbacks are “in town” vs have been spotted in San Juan Islands, the Strait, or elsewhere in the South Puget Sound).

2.6 Monitoring Techniques

The MMOs will collect marine mammal sightings data, including behaviors, for the pre-, during, and post-pile driving period. The efficacy of visual detection depends on several factors including the MMOs ability to detect the animal, the environmental conditions (visibility and sea state), and monitoring platforms. The following observation protocol will be implemented for all marine mammal monitoring:

- MMOs will survey the Injury and Behavioral Disturbance Zones. Monitoring will begin at least 15 minutes prior to initiation of pile driving through 30 minutes after completion of pile driving to ensure there are no marine mammals present.
- In case of reduced visibility due to weather or sea state, the MMOs must be able to see the Shutdown Zones or pile driving will not be initiated until visibility in these zones improves to acceptable levels.
- The Injury and Behavioral Disturbance Monitoring Zones will be continuously monitored throughout the time required to install each pile.
- Marine Mammal Observation Record forms (Appendix A) will be used to document observations. Additional information can be recorded in waterproof notebooks.
- Survey boats engaged in marine mammal monitoring will maintain speeds equal to or less than 10 knots.
- All MMOs will be trained and experienced marine mammal observers in order to accurately verify species sighted.
- MMOs will use binoculars and the naked eye to search continuously for marine mammals.
- MMOs will have a means to communicate with each other to discuss relevant marine mammal information (e.g., animal sighted but submerged with direction of last sighting).
- MMOs will have the ability to correctly measure or estimate the animals distance to the pile driving equipment such that records of any takes are accurate relevant to the pile size and type.

2.6.1 Visual Survey Protocol – Pre-Activity Monitoring

The following survey protocol will be implemented prior to commencing pile driving:

- Visual surveys of the Injury and Behavioral Zone will occur for at least 15 minutes prior to the start of construction.
- If marine mammal(s) are present within or approaching a Shutdown Zone prior to pile driving, the start of these activities will be delayed until the animal(s) have left the Shutdown Zone voluntarily and have been visually confirmed beyond the Shutdown Zone, or 15 minutes has elapsed without re-detection of the animal and the MMO is satisfied that the marine mammal has likely left the Zone.
- If marine mammal(s) are not detected within a Shutdown Zone (i.e., the zone is deemed clear of marine mammals), the MMOs will inform the monitoring coordinator/construction contractor that pile driving can commence.
- If a marine mammal approaches or enters the Shutdown Zone, pile driving will be delayed until the animal(s) leave the zone. If pinnipeds are present within the Behavioral Disturbance Monitoring Zone, pile driving would not need to be delayed, but MMOs would monitor and document, to the extent practical, the behavior of marine mammals that remain in the zone.

2.6.2 Visual Survey Protocol – During Activity Monitoring

The Injury and Behavioral Disturbance Monitoring Zones will be monitored throughout pile driving. The following survey protocol will be implemented during pile driving:

- If a cetacean approaches or enters the Shutdown Zone for cetaceans, pile driving will cease until the animal(s) voluntarily leave the zone. If a pinniped enters the Shutdown Zone for pinnipeds, pile driving will cease until the animal(s) voluntarily leave the zone. If a pinniped is observed within or entering the Behavioral Disturbance Zone during pile driving, a take would be recorded, behaviors documented, and the MMO coordinator alerted to the position of the animal. However, that pile segment would be completed without cessation, unless the animal approaches or enters the Shutdown Zone for pinnipeds, at which point all pile driving activities will be halted. The MMOs shall immediately radio to alert the monitoring coordinator/construction contractor. This action will require an immediate "all-stop" on pile operations.
- Once a shutdown has been initiated, pile driving will be delayed until the animal has voluntarily left the Shutdown Zone and has been visually confirmed beyond the Shutdown Zone, or 15 minutes have passed without re-detection of the animal (i.e., the zone is deemed clear of marine mammals). The monitoring coordinator will inform the construction contractor that activities can re-commence.
- If shutdown and clearance procedures would result in an imminent concern for human safety, as determined by the construction contractor, the Navy Point of contact will be notified prior to re-initiation of pile driving. The Navy POC will notify NMFS within 24 hours.

2.6.3 Visual Survey Protocol – Post-Activity Monitoring

Monitoring of the Injury and Behavioral Monitoring Zones will continue for 30 minutes following completion of pile driving. These surveys will record all marine mammal observations and will focus on observing and reporting unusual or abnormal behaviors. During this monitoring period, if an injured, sick, or dead marine mammal is observed, procedures outlined in Chapter 3 should be followed.

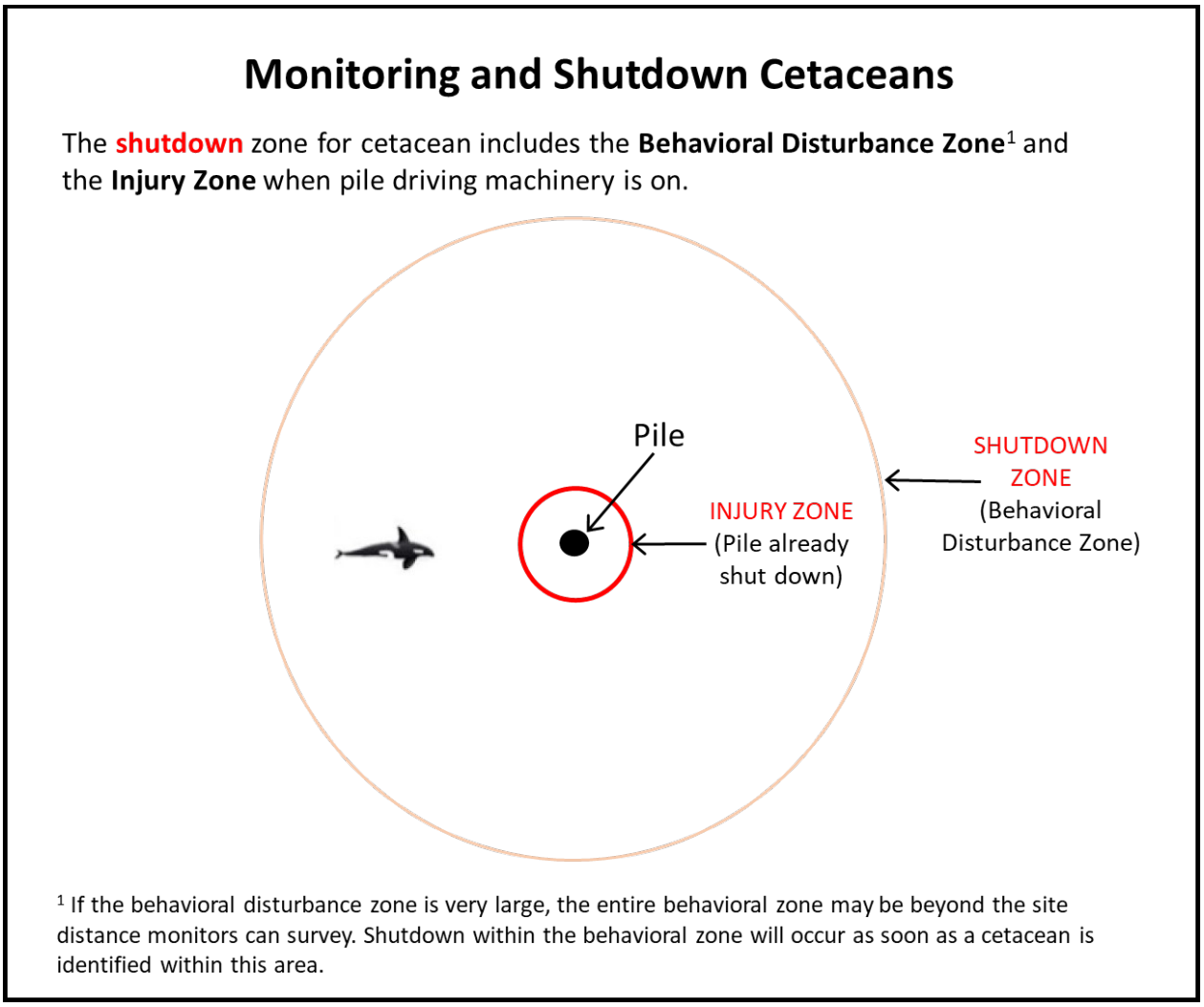


Figure 2-1. Diagram of Monitoring and Shutdown Zones for Cetaceans

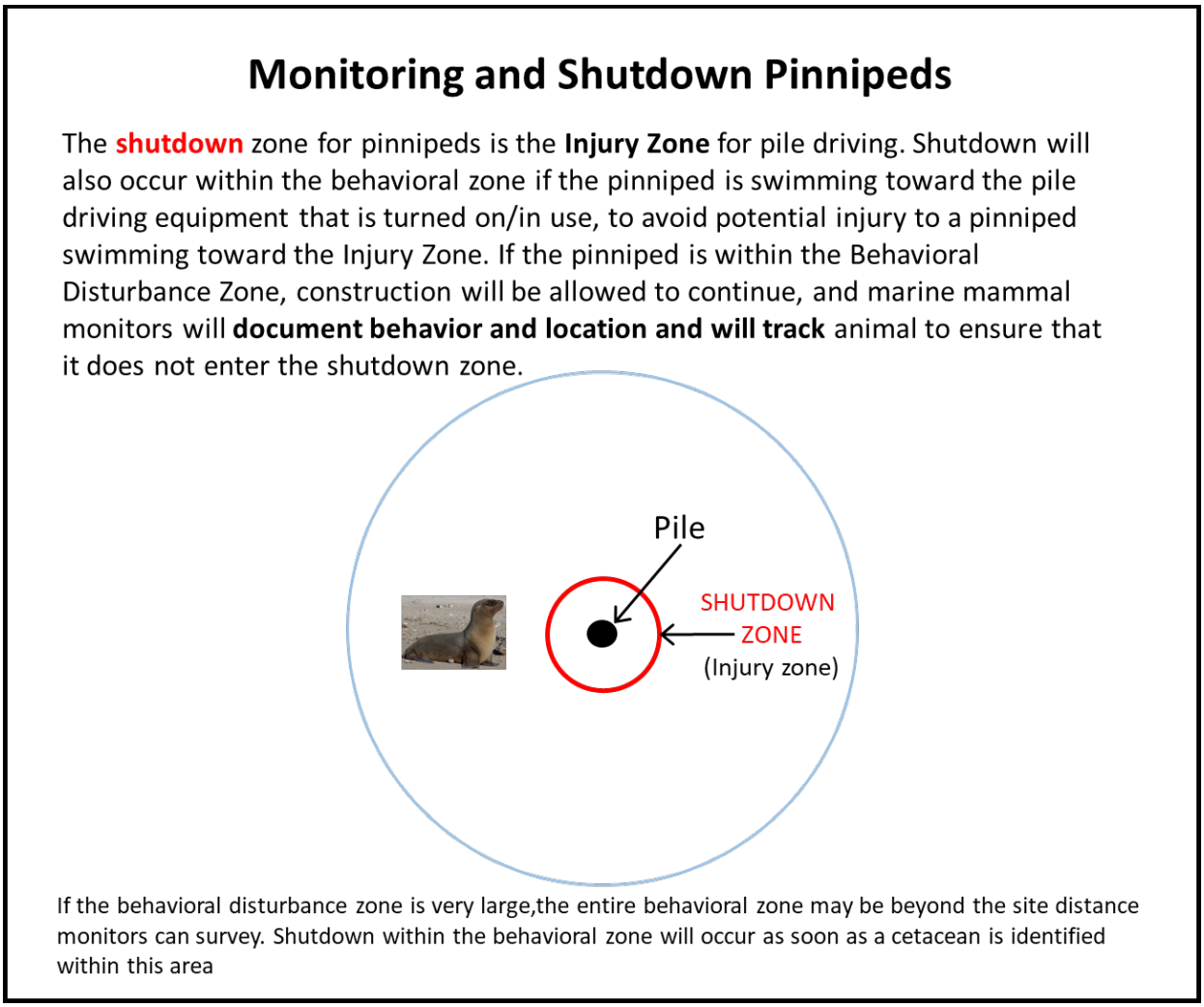


Figure 2-2. Diagram of Monitoring and Shutdown Zones for Pinnipeds

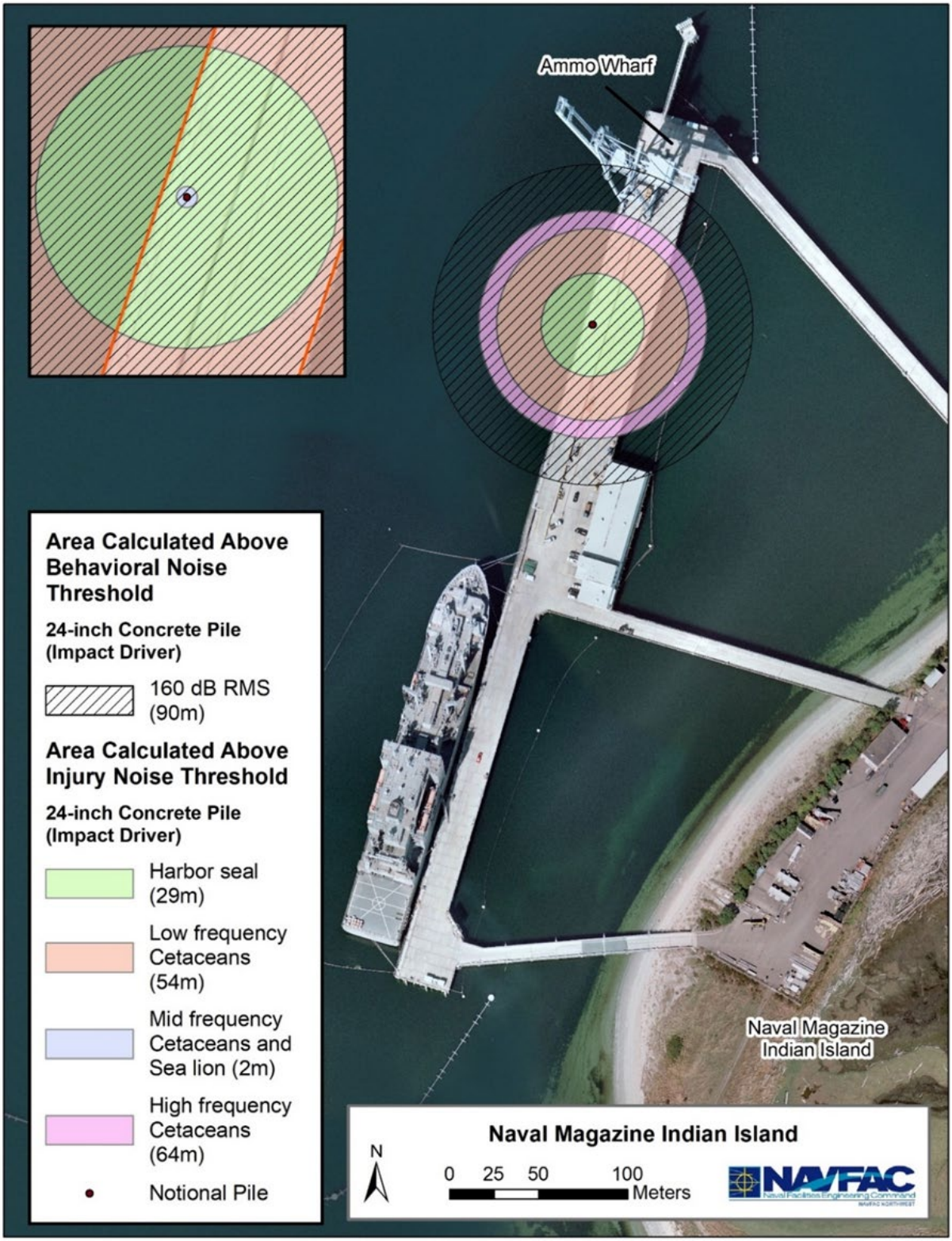


Figure 2-3 Example of Marine Mammal Visual Monitoring and Shutdown Zones for Impact Pile Driving for 24-Inch Concrete Piles

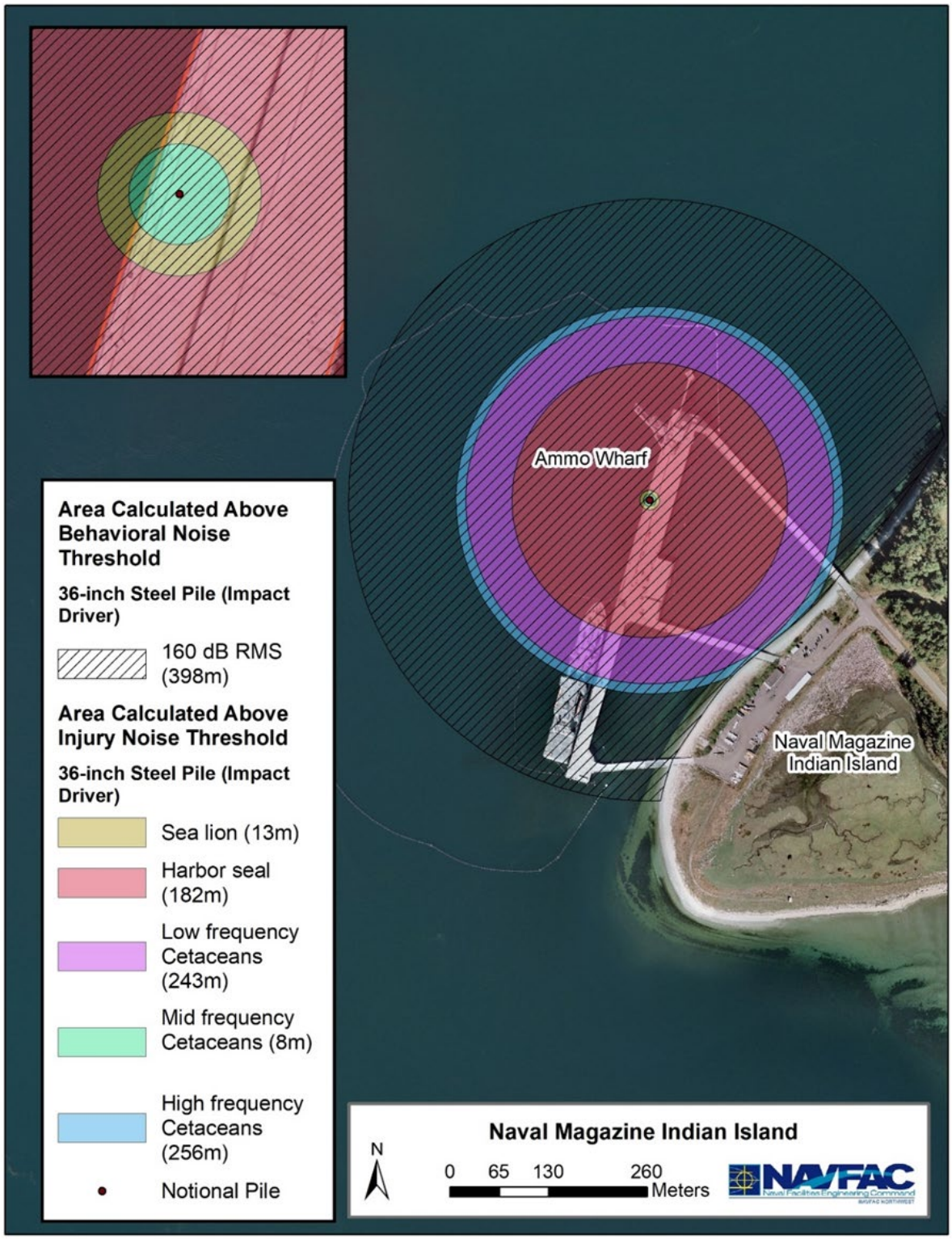


Figure 2-4 Example of Marine Mammal Visual Monitoring and Shutdown Zones for Impact Pile Driving for 36-Inch Steel Piles

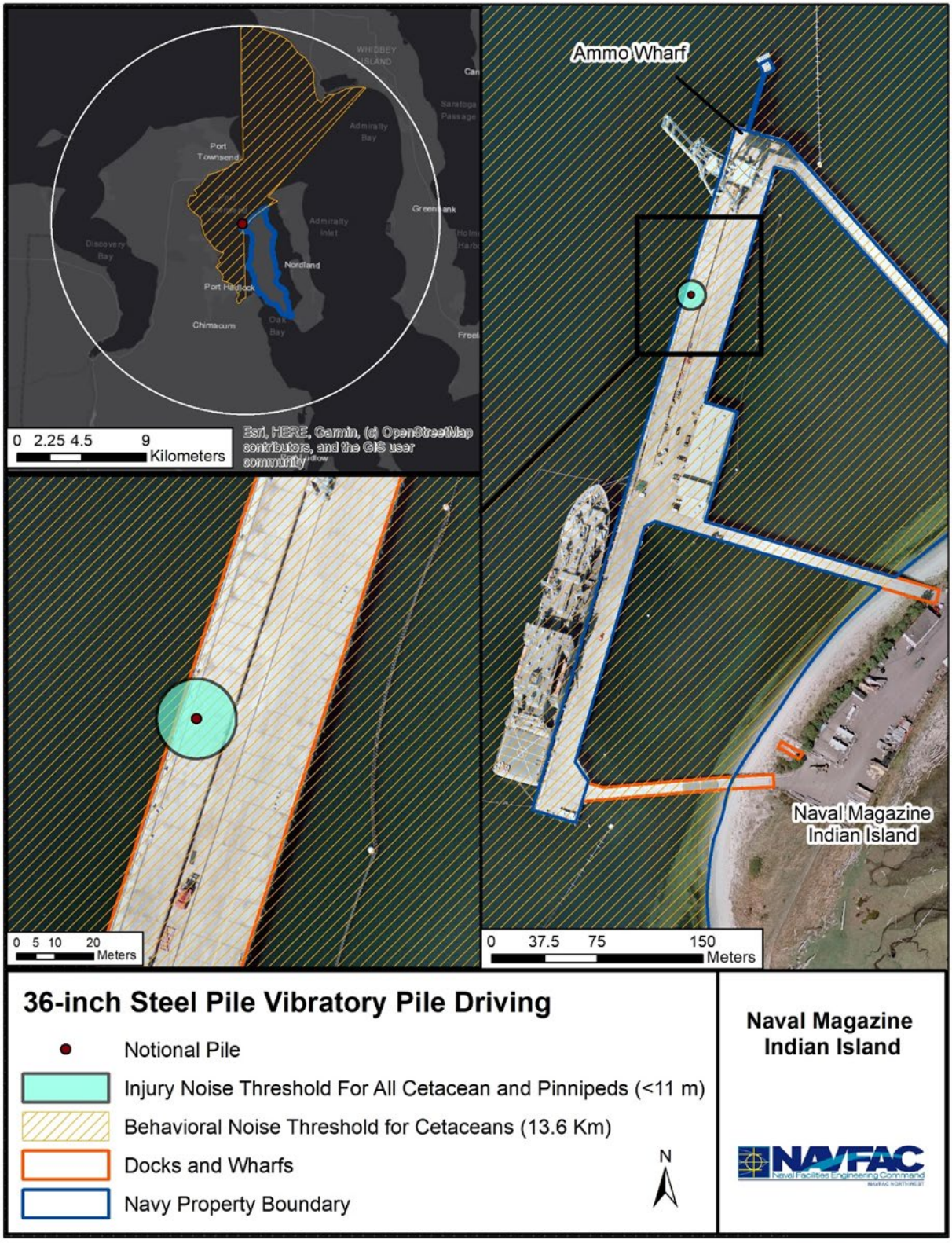


Figure 2-5 Example of Marine Mammal Visual Monitoring and Shutdown Zones for 36-inch Steel Pile Vibratory Pile Driving

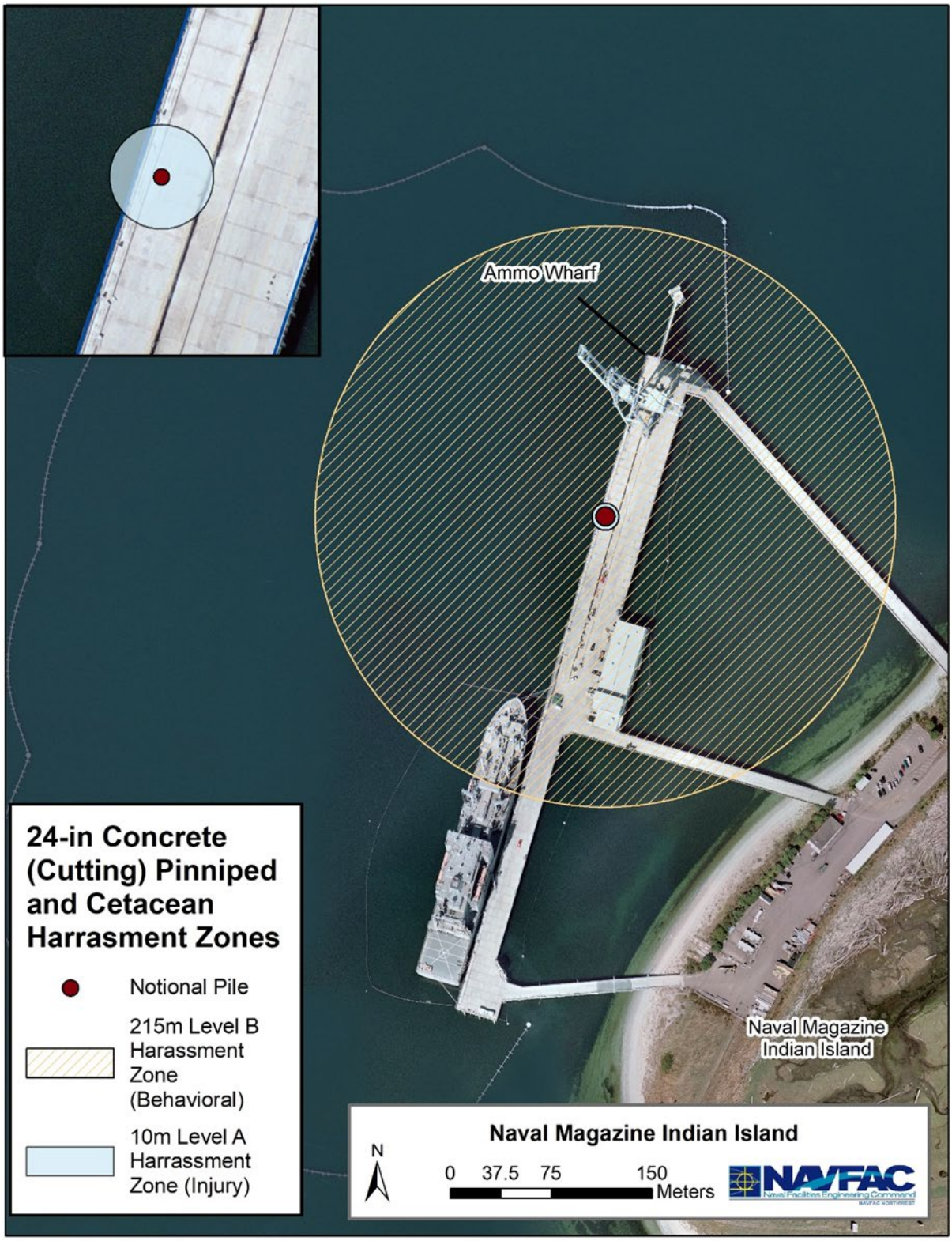


Figure 2-6 Example of Marine Mammal Visual Monitoring and Shutdown Zones for Removing 24-Inch Concrete Piles Via Cutting.

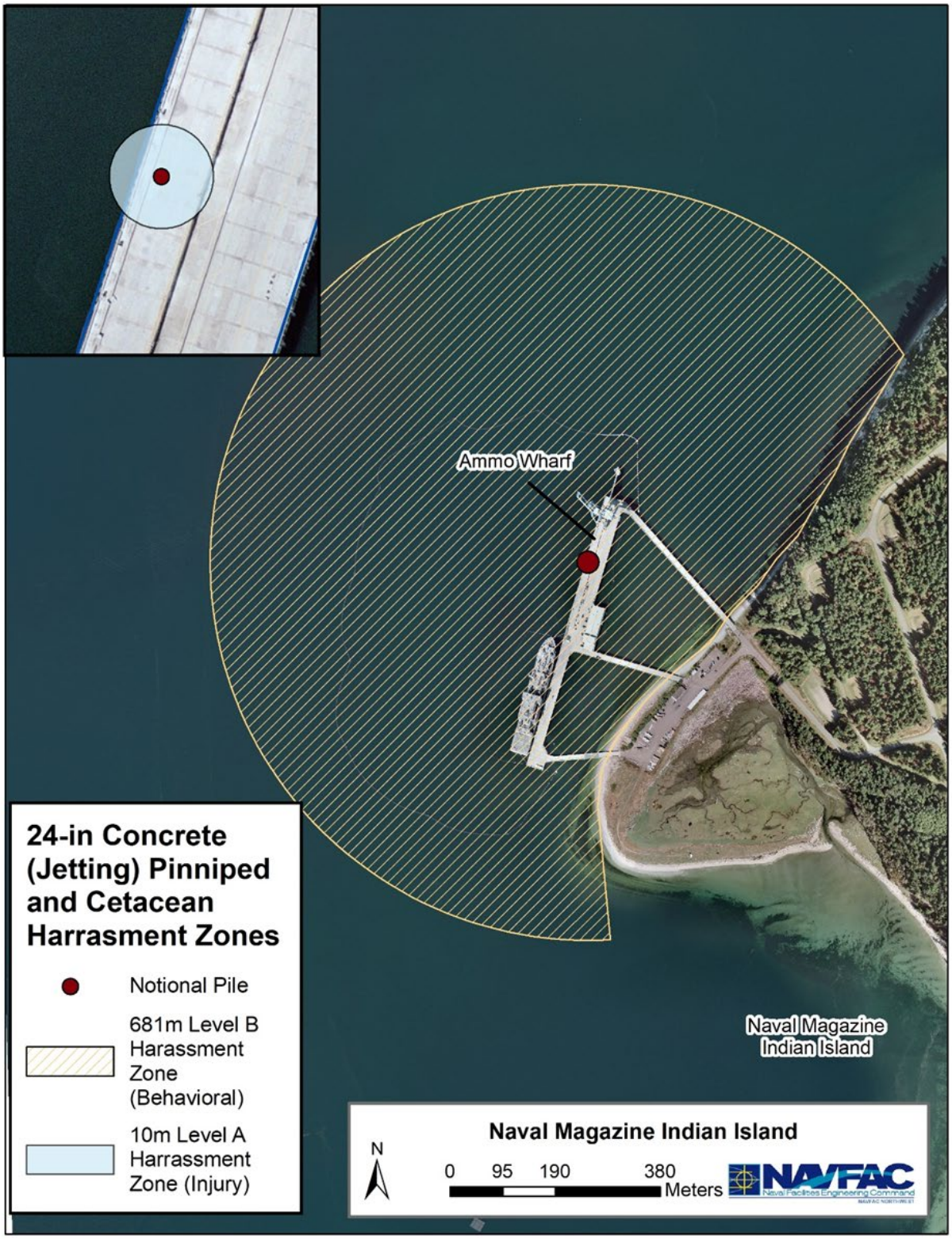


Figure 2-7 Example of Marine Mammal Visual Monitoring and Shutdown Zones for Installation of 24-Inch Concrete Piles Via Jetting Pile Driving.

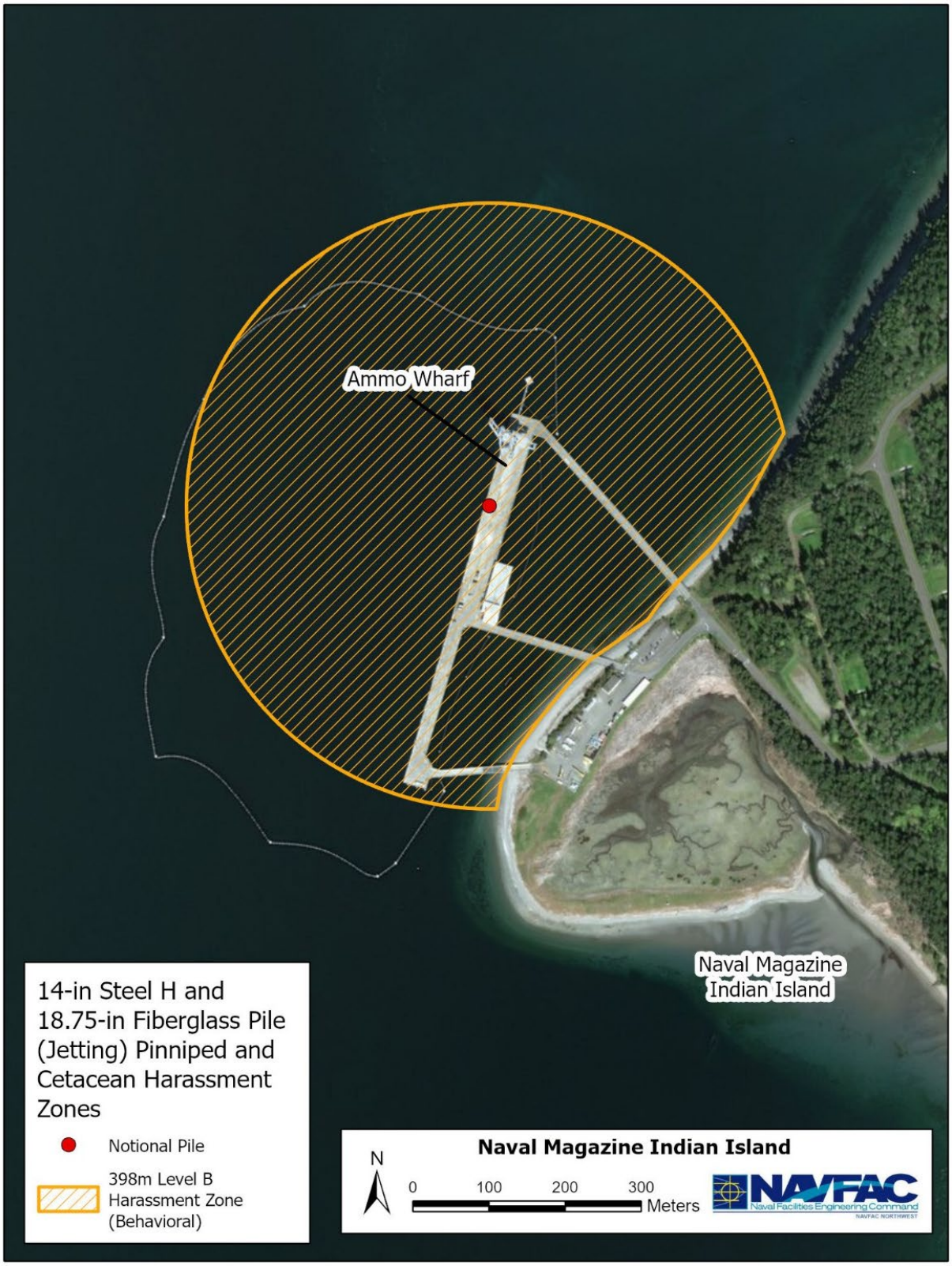


Figure 2-8 Example of Marine Mammal Visual Monitoring and Shutdown Zones for Vibratory Removal and Installation of Fender Piles.

3 INTERAGENCY NOTIFICATION

In the event that the Navy needs to modify terms of this monitoring plan, the NMFS representative will be promptly contacted for discussion of the requested modification.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as an injury (Level A harassment), serious injury, or mortality, the Navy shall immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division (301-427-8425), Office of Protected Resources, NMFS, and the Northwest Regional Stranding Coordinator (206-526-6550), NMFS. The report must include the following information:

- 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);
- Photographs or video footage of the animal(s); and
- Name and contacts of MMOs present.

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with the Navy to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure Marine Mammal Protection Act compliance. The Navy may not resume its activities until notified by NMFS.

In the event that the Navy discovers an injured or dead marine mammal, and the lead MMO 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), the Navy shall immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Northwest Regional Stranding Coordinator, NMFS. The report will include the same information as listed above. Activities may continue while NMFS reviews the circumstances of the incident. The Navy will work with NMFS to determine whether additional mitigation measures or modifications to the activities are appropriate.

In the event that the Navy discovers an injured or dead marine mammal, and the lead MMO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Navy shall report the incident to the Chief of Permits and Conservation Division, Office of Protected Resources, NMFS, and the Northwest Regional Stranding Coordinator, NMFS, within 24 hours of the discovery. The Navy shall provide photographs or video footage or other documentation of the stranded animal sighting to NMFS.

Care should be taken in handling dead specimens to preserve biological materials in the best possible state for later analysis of cause of death, if that occurs. In preservation of biological materials from a dead animal, the finder (i.e., the MMO) has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. The Navy will prepare a Chain of Custody Record (Appendix C) to document handling of specimens.

Primary points of contact for the Navy are:

1. Sara Street- (NAVMAG Indian Island Biologist) - (360) 396-5394 Office; sara.c.street.civ@us.navy.mil
2. Bill Kolina - (NAVMAG Indian Island Biologist) - (360) 396-5353 Office; (360) 981-8391 Cell; william.h.kalina2.civ@us.navy.mil
3. Phil Thorson (NAVFAC NW Marine Mammal Biologist) - (360) 315-2812 Office; (831) 234-5793 Cell; philip.h.thorson.civ@us.navy.mil

The Navy primary point of contact will contact NMFS. The primary points of contact at NMFS are:

1. NMFS Chief of the Permits and Conservation Division – Ben Laws (301) 427-8425; benjamin.laws@noaa,gov
2. NMFS Northwest Regional Stranding Hotline – (866) 767-6114
3. NMFS Northwest Regional Stranding Coordinator - Kristen Wilkerson (206) 526-6550; kristin.wilkinson@noaa.gov

4 MONITORING REPORTS

A draft MMO summary report will be submitted to NMFS within 90 work days of the completion of marine mammal monitoring. A final report will be prepared and submitted to the NMFS within 30 days following receipt of comments on the draft report from the NMFS. At a minimum, the report shall include the following:

- **General data:**
  - Date and time of activities;
  - Water conditions (e.g., sea state, tidal state); and
  - Weather conditions (e.g., percent cover, visibility).
- **Specific pile data:**
  - Description of the pile driving activities, including the size and type of pile;
  - The installation methods used for each pile and the duration each method was used per pile;
  - Impact or vibratory hammer force used to drive piles;
  - Detailed description of the sound attenuation system, including the design specifications;
  - Depth of water in which the pile was driven; and
  - Depth into the substrate that the pile was driven.
- **Specific pile removal data:**
  - Description of the pile removal activities being conducted:
    - Size and type of piles;
    - The machinery used for removal;
    - Duration each pile removal method was used; and
    - The vibratory driver force.
- **Pre-pile driving monitoring data:**
  - Dates and times monitoring was initiated and terminated;
  - Description of any observed marine mammal species and behaviors in the monitoring zones;
  - If possible, the correlation to underwater sound levels occurring at the time of the observable behavior; and
  - Actions performed to minimize impacts to marine mammals.
- **During pile driving monitoring data:**
  - Description of any observed marine mammal species and behavior within monitoring zones or in the immediate area surrounding monitoring zones, including the following:
    - Measured or estimated distance from animal to source;
    - Reason why/why not shutdown was implemented;

- If a shutdown was implemented, behavioral reactions noted and if they occurred before or after implementation of the shutdown;
- If a shutdown was implemented, the relative location of the animal to sound source at the time of the shutdown;
- Behavioral reactions noted during soft starts[1] and if they occurred before or after implementation of the soft start; and
- Measured or estimated distance or relative location (i.e., in a monitoring zone) to the animal from the source during soft start.

○ Actions performed to minimize impacts to marine mammals;

○ Times when pile driving was stopped due to presence of marine mammals within the Shutdown Zones and time when pile driving resumed;

○ Size and type of pile being installed; and

○ Installation method.

- **Post-pile driving monitoring data:**

○ Results, which include the observations of marine mammal species and group sizes, estimated distances, behaviors, and location within or outside of monitoring zones; and

○ A refined take estimate based on the number of marine mammals observed during the course of construction.

[1] The objective of a soft start is to provide a warning and/or give animals in proximity to pile driving a chance to leave the area prior to a vibratory or impact driver operating at full capacity; thereby, exposing fewer animals to loud underwater and airborne sounds.

APPENDIX A MARINE MAMMAL OBSERVATION RECORD FORM

Project Name: ______________________________ Monitoring Location______________________________ Page __________ of ____________
(Pier Location, Vessel based, Land Location, other)

Date: ______________________________ Vessel Name: ______________________________ Time Effort Initiated:______________

Time Effort Completed:____________

Sighting Data

Event Code	Sighting Number (1 or 1.1 if resight)	Time/Duration watching sighting (Start/End time if continuous)	WP # (every time a sighting is made)	Observer	Sighting cue	Species	Dist/ Dir to Animal (from Observer)	Dist to Pile (btwn animal & pile)	# of Animals Group Size (min/max/best)# of Calves	Relative Motion/and Behavior Code (see code sheet)	Const Type During Sighting	Miti gation used during sighting?	Miti gation Type?	Visibility	% Glare	Weath Cond	Sea State and Wave Ht	Swell Dir	Behavior Change/ Response to Activity/Comments
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / ___ calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E				N or S W or E	

Sighting #=chronological number of sightings, If resight of same animal, then 1.1, 1.2, etc. WP (Waypoint)=GPS recording of lat/long, time/date stamp. Critical for vessel observers.

Sighting Codes

Code	Marine Mammal Species
CASL	California Sea Lion
HSEA	Harbor Seal
STSL	Steller Sea Lion
HPOR	Harbor Porpoise
DPOR	Dall's Porpoise
ORCA	Killer Whale
HUMP	Humpback Whale
UNLW	Unknown Large Whale
RIVO	River Otter (not a marine mammal)
OTHR	Other
UNKW	Unknown

Event

Code	Activity
E ON	On Effort
E OFF	Off Effort
PRE	Pre Watch
POST	Post Watch
SSV	Soft Start Vibratory
SSI	Soft Start Impact
WC	Weather Condition/Change
S	Sighting
M-DE	Mitigation Delay
M-SD	Mitigation Shutdown
RE-S	Re Start

Construction Type

Code	Activity
SSV	Soft Start (Vibratory)
SSI	Soft Start (Impact)
V	Vibratory Pile Driving (installation and extraction)
I	Impact Pile Driving
PC	Pneumatic Chipping
DP	Dead Pull
ST	Stabbing
NONE	No Pile Driving

Mitigation Codes

Code	Activity
DE	Delay Onset of Pile Driving
SD	Shut Down Pile Driving

Visibility

Code	Activity
B	Bad (<0.5 km)
P	Poor (0.5-1.5 km)
M	Moderate (1.5-10 km)
G	Good (10-15 km)
E	Excellent (<15 km)

Glare

Percent should be total glare of observer's area of responsibility. Are they covering 90 degrees or 180 degrees? Total glare for that area and write that area down on the datasheet so we know later what percentage of the field of view was poor due to glare.

Weather Conditions

Code	Activity
S	**Sunny**
PC	**Partly Cloudy**
L	**Light Rain**
R	**Steady Rain**
F	**Fog**
OC	**Overcast**

Sea State and Wave Height

Code	Activity
Light	**0-3 ft**
Moderate	**4-6 ft**
Heavy	**>6 ft**

Swell Direction

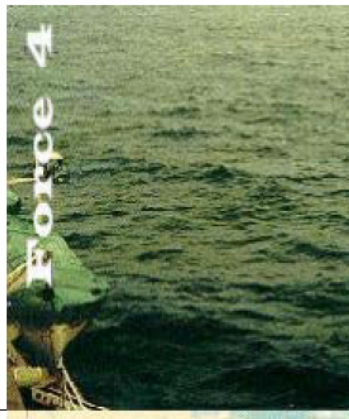
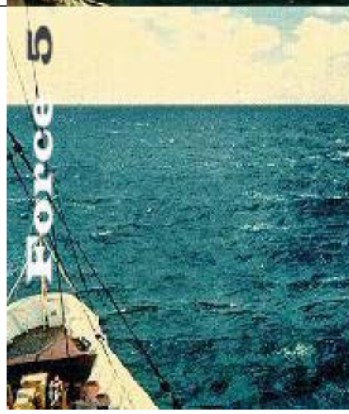
Swell direction should be where the swell is coming from (S for coming from the south). If possible, record direction relative to fixed location (i.e., pier). Choose this location at the beginning of the monitoring project.

APPENDIX B BEAUFORT SEA STATE SCALE

US Navy and Beaufort Sea State Codes (http://ioc.unesco.org and http://www.wrh.noaa.gov/pqr/info/beaufort.php)

Beaufort Sea State	*Wind Speed (knots)*	*Wind Description*	*Wave Height (ft) Beaufort*	*Sea State – Beaufort*	*Notes Specific to On-water Seabird Observations*	*Photos Indicating Beaufort Sea State*
0	<1	Calm	0	Calm; like a mirror	Excellent conditions, no wind, small or very smooth swell. You have the impression you could see anything.	
1	1-3	Light air	¼ < ½	Ripples with appearance of scales; no foam crests	Very good conditions, surface could be glassy (Beaufort 0), but with some lumpy swell or reflection from forests, glare, etc.	

Beaufort Sea State	*Wind Speed (knots)*	*Wind Description*	*Wave Height (ft) Beaufort*	*Sea State – Beaufort*	*Notes Specific to On-water Seabird Observations*	*Photos Indicating Beaufort Sea State*
2	4-6	Light breeze	½ – 1 (max 1)	Small wavelets; crests with glassy appearance, not breaking	Good conditions, no whitecaps; texture/lighting contrast of water make murrelets hard to see. Surface could also be glassy or have small ripples, but with a short, lumpy swell, thick fog, etc.	
3	7-10	Gentle breeze	2 – 3 (max 3)	Large wavelets; crests begin to break; scattered whitecaps	Fair conditions, scattered whitecaps, detection of murrelets definitely compromised; a hit-or-miss chance of seeing them owing to water choppiness and high contrast. This could also occur at lesser wind with a very short wavelength, choppy swell.	

Beaufort Sea State	*Wind Speed (knots)*	*Wind Description*	*Wave Height (ft) Beaufort*	*Sea State – Beaufort*	*Notes Specific to On-water Seabird Observations*	*Photos Indicating Beau*
4	11-16	Moderate breeze	3 ½ – 5 (max 5)	Small waves becoming longer, numerous whitecaps	Whitecaps abundant, sea chop bouncing the boat around, etc.	
5	17-20	Fresh breeze	6 – 8 (max 8)	Moderate waves, taking longer form; many whitecaps; some spray		

APPENDIX C CHAIN OF CUSTODY FORM

<table>
<tr><td colspan="6">Chain of Custody Record</td></tr>
<tr><td colspan="2">Date and Time of Collection:</td><td colspan="2">Duty Station:</td><td colspan="2">Collection By:</td></tr>
<tr><td colspan="3">Source of Specimen (Person and/or Location):

Found At:</td><td colspan="3">Project Name:</td></tr>
<tr><td>Item No:</td><td colspan="5">Description of Specimen (Include Species and Tag Number):</td></tr>
<tr><td rowspan="2">Item No:</td><td>From: (Print Name, Agency)</td><td>Release Signature:</td><td>Release Date:</td><td colspan="2" rowspan="2">Delivered via:
FEDEX
U.S. Mail
In Person
Other:</td></tr>
<tr><td>To: (Print Name, Agency)</td><td>Receipt Signature:</td><td>Receipt Date:</td></tr>
</table>

Chain of Custody Record

Item No:	From: (Print Name, Agency)	Release Signature:	Release Date:	Delivered via: FEDEX U.S. Mail In Person Other:
	To: (Print Name, Agency)	Receipt Signature:	Receipt Date:	
Item No:	From: (Print Name, Agency)	Release Signature:	Release Date:	Delivered via: FEDEX U.S. Mail In Person Other:
	To: (Print Name, Agency)	Receipt Signature:	Receipt Date:	
Item No:	From: (Print Name, Agency)	Release Signature:	Release Date:	Delivered via: FEDEX U.S. Mail In Person Other:
	To: (Print Name, Agency)	Receipt Signature:	Receipt Date:	
Item No:	From: (Print Name, Agency)	Release Signature:	Release Date:	Delivered via: FEDEX U.S. Mail In Person Other:
	To: (Print Name, Agency)	Receipt Signature:	Receipt Date:	