MARINE MAMMAL MONITORING PLAN for PROGRAMMATIC MAINTENANCE, REPAIR, AND REPLACEMENT ACTIVITIES in CEU JUNEAU AREA OF RESPONSIBILITY ALASKA

Order Number: **70Z08718RPJT38600** **Contract Number:** **HSCG50-14-D-PSL002**

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Prepared for:

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CEU Juneau Area of Responsibility, Alaska

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Table of Contents

Contents

List of Tables

List of Figures

List of Acronyms

µPa	microPascal
AOR	Area of Responsibility
AT	Acoustic Technician
BiOp	Biological Opinion
dB	decibel(s)
DTH	down-the-hole
ESA	Endangered Species Act
ft	foot/feet
GPS	Global Positioning System
kHz	kilohertz
km	kilometer(s)
LOA	Letter of Authorization
m	meter(s)
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PAM	Passive Acoustic Monitoring
Plan	Marine Mammal and Acoustic Monitoring Plan
PSO	Protected Species Observer
PTS	Permanent Threshold Shift
re 1 µPa	referenced to one microPascal
RMS	root mean square
RPM	reasonable and prudent measure
SEL	sound exposure level
SPL	sound pressure level
USFWS	US Fish and Wildlife Service
ZOI	zone of influence

1.0 INTRODUCTION

1.1 Purpose of the Monitoring Plan

The purpose of this Marine Mammal Monitoring Plan (Plan) is to provide protocols for marine mammal monitoring activities in accordance with the Letter of Authorization (LOA) issued on March 1, 2024 by the National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) for the incidental take of 15 species (Table 1). Also, some conditions herein are required based on the Biological Opinion (2023 USCG Alaska Maintenance and Repair BiOp). Incidental take is expected as a result of the U.S. Coast Guard's (USCG's) programmatic maintenance, repair, and replacement activities (Project) at eight USCG facilities within CEU Juneau's Area of Responsibility (AOR) in Alaska.

The USCG intends to perform maintenance activities at eight stations located in southwestern, southcentral, and southeastern Alaska, including: 1) Kodiak, 2) Sitka, 3) Ketchikan, 4) Valdez, 5) Cordova, 6) Juneau, and 7) Petersburg, and 8) Seward (refer to Figure 1). In-water maintenance activities may include pile repair (i.e., sleeve or jacket re/placement) pile replacement (including removal and installation), and deck repair and replacement to maintain safe berthing for currently operating vessels. Details of proposed activities including other maintenance activities such as underwater power washing piles and above-water power washing of deck, fender repair (camel replacement, chain replacement, utility handlers), replacement of rub strips and ladder support (which require drilling), etc. Specific pile types, sizes, and quantities as well as decking types are described for each USCG facility (see Section 1.3 – *Proposed Action Details by Location*).

The purpose of monitoring described herein is twofold:

1) To minimize the potential for Level A (injury) harassment of marine mammals by implementing a shutdown of activities whenever a marine mammal is within a distance where Level A (injury) harassment could result from those activities;

2) To enumerate the numbers and species of marine mammals that occur within established Level A (injury) and Level B (behavioral disturbance) harassment zones, and to document any differences in species, numbers, or effects associated with Project-related in-water activities; and

The Plan is a requirement of the final rule and language of the LOA authorized under the Marine Mammal Protection Act (MMPA). Once approved by NMFS, the Plan cannot be modified without NMFS approval. The LOA and this corresponding monitoring plan are valid for take incidental to the specified maintenance activities as set forth in the LOA.

Mitigation measures and monitoring protocols described herein will serve to protect marine mammal species in the Project area including from both Level A injury and Level B harassment, provide for practical implementation of this Plan, reduce the risk of unauthorized take, and allow maintenance of the construction schedule.

Table 1 Species and Stocks for which Harassment is Authorized Under LOA

Species (Common Name)	Scientific Name	Stock / DPS
Fin whale	*Balaenoptera physalus*	Northeast Pacific / NA
Gray whale	*Eschrichtius robustus*	Eastern North Pacific / NA
Humpback whale	*Megaptera novaeangliae*	Hawai'i / Hawaii DPS
		Mexico – North Pacific / Mexico DPS
		Mexico- North Pacific / Western North Pacific DPS
Minke whale	*Balaenoptera acutorostrata*	Alaska / NA
Killer whale	*Orcinus orca*	Eastern North Pacific Alaska Resident / NA
		Eastern North Pacific Northern Resident / NA
		Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea Transient / NA
		AT1 Transient / NA
		West Coast Transient / NA
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	North Pacific / NA
Harbor porpoise	*Phocoena phocoena*	Northern Southeast Alaska Inland Waters / NA
		Southern Southeast Alaska Inland Waters / NA
		Yakutat - Southeast Alaska Offshore Waters / NA
		Gulf of Alaska / NA
Dall's porpoise	*Phocoenoides dalli*	Alaska / NA
Steller sea lion	*Eumetopias jubatus*	Western / Western DPS
		Eastern / Eastern DPS
Northern fur seal	*Callorhinus ursinus*	Eastern North Pacific / NA
California sea lion	*Zalophus californianus californianus*	US Stock / NA
Harbor seal	*Phoca vitulina*	Prince William Sound / NA
		Lynn Canal - Stephens Passage / NA
		Sitka - Chatham Strait / NA
		Clarence Strait / NA
		South Kodiak / NA

Northern sea otter	*Enhydra lutris kenyoni*	Southeast Alaska / NA
		Southcentral Alaska / NA
		Southwest Alaska / NA

Figure 1 Sector Alaska Facilities included in Programmatic Maintenance Activities

1.2 Summary of Activities to be Monitored

All relevant in-water construction activities that have the potential to result in Level A or Level B harassment of marine mammals will be monitored.

In-water maintenance activities under the LOA must comply with the following General Conditions of the LOA:

1) A copy of any issued LOA must be in the possession of the Coast Guard, supervisory construction personnel, lead protected species observers, and any other relevant designees of the Coast Guard operating under the authority of this LOA at all times that activities subject to this LOA are being conducted.;
2) Take by Level A harassment is limited to harbor porpoise, harbor seal, and Dall's porpoise, as specified in the LOA is authorized;
3) For all other marine mammals, only Level B harassment, as specified in the LOA is authorized; and
4) Taking of species that exceeds the numbers and/or intensity indicated in the LOA, or any taking of other species of marine mammal is prohibited and may result in modification, suspension, or revocation of the LOA.

Marine mammal and other ESA protected species monitoring will be conducted before, during, and after all in-water maintenance activities described below within the acoustic harassment zones of those activities relative to Level A and B acoustic thresholds. The proposed monitoring will document the number of marine mammal species exposed to underwater sound levels that would constitute "take" under the MMPA. Endangered Species Act (ESA) listed species (e.g., humpback whale) also will be monitored within the same harassment zones.

Pile Repair

Existing piles that show signs of deterioration may be repaired using a protective wrapping system which typically includes installation of grouted fiberglass pile jackets around deteriorated piles. For piles located near the shoreline, any surrounding rock armor will be temporarily removed to access the full pile length down to the mudline. Rock armor will be removed and replaced using an excavator, crane, or similar method to move individual rocks. It may also be necessary to replace wooden bracings during repair activities.

Pile Replacement

Piles that cannot be repaired with sleeves or pile jackets will be replaced. Existing timber, steel, and concrete piles will be replaced with similar timber, steel, concrete, or composite piles of similar size. Pile replacement will generally proceed along the following steps: 1) remove overlying decking if pile is otherwise inaccessible, 2) remove the damage pile, 3) install new pile of similar size and material, and 4) re-install old or install new decking over the replacement pile as necessary. The exact pile extraction and installation methods will be determined by the construction contractor; however, pile extraction will potentially comprise "dead pulling" or vibratory extraction while pile installation will potentially use drilling of rock sockets where shallow bedrock is present as well as vibratory and/or impact pile driving. If piles break during extraction they will be left in place as no further cutting will occur.

Deck Repair and/or Replacement

Decking will be replaced in kind (i.e., wood deck will be replaced with wood). If a portion of decking needs to be replaced due to damage or rot, just the section identified for repair will be replaced. For concrete decks, cracked or spalled concrete will be repaired as needed. In order to access piles on a concrete deck, the section above the pile will be removed using a concrete saw. Following pile replacement, a watertight

form will be prepared, and uncured concrete will be pumped into the form in order to "patch" the void. Concrete will not be allowed to top the form.

Other Maintenance Activities

Other maintenance activities include fender repair and replacement, gangway repair and replacement, replacement of rub strips and ladder supports, replacement of handrails, bollards, and other minor repairs including pressure washing, cleaning, and scraping of piles and decking.

Fender repair may include fender pile replacement, camel replacement, and camel system repairs. Fender pile replacement will be similar to that described above for replacement of pier piles. Repairs may include replacement of the chain connection and 24-inch (61-centimeters [cm]) diameter high-density polyethylene (HDPE) camel. Utility hangers below the dock would also be replaced as necessary.

1.3 Proposed Action Details by Location

Each of the eight USCG facilities has its own unique array of shoreside and in-water components depending upon the local mission. Further, two of the facilities – Cordova and Seward – are leased by USCG from those municipalities and USCG is responsible for repairs resulting from its operations. The following table provides a summary of activities proposed by location under this programmatic request while detailed descriptions of each USCG facility and its components are provided in the following section and summarized in Table 2.

USCG Base Kodiak

Base Kodiak occupies a 25,458-acre upland site with adjacent waterside structures along Seafarer Drive (KIB, 2019). USCG Base Kodiak has three non-recreation piers fronting Womens Bay; they include the Marginal Wharf, which was condemned after the 1964 earthquake; the Fuel Pier, used by Base Kodiak to provide fuel to homeported and visiting cutters, and as temporary berthing for transient vessels; and the Cargo Wharf, which currently provides permanent berthing space for the USCG Cutters (USCGCs) *Alex Haley, Munro*, and *SPAR* as well as visiting vessels. Two of the three piers (the Fuel Pier and Cargo Wharf) at Base Kodiak need periodic maintenance and repair; the Marginal Wharf is currently being evaluated for demolition.

The Cargo Wharf is a 1,087-foot-long pier with widths varying 26 ft to 59 ft and a 48 ft catwalk. The pier was constructed in 1967 and modified in 1986, 1990, and 1995. The Cargo Wharf is constructed of timber and steel material and is supported by 64 piles. Existing piles are 24-inches in diameter and consist of treated wood. Two breasting dolphins sit fore and aft of the Cargo Wharf. These dolphins each contain eight 24-inch steel piles.

The Fuel Pier is a 610-ft long, 40-ft wide pier with a 150-ft catwalk. The Fuel Pier was constructed in 1942 and modified in 1965, 1988, and 2010. The Fuel Pier consists of steel piles and wood piles supporting wood beams, stringers, and decking.

Maintenance activities at Base Kodiak include pile repair and replacement of (to include 12-inch for 12-inch steel piles, 12-inch and 24-inch treated wood piles will be replaced with 12-inch and 24-inch steel piles, respectively), treated wood deck replacement with treated wood decking, fender replacement, and rub strip and ladder replacement as necessary.

It is estimated that between 10 and 15 piles will be replaced in any given year over the life of the Program, not to exceed 50 piles total.

Because there is the potential for contaminated sediments at this location, no pressure washing of existing piles will occur and all pile removal and installation activities will be conducted in accordance with

the U.S. Environmental Protection Agency's (EPA's) *Best Management Practices for Piling Removal and Placement* (2016).

USCG Moorings Sitka

The shoreside and in-water cutter facilities at Sitka moorings occupy a 1.13-acre upland site with adjacent waterside structures along Seward Avenue on the southeastern shore of Japonski Island (CBS, 2019). Only one dock is used at this location. During a 2017 inspection, 25 piles with marine borer infestation were identified. In 2019, 17 of those existing piles were repaired by jacketing the piles (i.e., cleaning and wrapping the deteriorated area of the pile with a special form made of fiber reinforced plastic or other material, placing reinforcing inside the form and grouting inside the form to fill all voids).

It is anticipated that other piles damaged by marine borer infestation will be repaired or replaced for a total of 25 pile replacements over the Program duration or approximately 5 piles per year of the authorization.

If required, pile replacement will be conducted by replacing the same size and type of steel pile (maximum pile size of 12 inches) or replacing treated wood piles (maximum pile size of 24 inches) with similar wood piles.

USCG Base Ketchikan

Base Ketchikan occupies a 42.79-acre upland site with adjacent waterside structures along Steadman Street in Ketchikan (KGB, 2019). Shoreside facilities at Base Ketchikan are supported by an array of pile types including 12- and 16- inch timber piles, 8.5- and 16-inch steel piles, and 20-inch concrete piles. Many of the timber piles have served past their service life and are impacted by marine borers and the harsh local environment and are anticipated to be replaced. Additionally, some existing concrete piles exhibit spalling or flaking that would eventually require repair or replacement. It is estimated that between 10-15 piles will be replaced in any given year over the life of the permit, not to exceed 50 piles total. In addition to pile replacement, it is estimated that five timber piles per year will require repairs including powerwashing and pile jacketing.

Other maintenance activities at Base Ketchikan will include replacement of treated wood decking with in-kind materials, fender replacement, and rub strip and ladder replacement.

USCG Moorings Valdez

The USCG proposes to conduct maintenance on an aged ferry pier used to moor a USCG ship that is critical to Moorings Valdez's mission. The station occupies a 25,458-acre upland site with adjacent waterside structures along Fidalgo Drive in Valdez. The Station Valdez moorings consist of a timber access trestle and a concrete floating dock with steel guide piles. Maintenance activities anticipated at Station Valdez include timber pile repair and replacement of timber or steel piles with in-kind materials. For the purposes of this analysis, it is anticipated that one steel guide pile and five timber piles (one per year), and five timber pile repairs including powerwashing and pile jacketing over the five-year authorization.

Other maintenance activities at USCG Station Valdez will include repair or replacement of decking, as well as concrete framing, gangway, fender replacement, and rub strip and ladder replacement as needed.

USCG Moorings Cordova

The dock used by the USCG at this station is owned by the City of Cordova and is located at the end of Sorrell Road. Because the USCG leases the berth, they are not typically responsible for maintenance and repair of dock features. However, the USCG damaged a 3-pile dolphin associated with the pier during use and is responsible for replacing the structure. The damaged dolphin consists of three steel piles and

damage is extensive enough to warrant replacement. Therefore, the USCG is proposing to replace three 12-inch steel piles with 12-inch steel piles and additional steel piles. The entire damaged dolphin replacement action will occur within a single calendar year. The USCG does not anticipate conducting additional maintenance actions at the Cordova Moorings beyond replacement of the dolphin piles for the remainder of the Program duration.

USCG Station Juneau

The shoreside and in-water facilities at Station Juneau occupy a 1.12-acre upland site with adjacent waterside structures along Egan Drive in Juneau (CBJ, 2019). The timber-decked Station Juneau facilities are supported by approximately 474 14-inch timber piles with accompanying 12-inch fender piles. It is estimated that 10-15 piles will be replaced in any given year over the life of the permit, not to exceed 50 piles total.

Other maintenance activities at Station Juneau will include replacement of damaged decking with treated wood decking, gangway replacement, fender replacement, and rub strip and ladder replacement.

USCG Moorings Petersburg

The USCG Petersburg moorings occupy a small (<1 acre) upland site with nearby shoreside structures along Dock Street in Petersburg (PMV, 2019). In-water components at the Petersburg moorings include 12.75-inch steel piles, 12-inch timber piles, 16-inch timber fender piles, and treated wood decking. Existing steel piles previously had replaced timber piles while the remaining timber piles had been previously repaired by power washing and wrapping in a PVC support. Anticipated maintenance activities at the Petersburg Moorings include replacement of multiple fender piles, up to 10 over the duration of the Program, or approximately two per year.

Other maintenance activities at USCG Petersburg moorings are likely to include pile repair, repair or replacement of treated wood deck, and rub strip and ladder replacement.

USCG Moorings Seward

The dock, a concrete floating dock with steel guide piles, and hoist crane supported by a timber deck with timber and steel piles used by the USCG at this station are owned by the City of Seward and is located on the eastern side of the Seward Boat Harbor. Because the USCG leases the berth, they are not typically responsible for maintenance and repair of dock features. However, in the event that USCG operations result in damage to the city-owned facilities, USCG will be responsible for repairs. Therefore, for the purposes of project over the five-year maintenance Program period, the USCG is proposed to replace one timber and one steel pile during one single year of the Program.

The proposed activities are summarized in Table 2

Table 2 Estimated In-Water Maintenance Activities at USCG Facilities by Expected Program Year of Completion

Facility	***Year 1***	***Year 2***	***Year 3***	***Year 4***	***Year 5***
Kodiak	Replace 20 timber* or steel piles	Replace 20 timber or steel piles	Replace 20 timber or steel piles	Replace 20 timber or steel piles	Replace 20 timber or steel piles
Sitka	Pile Repair/Washing Replace 5 piles	Pile Repair/Washing Replace 5 piles	Pile Repair/Washing Replace 5 piles	Pile Repair/Washing Replace 5 piles	Pile Repair/Washing Replace 5 piles
Ketchikan	Pile Repair/Washing Replace 10 - 15 timber piles	Pile Repair/Washing Replace 10 - 15 timber piles	Pile Repair/Washing Replace 10 - 15 timber piles	Pile Repair/Washing Replace 10 -15 timber piles	Pile Repair/Washing Replace 10 -15 timber piles
Valdez	Pile Repair/Washing Replace 1 timber pile	Pile Repair/Washing Replace 1 timber pile	Pile Repair/Washing Replace 1 timber pile	Pile Repair/Washing Replace 1 timber pile Replace 1 steel guide pile	Pile Repair/Washing Replace 1 timber pile
Cordova		Replace 3 steel piles (single damaged dolphin)			
Juneau	Pile Repair/Washing Replace 10 timber piles	Pile Repair/Washing Replace 10 timber piles	Pile Repair/Washing Replace 10 timber piles	Pile Repair/Washing Replace 10 timber piles	Pile Repair/Washing Replace 10 timber piles
Petersburg	Pile Repair/Washing Replace 2 fender piles	Pile Repair/Washing Replace 2 fender piles	Pile Repair/Washing Replace 2 fender piles	Pile Repair/Washing Replace 2 fender piles	Pile Repair/Washing Replace 2 fender piles
Seward			Replace 1 steel pile		

Notes:
*Timber piles will be preferentially replaced with composite piles where technically possible

1.4 Mitigation Measures

The following mitigation measures, as specified in the NMFS LOA and BiOp, shall be implemented during in-water maintenance activities to avoid and minimize marine mammal exposure to Level A injury and to reduce to the lowest extent practicable exposure to Level B noise levels. The contractor is responsible for complying with all the mitigation measures listed below, whereas onsite USCG representatives will monitor the contractor's performance and require corrective action or stop work, if necessary, to ensure the requirements are met.

1) General Mitigation Measures

1) The USCG will inform NMFS of impending in-water activities a minimum of one week prior to the onset of those activities.
2) If construction activities will occur outside of the time window specified in thee biological opinion, the USCG will notify NMFS in writing within one week (as feasible) of this determination, with a detailed description of work to take place outside of the original time window and justification for the requested change.
3) In-water work will be conducted at the lowest points of the tidal cycle feasible.
4) Project-associated staff will cut all materials that form closed loops (e.g., plastic packing bands, rubber bands, and all other loops) prior to proper disposal in a closed and secured trash bin. Trash bins will be properly secured with locked or secured lids that cannot blow open, preventing trash from entering into the environment, thus reducing the risk of entanglement in the event that waste enters marine waters.
5) Project-associated staff will properly secure all ropes, nets, and other marine mammal entanglement hazards to ensure they do not blow or wash into the water.
6) The Coast Guard would adhere to in-water work windows designed for the protection of fishes and marine mammals under other permitting requirements.

2) PSO-Related Measures

The following pre-clearance and shutdown zone measures are the same for all in-water activities. Additional mitigation measures specific to each activity are listed in subsections below.

1) One or more PSOs will perform PSO duties onsite throughout all pile repair, removal, and installation activities at each of the 8 USCG facilities.
2) For each in-water activity, PSOs will monitor all marine waters within the indicated shutdown zone (Section 2.2) and Level B monitoring zone for that activity (Attachment A).
3) Prior to commencing pile removal operations, divers will survey the area within the 20 m shutdown zone (Section 2.2) for sunflower sea stars. Sea stars that are found will be gently moved into a bucket of water collected at the site and taken to a location at least 100 m (328 ft) outside and away from the shutdown zone and gently released onto the substrate.
4) PSOs will be positioned such that they will collectively be able to monitor the entirety of each activity's shutdown zone, and to the extent feasible, the Level B monitoring zones (Attachment A). The USCG will coordinate with NMFS on the placement of PSOs prior to commencing in-water work.
5) If a listed species is observed within a shutdown zone or is otherwise harassed, harmed, injured, or disturbed, PSOs will immediately report that occurrence to NMFS using the contact information specified in Section 4.0.

3) Time Restriction

In-water maintenance activities will only be conducted when sufficient light is available for visual observations (generally 30 minutes after sunrise and up to 45 minutes before sunset).

4) Vessels

- For in-water maintenance activities, heavy machinery activities other than those defined in this application but not included as noise-generating activities (e.g., use of barge mounted excavator to remove pile armoring to provide access to repair or replace pile) must cease operations and reduce vessel speed to the minimum level required to maintain steerage and safe working conditions if a marine mammal approaches within 20 m (66 ft).
- For all other activities, all crew members (i.e., construction supervisors and crews, Protected Species Observers [PSOs], and relevant staff) must avoid direct physical interaction with marine mammals during construction activities. If a marine mammal comes within 20 m (66 ft) of such activity, operations must cease.
- Vessel operators will:
    a. maintain a watch for marine mammals at all times while underway;
    b. stay at least 91 m (300 ft) away from listed marine mammals, except they will remain at least 460 m (1,509 ft) from endangered North Pacific right whales;
    c. travel at less than 5 knots (9 km/hour) when within 274 m (900 ft) of a whale;
    d. avoid changes in direction and speed when within 274 m (900 ft) of a whale, unless doing so is necessary for maritime safety;
    e. not position vessel(s) in the path of a whale, and will not cut in front of a whale in a way or at a distance that causes the whale to change direction of travel or behavior (including breathing/surfacing pattern);
    f. check the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged;
    g. reduce vessel speed to 10 knots or less when weather conditions reduce visibility to 1.6 km (1 mi) or less;
    h. follow designated speed limits to and from the project sites.
- Vessel operators will adhere to the Alaska Humpback Whale Approach Regulations when vessels are transiting to and from the project site (see 50 CFR §§ 216.18, 223.214, and 224.103(b); note: these regulations apply to all humpback whales). Specifically, pilot and crew will not:
    a. approach, by any means, including by interception (i.e., placing a vessel in the path of an oncoming humpback whale), within 300 ft of any humpback whale;
    b. cause a vessel or other object to approach within 300 ft of a humpback whale; or
    c. disrupt the normal behavior or prior activity of a whale by any other act or omission.
- If a whale's course and speed are such that it will likely cross in front of a vessel that is underway, or approach within 91 m (300 ft) of the vessel, and if maritime conditions safely allow, the engine will be put in neutral and the whale will be allowed to pass beyond the vessel, except that vessels will remain 460 m (1,509 ft) from North Pacific right whales.
- Vessels will take reasonable steps to alert other vessels in the vicinity of whale(s).
- Vessels will not allow lines to remain in the water unless both ends are under tension and affixed

to vessels or gear. No materials capable of becoming entangled around marine mammals will be discarded into marine waters.

- Vessels will not approach within 5.5 km (3 nautical miles) of rookery sites listed in 50 CFR § 224.103(d).
- Vessels will not approach within 914 m (3,000 ft) of any Steller sea lion haulout or rookery.

5) Pre-Construction Briefing

Prior to the start of all in-water maintenance activities, briefings will be conducted for construction supervisors and crews and the monitoring team when new personnel join the work or a new activity at an individual USCG facility begins, in order to explain responsibilities, communication procedures, the marine mammal protocols, and operations procedures.

6) Establishment of Level A Exclusion Zone and Level B Harassment Zones During In-Water Maintenance Activities

- During all in-water maintenance activities, regardless of predicted isopleths, a physical interaction shutdown zone of 20 m (66 ft) will be implemented. Since most marine mammals are fast-swimming, this is appropriate to reduce the likelihood of injury to marine mammal species due to physical interaction with noise generating equipment during in-water activities. If an animal enters the shutdown zone, the pile repair or replacement activity would be stopped until the individual(s) has left the zone of its own volition, or not been sighted for 15 minutes for MMPA protected species and 30 minutes for ESA listed species. Activity and species-specific Level A shutdown zones include:

    1) 220 m (722 ft) low frequency cetaceans during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward)
    2) 440 m (1,444 ft) low frequency cetaceans during down-the-hole (DTH) drilling (Kodiak and Ketchikan)
    3) 260 m (853 ft) high frequency cetaceans during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward)
    4) 520 m (1,706 ft) high frequency cetaceans during DTH drilling (Kodiak and Ketchikan)
    5) 120 m (394 ft) phocid pinnipeds during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward)
    6) 240 m (787 ft) phocid pinnipeds during DTH drilling (Kodiak and Ketchikan)
    7) 5,412 m (17,756 ft) all species during power washing (Valdez)
    8) 30 m (98 ft) low frequency cetaceans during impact driving of concrete piles (Ketchikan)
    9) 40 m (131 ft) high frequency cetaceans during impact driving of concrete piles (Ketchikan)To the maximum extent practicable based on the required number of PSOs, required monitoring locations, and environmental conditions, the Level A harassment zones will be monitored throughout the time required to power wash, remove, or install a pile. T(250 m – Low Frequency cetaceans, 200 m – High Frequency cetaceans, and 120 m – Phocid pinnipeds during DTH drilling and steel pile impact driving; and 35 m – Low and High Frequency cetaceans during concrete pile impact driving)will be monitored for 15 minutes (MMPA) or 30 minutes (ESAFor High Frequency cetaceans, the 200 m (656 ft) shutdown zone will be

monitored.

- To the maximum extent practicable based on the required number of PSOs, required monitoring locations, and environmental conditions, the Level B harassment zones will be monitored throughout the time required to power wash, remove, or install a pile.. If a marine mammal is observed entering the Level B harassment zone, an exposure would be recorded, and behaviors documented. Work would continue without cessation, unless the animal approaches or enters the shutdown zone, at which point maintenance activity shall be halted.

7) Marine Protected Species Visual Monitoring

- In-Water Maintenance: Monitoring will be conducted for a 20 m (66 ft) physical interaction shutdown zone and relevant Level A shutdown and Level B harassment zones identified for the specific maintenance activity at the identified USCG facility, and to the greatest visual extent possible before, during, and after maintenance activities. Monitoring will take place from 30 minutes prior to initiation through 30 minutes post-completion of removal activities. PSOs must record all observations of marine mammals, regardless of distance from the in-water maintenance activity being conducted.
- In-water maintenance activities will take place only during conditions with a Beaufort Sea State of 4 or less.
- Monitoring will be conducted by qualified, independent (i.e., not construction personnel) PSOs approved by NMFS and USFWS. PSOs must not have any other assigned tasks during monitoring periods. All PSOs would be trained in marine mammal identification and behaviors, and have experience conducting marine mammal monitoring or surveys. At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization. Trained PSOs will be placed at the best vantage point(s) practicable (e.g., from a small boat, the pile removal barge, on shore, or any other suitable location) to monitor for marine mammals and implement shutdown/delay procedures, when applicable, by notifying the operator of a need for a shutdown of construction.
- Up to five PSOs will be deployed on land or vessel with a clear view of the shutdown zone and zones of influence (ZOIs).
- PSOs will work in shifts lasting no longer than 4 hours with at least a 1 hour break from monitoring duties between shifts. PSOs will not perform PSO duties for more than 12 hours in a 24-hour period.
- Prior to the start of an in-water maintenance activity, the relevant activity-specific shutdown zone and relevant Level B harassment zone will be monitored for 30 minutes to ensure that they are clear of marine mammals. In-water maintenance activities will only commence once observers have declared the zones clear of marine mammals. If animals are sighted within the Level B harassment zone, work will be allowed to proceed and a take will be documented.
- If visibility degrades such that a PSO can no longer ensure that the shutdown zones remain devoid of listed species during in-water maintenance activities, the crew will cease in-water work until the entire shutdown zone is visible and the PSO has indicated that the zone has remained devoid of listed species for 30 minutes.
- If a marine mammal approaches/enters the activity-specific shutdown zone during the course of in-water maintenance activities, the noise generating activity will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone, or 15 minutes (MMPA) or 30 minutes (ESA) have passed without a re-detection of the animal(s) from the last observation time. At Moorings Valdez, a shutdown will be ordered if one or more

listed species has entered, or appears likely to enter, the associated Level B power washing zone.

  - If a marine mammal species not covered in this LOA enters the Level B harassment zone, all in-water maintenance activities shall be halted until the animal(s) has been observed to have left the Level B ZOI. NMFS and USFWS, as appropriate, will be notified immediately with information regarding the species and precautions made during the encounter. In-water maintenance activities will be allowed to proceed if the above measures are fulfilled for non-authorized species.

- In the event of conditions (such as heavy fog) that prevent visual detection of marine mammals within the Shutdown Zone or render the Shutdown Zone not completely visible once in-water maintenance activities have been initiated, activities will be delayed until the full zone is once again visible.
- If the take of a marine mammal species approaches 80% of authorized take limits specified in the LOA, NMFS or USFWS will be notified, and appropriate steps will be discussed.

8) Soft-Start

The use of impact soft-start procedures are believed to provide additional protection to marine mammals by providing a warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity.

Impact Pile Driving

1) Soft-start requires contractors to provide an initial set of three strikes at reduced energy, followed by a 30-second waiting period, then two subsequent reduced energy strike sets. A soft-start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.
2) Following this soft-start procedure, operational impact pile driving may commence and continue, provided listed species remain absent from the shutdown zone.

DTH Drilling

1) If no listed species are observed within the DTH shutdown zone for 30 minutes immediately prior to pile driving, soft-start procedures will be implemented immediately prior to activities.
2) Soft-start requires contractors to activate the drilling equipment at no more than half the operational power for several seconds, followed by a 30 second waiting period, then two subsequent reduced power start-ups. A soft start must be implemented at the start of each day's DTH, any time pile driving has been shutdown or delayed due the presence of a listed species, and following cessation of pile driving for a period of 30 minutes or longer.
3) Following this soft-start procedure, DTH may commence and continue provided listed species remain absent from the shutdown zone.
4) Following a lapse of pile driving activities of more than 30 minutes, the PSO will authorize resumption of DTH only after the PSO provides assurance that listed species have not been present in the shutdown zone for at least 30 minutes immediately prior to resumption of operations.

9) Vibratory Pile Driving

If no listed species are observed within the vibratory pile driving shutdown zone for 30 minutes immediately

prior to pile driving, vibratory pile driving may commence. This pre-pile driving observation period will take place at the start of each day's vibratory pile driving, each time pile driving has been shut down or delayed due the presence of a listed species, and following cessation of pile driving for a period of 30 minutes or longer.

10) Daylight Construction

In-water maintenance work will occur only during civil daylight hours that allow for sighting of marine protected species within all project area and defined monitoring zones (generally 30 minutes after sunrise and up to 45 minutes before sunset).

11) Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR § 402.02). For this proposed action, NMFS suggests the following conservation recommendations:

1) Project vessel crews should participate in the WhaleAlert program to report real-time sightings of whales while transiting in the waters of Southeast Alaska and to minimize the risk of vessel strikes. More information is available at https://www.fisheries.noaa.gov/resource/tool-app/whale-alert.
2) Without approaching whales, project vessel crews should attempt to photograph humpback whale flukes and record GPS coordinates of the sightings during transit. These data should be included in the final report submitted to NMFS AKR.
3) Without approaching whales, project vessel crews should attempt to photograph and/or video North Pacific right whales and record GPS coordinates of the sightings during transit. These data should be submitted to NMFS AKR as soon as possible.
4) Without approaching sea lions, project vessel crews should attempt to photograph Steller sea lions when brand numbers are visible and record GPS coordinates of the sightings during transit. These data should be included in the final report submitted to NMFS AKR.
5) USCG should ensure that the entities responsible for conducting the sunflower sea star surveys have practice and expertise with the methodology they use to conduct the survey, prior to conducting the actual surveys. In addition, USCG should invite PRD biologists to the site when a sunflower sea star survey is being conducted or the equipment to do the survey is being tested to enable PRD to better understand the efficacy of the selected methods and equipment.
6) USCG should publish, or make widely available, a report detailing the methodology used and results of the sunflower sea star surveys conducted as part of this proposed action. Those findings will aid other action agencies and future projects in developing protocols for future surveys, and will increase general understanding of sunflower sea star movements and densities across southcentral and southeast Alaska.

12) Reasonable and Prudent Measures

Reasonable and prudent measures (RPMs) are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take." (50 CFR 402.02). Failure to comply with RPMs (and the terms and conditions that implement them) may invalidate the take exemption and result in unauthorized

take. RPMs are distinct from the mitigation measures that are included in the proposed action.

The RPMs included below, along with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. NMFS concludes that the following RPMs are necessary and appropriate to minimize or to monitor the incidental take of Mexico DPS humpback whales, fin whales, and WDPS Steller sea lions resulting from the proposed action.

1) The USCG and NMFS Permits Division will conduct operations in a manner that will minimize impacts to Mexico DPS humpback whales, fin whales, and WDPS Steller sea lions that occur within or in the vicinity of the action areas at each USCG facility.

2) The USCG and NMFS Permits Division will implement a comprehensive monitoring program to ensure that Mexico DPS humpback whales, fin whales, and WDPS Steller sea lions are not taken in numbers or in a manner or in amounts not anticipated by this opinion, and to submit a final report to NMFS AKR evaluating the mitigation measures and the results of the monitoring program.

13) Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the ESA, the action agencies must comply (or must ensure that any applicant complies) with the following terms and conditions.

To carry out RPM #1, the USCG and NMFS Permits Division, or its authorization holder, must:

1) Implement all mitigation measures, including observation and shut down zones and other requirements, as described in the final IHA and the marine mammal monitoring and mitigation plan.

To carry out RPM #2, the USCG and NMFS Permits Division, or its authorization holder, must:

1) Through the use of PSOs, ensure that marine mammals are not present within the relevant activity-specific Level B monitoring zones for pile repair, removal, and installation for at least 30 minutes immediately prior to initiation of the in-water activity. If one or more listed species are observed within the Level B monitoring zone, the in-water activity will not begin until the listed species exit the monitoring zone of their own accord, or the monitoring zone has remained clear of listed species for 30 minutes immediately prior to start of activities.

2) Report immediately to NMFS AKR the taking of any ESA-listed marine mammal in a manner other than that described in this ITS.

3) Reinitiate consultation following a prohibited take. Any subsequent activities causing incidental take will not be exempt from the take prohibitions of ESA Section 9 until consultation is reinitiated. NMFS AKR will work with USCG and NMFS Permits Division to determine what additional actions are necessary to minimize additional prohibited take and ensure ESA compliance.

4) Adhere to all monitoring and reporting requirements as detailed in the IHA issued by NMFS under Section 101(a)(5) of the MMPA as reflected in the marine mammal monitoring and mitigation plan.

5) Submit a project specific report within 90 days of the conclusion of in-water work associated with this project. The report must analyze and summarize marine mammal interactions during this project. The report should be emailed to NMFS AKR at AKR.PRD.Section7@noaa.gov This report must also contain information described in the mitigation measures of the BiOp.

2.0 MONITORING ZONES

The shutdown and monitoring zones as well as representative PSO monitoring locations are described in the subsections below.

Anticipated sound propagation during in-water maintenance activities including pile repair, removal, and installation was assessed using the NMFS Technical Guidance (NMFS 2018), NMFS User Spreadsheet (NMFS 2020) and practical spreading loss model; however, it should be noted that calculations did not take into account local environmental conditions (e.g., bathymetry, sediment type, seasonal water temperatures).

Table 3 Projected Level A ZOIs by Marine Mammal Hearing Group

Pile Removal/Installation Activity	***Projected Distances to Level A Thresholds (m)[1]***				
	LF	***MF***	***HF***	***PW***	***OW***
Power washing of timber and steel piles 165.5 dB RMS for 9,000 seconds per day	1.3	n/a	n/a	n/a	0.1
Vibratory Extraction/Installation – Timber 152 dB RMS for 3,000 seconds per day	1.5	0.1	2.2	0.9	0.1
Vibratory Extraction/Installation - Steel 162.0 dB RMS for 3,000 seconds per day	7.1	0.6	10.4	4.3	0.3
Impact Drive – Timber 170 dB RMS, 160 dB $SEL_{s-s,}$100 strikes per pile, 5 piles/day	18.4	0.7	21.9	9.9	0.7
Impact Drive – Composite 153 dB RMS, 145 dB $SEL_{s-s,}$ 120 strikes, 5 piles/day	2.1	0.1	2.5	1.1	0.1
Impact Drive – Steel 190 dB RMS, 177 dB SEL_{s-s} 400 strikes per pile, 5 piles/day	215.8	7.7	257.1	115.5	8.4
Impact Drive – Concrete 170 dB RMS, 160 dB $SEL_{s-s,}$ 184 strikes per pile, 5 piles per day	27.7	1.0	33.0	14.8	1.1
DTH Drive – All pile types and sizes 167 dB RMS, 159 dB $SEL_{s-s,}$ 7,200 seconds / day and 10 strikes / second, 2 piles per day	434.1	15.4	517.1	232.2	16.9

Notes:
HF = high frequency; LF = low frequency; m = meters; MF = mid-frequency; OW = otariid in water; PW = phocid in water.

The calculated radial distances to Level B behavioral disturbance thresholds and corresponding areas within the harassment zones are summarized in Table 4. Distances are based on the Level B threshold distance is determined by the point at which the maximum sound from the project source diminishes to 120 dB re 1 µPa.

Table 4 Calculated Distances(s) to Level B Underwater Noise Thresholds and ZOIs within the Thresholds from Pile Repair, Removal, and Installation

Activity Description/ Source Sound Levels at 10-m (33-ft)	***Distance from Source to Reach to 160 dB[2] re 1 µPa (m)***	***Distance from Source to reach to 120 dB[3] re 1 µPa (m)***
	Maximum Radial Distance (m)	***Maximum Radial Distance (m)***
Power washing of timber and steel piles 161.0 dB RMS for 9,000 seconds per day	1.3	5,412
Vibratory Extraction/Installation – Timber 152 dB RMS for 3,000 seconds per day	1.5	1,359
Vibratory Extraction/Installation - Steel 162.0 dB RMS for 3,000 seconds per day	7.1	6,310
Pile Clipper – Timber 153.8 dB RMS for 710 seconds per day	NA	1,792
Pile Clipper – Concrete 161.2 dB RMS for 3,110 seconds per day	NA	5,580
Hydraulic Chainsaw 151.0 dB RMS for 291 seconds per day	NA	1,166
Diamond Wire Saw 161.5 dB RMS for 930 seconds per day	NA	5,843
Impact Drive – Timber 170 dB RMS, 160 dB $SEL_{s-s,}$ 100 strikes	46	NA
Impact Drive – Composite 153 dB RMS, 145 dB $SEL_{s-s,}$ 120 strikes	3	NA
Impact Drive – Steel 190 dB RMS, 177 dB $SEL_{s-s,}$ 400 strikes	1,000	NA
Impact Drive – Concrete 170 dB RMS, 160 dB $SEL_{s-s,}$ 184 strikes	46	NA
DTH Drive – All pile types and sizes 167 dB RMS, 159 dB $SEL_{s-s,}$ 7,200 seconds / day and 10 strikes / second	NA	13,594

Notes:

*Only low frequency cetaceans (humpback and fin whales) and otariids (Steller sea lions) are expected ESA species in the project action areas

Distances to Level B underwater noise thresholds were calculated using acoustic data as sourced above along with the practical spreading loss model including transmission loss factor of 15.

Distances to Level B threshold distances for impulsive noise sources calculated to 160 dB threshold distance (bolded radial distance values).

Distances to Level B threshold distances for non-impulsive noise sources calculated to 120 dB threshold distance (bolded radial values).

Distances to Level B threshold distances for non-impulsive noise sources calculated to 160 dB threshold distance are used for northern sea otters per USFWS.

Abbreviations:

dB re 1 µPa = decibels referenced to a pressure of 1 microPascal, km2 = square kilometers, m = meters,

PTS = permanent threshold shift, RMS = root mean square, SEL = sound exposure level, ZOI = Zone of Influence (area encompassed within acoustic threshold boundary).

2.1 Level A Shutdown and Level B Harassment Monitoring Zones

Maximum potential distances to Level A and Level B acoustic harassment associated with proposed in- water maintenance activities at each USCG facility are provided below and depicted in Attachment A.

2.2 Observer Monitoring Locations

In order to effectively monitor Level A and Level B Harassment Zones, PSOs will be positioned at the best practicable vantage points, taking into consideration security, safety, and space limitations. Up to five (5) PSOs will be required, depending on in-water activity and breadth of the monitoring zone. One PSO (in the "Command" position) will be located with clear view of the buffered shutdown zone and will be responsible for halting in-water activities, as required.

For harassment zones larger than can be surveyed by one PSO, two (2) PSOs will be on a captained vessel that will conduct the pre-activity survey of the entire monitoring area prior to in-water construction, as needed (e.g., Sitka, Ketchikan, Valdez, and Petersburg) Data will be collected on any protected marine species observed within the monitoring zones in accordance with monitoring and data collection procedures (refer to Section 3). When the vessel arrives near the boundary of the harassment zone, a station will be set up such that the PSOs are best situated to detect any marine mammals that may approach. Additional vessel sweeps of the harassment zones will occur when more than 30 minutes exist between construction activities. The number of land-based PSOs may be increased for larger harassment zones, if warranted based on actual marine mammal occurrence.

Level A Zones

The USCG is proposing a 20 m (66 ft) physical interaction shutdown zone for all activities at all 8 USCG facilities including in the Program for all species and activities as well as activity and species-specific Level A shutdown zones including:

a. 220 m (722 ft) low frequency cetaceans during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward);
b. 440 m (1,444 ft) low frequency cetaceans during DTH drilling (Kodiak and Ketchikan);
c. 260 m (853 ft) high frequency cetaceans during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward);
d. 520 m (1,706 ft) high frequency cetaceans during DTH drilling (Kodiak and Ketchikan)120 m (394 ft) phocid pinnipeds during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward);
e. 240 m (787 ft) phocid pinnipeds during DTH drilling (Kodiak and Ketchikan)
f. 30 m (98 ft) low frequency cetaceans during impact driving of concrete piles (Ketchikan)
g. 40 m (131 ft) high frequency cetaceans during impact driving of concrete piles (Ketchikan)

In-water maintenance activities will stop if an individual is in close proximity or within the exclusion zone. Therefore, Level A impacts are only anticipated with implementation of monitoring and shutdown measures for high frequency cetaceans (i.e., harbor and Dall's porpoises) during steel impact pile driving and DTH drilling. No Level A impacts are expected to result from all other activities.

Level B Zones

Using the threshold guidance for drilling and vibratory (non-impulsive noise generation) of 120 dB and impact hammer (impulsive noise generation) of 160 dB, we have calculated the following harassment zones for Level B disturbance specific to each USCG facility. See Attachment A for expected site- and activity-specific Level B zones.

Base Kodiak

Base Kodiak's location within Womens Bay and separation from the larger Chiniak Bay by the Nyman Peninsula isolates sound within that waterbody and limits long-distance transmission of all sound types.

Noise generated by in-water activities would generally be intercepted by the sides of Womens Bay before

the sound has distance to fall off to the ambient sound level except to the southeast towards the open end of Womens Bay (Table 5).

Table 5 Level B Harassment Zones for Pile Repair, Removal, and Installation Activities at Base Kodiak

Activity Description	*Calculated Level B Threshold Maximum Radial Distance (m)*	*Level B ZOI Areal Extent (square kilometers [km²])*
Non-Impulsive[1,2]		
Vibratory Extraction/Installation – Timber	1,350	1.30
Vibratory Extraction/Installation - Timber	*3*	*0.00003*
Vibratory Extraction/Installation – Steel	6,310	4.51
Vibratory Extraction/Installation - Steel	*14*	*0.0006*
Impulsive[3]		
Impact Drive – Timber	46	0.006
Impact Drive – Composite	3	0
Impact Drive – Steel	1,000	1.03
DTH Drilling – All Pile Types/Sizes	13,594	4.51

Notes:
[1] Non-impulsive distances calculated to 120 dB
[2] Italicized non-impulsive distances calculated to 160 dB for sea otter per USFWS
[3] Impulsive distances calculated to 160 dB

Moorings Sitka

Moorings Sitka's location within Sitka Harbor between Japonski and Baranof islands isolates sound within that waterbody and limits long-distance transmission of all sound types. Noise generated by in-water activities would generally be intercepted to the northeast at the entrance to Sitka Harbor before the sound has distance to fall off to the ambient sound level except to the southeast towards the passage between Japonski and Baranof islands (Table 6).

Table 6 Level B Harassment Zones for Pile Repair, Removal, and Installation Activities at Moorings Sitka

Activity Description	*Calculated Level B Threshold Maximum Radial Distance (m)*	*Level B ZOI Areal Extent (square kilometers [km²])*
Non-Impulsive[1,2]		
Power-washing of timber and steel piles	5,412	4.5
Power-washing of timber and steel piles	*12*	*0.0005*
Vibratory Extraction/Installation – Timber	1,350	0.87
Vibratory Extraction/Installation – Timber	*3*	*0.00003*
Vibratory Extraction/Installation – Steel	6,310	5.67
Vibratory Extraction/Installation – Steel	*14*	*0.0006*
Impulsive[3]		
Impact Drive – Timber	46	0.007
Impact Drive – Composite	3	0
Impact Drive – Steel	1,000	0.56

Notes:
[1] Non-impulsive distances calculated to 120 dB
[2] Italicized non-impulsive distances calculated to 160 dB for sea otter per USFWS
[3] Impulsive distances calculated to 160 dB

Base Ketchikan

Base Ketchikan's location along the East Channel of the Tongass Narrows isolates sound within that waterbody and long-distance transmission of all sound types except along the axis of the Narrows to the north and south. Noise generated by in-water activities would generally be intercepted by the opposite

side of the Tongass Narrows (Pennock Island) but would propagate until falling off to ambient levels along the Narrows to the north and south (Table 7).

Table 7 Level B Harassment Zones for Pile Repair, Removal, and Installation Activities at Base Ketchikan

Activity Description	*Calculated Level B Threshold Maximum Radial Distance (m)*	*Level B ZOI Areal Extent (square kilometers [km²])*
Non-Impulsive[1,2]		
Power-washing of timber and steel piles	5,412	6.51
Power-washing of timber and steel piles	*12*	*0.0003*
Vibratory Extraction/Installation – Timber	1,389	1.45
Vibratory Extraction/Installation – Timber	*3*	*0.00003*
Vibratory Extraction/Installation – Steel	6,310	7.29
Vibratory Extraction/Installation – Steel	*14*	*0.0004*
Impulsive[3]		
Impact Drive – Timber	46	0.004
Impact Drive – Composite	3	0
Impact Drive – Steel	1,000	1.06
Impact Drive – Concrete	46	0.004
DTH Drilling – All Pile Types/Sizes	13,594	10.06

Notes:
[1] Non-impulsive distances calculated to 120 dB
[2] Italicized non-impulsive distances calculated to 160 dB for sea otter per USFWS
[3] Impulsive distances calculated to 160 dB

Moorings Valdez

Mooring Valdez's is located in Valdez Harbor, directly on the Valdez Arm of Prince William Sound allows for all sound to propagate out into the Valdez Arm up to distances where it falls off to ambient levels (Table 8).

Table 8 Level B Harassment Zones for Pile Repair, Removal, and Installation Activities at Moorings Valdez

Activity Description	*Calculated Level B Threshold Maximum Radial Distance (m)*	*Level B ZOI Areal Extent (square kilometers [km²])*
Non-Impulsive[1,2]		
Power-washing of timber and steel piles	5,412	2.82
Power-washing of timber and steel piles	*12*	*0.0004*
Vibratory Extraction/Installation – Timber	1,359	2.62
Vibratory Extraction/Installation – Timber	*3*	*0.00003*
Vibratory Extraction/Installation – Steel	6,310	2.82
Vibratory Extraction/Installation – Steel	*14*	*0.0006*
Impulsive[3]		
Impact Drive – Timber	46	0.005
Impact Drive – Composite	3	0
Impact Drive – Steel	1,000	0.188

Notes:
[1] Non-impulsive distances calculated to 120 dB
[2] Italicized non-impulsive distances calculated to 160 dB for sea otter per USFWS
[3] Impulsive distances calculated to 160 dB

Moorings Cordova

Moorings Cordova's location on Orca Inlet immediately across the Inlet from Hawkins Island restricts in-water sound transmission to the axis of the inlet. Noise generated by in-water activities would generally be intercepted by Hawkins Island directly across Orca Inlet before the sound has distance to fall off to the

ambient sound level except to the north and south where sound would be propagated until it fell off to ambient levels (Table 9).

Table 9 Level B Harassment Zones for Pile Repair, Removal, and Installation Activities at Moorings Cordova

Activity Description	*Calculated Level B Threshold Maximum Radial Distance (m)*	*Level B ZOI Areal Extent (square kilometers [km²])*
Non-Impulsive[1,2]		
Vibratory Extraction/Installation – Steel	6,310	23.42
Vibratory Extraction/Installation - Steel	*14*	*0.0006*
Impulsive[3]		
Impact Drive – Steel	1,000	1.57

Notes:
[1] Non-impulsive distances calculated to 120 dB
[2] Italicized non-impulsive distances calculated to 160 dB for sea otter per USFWS
[3] Impulsive distances calculated to 160 dB

Station Juneau

Station Juneau's location on the south side of the City of Juneau and the north side of the Gastineau Channel isolates sound generally within Juneau Harbor which limits long-distance transmission of all sound types. Noise generated by in-water activities would generally be intercepted by the sides of the Gastineau Channel before the sound can fall off to the ambient sound level except to the southeast along the axis of the Gastineau Channel (Table 10).

Table 10 Level B Harassment Zones for Pile Repair, Removal, and Installation Activities at Station Juneau

Activity Description	*Calculated Level B Threshold Maximum Radial Distance (m)*	*Level B ZOI Areal Extent (square kilometers [km²])*
Non-Impulsive[1,2]		
Power-washing of timber and steel piles	5,412	3.31
Power-washing of timber and steel piles	*12*	*0.0002*
Vibratory Extraction/Installation – Timber	1,359	1.62
Vibratory Extraction/Installation – Timber	*3*	*0.00001*
Impulsive[3]		
Impact Drive – Timber	46	0.0003
Impact Drive – Composite	3	0

Notes:
[1] Non-impulsive distances calculated to 120 dB
[2] Italicized non-impulsive distances calculated to 160 dB for sea otter per USFWS
[3] Impulsive distances calculated to 160 dB

Moorings Petersburg

The Moorings Petersburg location southwest of the meeting of the Wrangell Narrows and Frederick Sound generally isolates sound within that waterbody except for some sound which would transit into the Frederick Sound (Table 11).

Table 11 Level B Harassment Zones for Pile Repair, Removal, and Installation Activities at Moorings Petersburg

Activity Description	*Calculated Level B Threshold Maximum Radial Distance (m)*	*Level B ZOI Areal Extent (square kilometers [km^2])*
Non-Impulsive[1,2]		
Power-washing of timber and steel piles	5,412	2.59
Power-washing of timber and steel piles	*12*	*0.0005*
Vibratory Extraction/Installation – Timber	1,359	1.63
Vibratory Extraction/Installation - Timber	*3*	*0.00003*
Vibratory Extraction/Installation – Steel	6,310	2.89
Vibratory Extraction/Installation - Steel	*14*	*0.0006*
Impulsive[3]		
Impact Drive – Timber	46	0.006
Impact Drive – Composite	3	0
Impact Drive – Steel	1,000	1.33

Notes:
[1] Non-impulsive distances calculated to 120 dB
[2] Italicized non-impulsive distances calculated to 160 dB for sea otter per USFWS
[3] Impulsive distances calculated to 160 dB

Moorings Seward

Moorings Seward's location within Seward Harbor and separation from the larger Resurrection Bay by the harbor walls/breakwaters isolates sound within the harbor and limits long-distance transmission of all sound types, intercepting sound before it has distance to fall off to ambient sound levels (Table 12).

Table 12 Level B Harassment Zones for Pile Repair, Removal, and Installation Activities at Moorings Seward

Activity Description	*Calculated Level B Threshold Maximum Radial Distance (m)*	*Level B ZOI Areal Extent (square kilometers [km^2])*
Non-Impulsive[1,2]		
Vibratory Extraction/Installation – Steel	6,310	0.24
Vibratory Extraction/Installation - Steel	*14*	*0.0002*
Impulsive[3]		
Impact Drive – Steel	1,000	0.24

Notes:
[1] Non-impulsive distances calculated to 120 dB
[2] Italicized non-impulsive distances calculated to 160 dB for sea otter per USFWS
[3] Impulsive distances calculated to 160 dB

3.0 MARINE PROTECTED SPECIES MONITORING PROTOCOLS

3.1 Objectives

The primary objective of the monitoring is to detect, and document impacts from Project-related activities on marine protected species. Monitoring will be conducted at all times during in-water demolition and/or construction to assess marine mammal use patterns and behavioral responses relative to Level A and Level B harassment ZOIs.

3.2 Overview

The visual monitoring component of this Plan takes into consideration logistical and environmental requirements for working in the Project area. For in-water maintenance activities, distances to regulatory thresholds (see Section 2) were estimated based on acoustic data for similar pile types and sizes using the latest acoustic threshold guidance from NOAA Fisheries (2018). The estimated distances to the Level A and Level B harassment zone boundaries were used to determine monitoring locations identified in this Plan and depicted in Attachment A.

During all in-water maintenance activities, regardless of predicted SPLs, a 20-m (66-ft) physical interaction shutdown zone will be monitored as well as activity and species-specific Level A shutdown zones including:

a. 220 m (722 ft) low frequency cetaceans during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward);
b. 440 m (1,444 ft) low frequency cetaceans during DTH drilling (Kodiak and Ketchikan);
c. 260 m (853 ft) high frequency cetaceans during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward);
d. 520 m (1,706 ft) high frequency cetaceans during DTH drilling (Kodiak and Ketchikan)
e. 120 m (394 ft) phocid pinnipeds during impact driving of steel piles (Kodiak, Sitka, Ketchikan, Valdez, Cordova, Petersburg, and Seward);
f. 240 m (787 ft) phocid pinnipeds during DTH drilling (Kodiak and Ketchikan)
g. 30 m (98 ft) low frequency cetaceans during impact driving of concrete piles (Ketchikan)
h. 40 m (131 ft) high frequency cetaceans during impact driving of concrete piles (Ketchikan)

These shutdown zones are appropriate to reduce the likelihood of injury to that marine mammal species due to physical interaction with equipment during in-water activities. If an animal enters the shutdown zone, maintenance activities would be stopped until the individual(s) has left the zone of its own volition, or not been sighted for 15 minutes (MMPA) or 30 minutes (ESA).

The Level A/B harassment zones will be monitored throughout the time required to power-wash, remove, or install a pile. If a marine mammal is observed entering the Level B harassment zones, an exposure would be recorded and behaviors documented. Work would continue without cessation unless the animal approaches or enters the shutdown zone for Level A, at which point activities will be halted.

In the event that a marine mammal species is observed that is not covered under the LOA, the location and directional movement of the animal (or group) with respect to the applicable Level B harassment zone will be determined, and all construction will be stopped immediately if the animal (or group) is likely to enter the Level B harassment zone. Activities will commence if the animal (or group) has not been seen inside the Level B harassment zone for at least one hour of observation. If the animal (or group) is re-sighted, activities will be stopped and a boat-based PSO (if available) will follow the animal at a distance of at least 100 m (328 ft) until it has left the Level B harassment zone.

During any monitored activity, the PSO located closest to maintenance activities ("Command" position) will initiate shutdown procedures, if warranted, by notifying the work crew via either verbal or visual

communication procedures (e.g., signal flag). Other PSOs can initiate shutdown procedures by calling the "Command" PSO who will then stop construction by notifying the work crew.

3.3 Observer Qualifications

The PSOs must be independent observers (i.e., not construction personnel), who are trained biologists with the ability to correctly identify marine mammal species and accurately describe relevant species-specific behaviors that may occur in proximity to in-water construction and demolition activities. The PSOs may either be biologists with prior training and experience to meet the qualifications in conducting marine mammal monitoring or must undergo applicable training to meet the qualifications. Additional qualifications and protocols of PSOs include the following:

- PSOs will be approved by NMFS and USFWS and have no other assigned tasks during monitoring periods. All PSO resumes and *curriculae vitae* must be submitted to NMFS and USFWS for review and approval via the NMFS consultation biologist, AKR.PRD.Section7@noaa.gov, and FW7_MMM_Reports@fws.gov prior the onset of in-water maintenance activities.
- Will have the ability to conduct field observations and record field data accurately and in accordance with project protocols.
- Where a team of more than three PSOs (up to five) is required, a lead observer or monitoring coordinator must be designated. The lead observer or monitoring coordinator will be referred to as "Command" and must have prior experience the duties of a PSO during construction activity, while other PSOs may substitute education (degree in biological science or related field) or training for experience.
- Will have experience or training in the field identification of marine mammals, including the identification of behaviors.
- Will have a minimum of a Bachelor's degree in biological science, wildlife management, mammalogy, or a related field.
- Will have visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface, with the ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target.
- Will have sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
- Will have writing skills sufficient to prepare a report of observations including, but not limited to, dates and times when monitoring was conducted; the number and species of marine mammals observed; observed marine mammal behavior during monitoring relative to Project-related in-water activities; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound or physical interaction with operating equipment; and reason for implementation of mitigation (or why mitigation was not implemented when required).
- Ability to communicate orally, by radio or in person, with Project personnel to provide real-time information on marine mammals observed in the area, as necessary.
- Ability and authority to order appropriate mitigation response, including shutdowns, to avoid takes of all listed species.
- At least one PSO on the project will complete PSO training prior to deployment (e.g., see https://aisobservers.com/protected-species/new-protected-species-observer-training/). The training will include:
    a. field identification of marine mammals and marine mammal behavior;

b. ecological information on marine mammals and specifics on the ecology and management concerns of those marine mammals;
c. ESA and MMPA regulations;
d. proper equipment use;
e. methodologies in marine mammal observation and data recording and proper reporting protocols; and
f. an overview of PSO roles and responsibilities.

- The PSOs will have the following equipment to address their duties:
  a. tools which enable them to accurately determine the position of a marine mammal in relationship to the shutdown zone (e.g., laser rangefinder);
  b. two-way radio communication, or equivalent, with onsite project manager;
  c. tide tables for the project area;
  d. watch or chronometer;
  e. binoculars (7x50 or higher magnification) with built-in rangefinder or reticles (rangefinder may be provided separately);
  f. instruments that allow observer to determine geographic coordinates of observed marine mammals
  g. a legible copy of this LOC and all appendices;
  h. legible and fillable observation record form allowing for required PSO data entry.
- Prior to commencing in-water work or at changes in watch, the Command PSO will establish a point of contact with the construction crew. The Command PSO will brief the point of contact as to the shutdown procedures if listed species are observed likely to enter or within the shutdown zone, and will request that the point of contact instruct the crew to notify the PSO when a marine mammal is observed. If the point of contact goes "off shift" and delegates his duties, the Command PSO must be informed and brief the new point of contact.

3.4 Marine Species Data Collection

NMFS requires that at a minimum, the following information be collected by PSOs:

- Date and time that a given maintenance activity begins or ends;
- Activities occurring during each observation period;
- Weather parameters (e.g., wind, temperature, percent cloud cover, and visibility);
- Tide stage and sea state (the Beaufort Sea State Scale will be used to determine sea-state);
- Species, numbers, and if possible sex and age class of marine mammals;
- Marine mammal behavior patterns observed, including bearing and direction of travel, and if possible, the correlation to SPLs;
- Distance from activities to marine mammals and distance from the marine mammal to the observation point;
- Locations of all PSOs; and
- Other human activity in the area.

The required fields will be incorporated into an electronic tablet form or hardcopy datasheets that will be used by the PSOs.

To the extent practicable, the PSOs will also record behavioral observations that may make it possible to determine if the same or different individuals are being "taken" as a result of Project activities over the

course of a day.

The required data will be recorded by the PSOs on electronic database forms or paper datasheets. Data collection forms shall be furnished to the USCG point of contact within a mutually agreeable timeframe prior to the start of construction.

The PSOs will monitor the Level A and B harassment zones before, during, and after all in-water maintenance activities, which will be monitored within the shutdown zone only to avoid the potential for physical interaction with operating equipment.

3.5 Monitoring Equipment

PSOs will be stationed at land-based observation locations and may be on a survey boat, depending on size of monitoring zones.

3.5.1 Survey Vessel

The vessel will include the following equipment for the safety of the crew:

- A fixed marine radio for the vessel operator to monitor channels independent of observers communicating on a dedicated channel;
- Cellular phones (minimum one per boat), and the contact information for the other observers, and monitoring coordinator;
- Flags (one green, one red per boat) as back-up for radio communication;
- Daily tide tables for the Project area;
- A depth finder;
- Nautical chart;
- Navigational plotting equipment; and
- Both fixed and handheld Global Positioning System (GPS) units.

The vessel will comply with all Coast Guard regulations and be able to pass a Coast Guard safety inspection.

3.5.2 Marine Species Observation Equipment

The following equipment would be used to conduct marine species monitoring:

- Hearing protection for all personnel working near heavy construction equipment;
- Portable marine radios for the observers to communicate with the monitoring coordinator, construction contractor, and other observers;
- Cellular phones (one per observing location), and the contact information for the other observers, and monitoring coordinator;
- Flags (one green, one red per observing location) as back-up for radio communication;
- Daily tide tables for the Project area;
- Watch or Chronometer;
- Binoculars with built-in compass (quality of 7x50 or better);
- Laser rangefinder;
- Monitoring plan, LOA permit, and/or other relevant permit requirement specifications in sealed transparent plastic cover;
- Notebook and/or electronic tablets with pre-standardized Marine Mammal Observation Record forms to record field monitoring data electronically or on waterproof paper (e.g., Rite-in-the Rain);
- Marine mammal identification guides on waterproof paper;
- Clipboard; and
- Pen / Pencil

3.6 Monitoring Methods

The USCG will conduct briefings between construction supervisors and crews and the PSO team prior to the start of all in-water maintenance activities, and when new personnel join the work. These briefings will explain responsibilities, communication procedures, visual monitoring protocols, and operational procedures.

The USCG will monitor the 20 m (66 ft) physical interaction shutdown zone and relevant activity and species-specific shutdown zones (as needed), Level B harassment zones, and greatest visual extent possible given conditions, before, during, and after in-water maintenance activities. Based on NMFS requirements, the Marine Mammal Monitoring Plan would include the following procedures:

- PSOs will be independent (i.e., not construction personnel), and approved by NMFS and USFWS, who have no other assigned tasks during monitoring periods. At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization. Where a team of more than three PSOs (up to five) is required, a lead observer or monitoring coordinator must be designated. The lead observer or monitoring coordinator will be referred to as "Command" and must have prior experience working as a marine mammal observer during construction while other PSOs may substitute education (degree in biological science or related field) or training for experience. All PSO resumes and *curriculae vitae* must be submitted to NMFS and USFWS for review and approval prior the onset of in-water maintenance activities.
- Monitoring will be conducted during civil daylight hours. Should environmental conditions deteriorate such that marine mammals within the entire shutdown zone would not be visible (*e.g.*, fog, heavy rain, night), the Coast Guard must delay in-water construction activities until observers are confident marine

mammals within the shutdown zone could be detected.

- For each type of in-water maintenance activities (repair, removal, and installation of piles), PSOs will be placed at the best vantage point(s) practicable (e.g., from a small boat, construction barges, on shore).
- The Coast Guard must establish monitoring locations at all eight stations. For all pile driving activities, a minimum of one PSO must be assigned to the active pile driving location to monitor the shutdown zones and as much of the Level B harassment zones as possible. The number of PSOs required at each facility (see below) is dependent upon the size of the Level B harassment area as well as the topography of the activity site and a PSO's ability to observe the estimated Level A harassment area for the particular activity. A team of three PSOs (up to five PSOs) at up to three locations (including two PSOs on a captained vessel in the case of the 5-member team) will conduct the marine protected species monitoring depending on the activity and size of monitoring zones. The lead observer must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization. When there are two or more PSOs, all will be in radio communication with each other to enhance tracking of marine mammals that may be moving through the area and to minimize duplicate observation records of the same animal by different PSOs (i.e., a re-sighting). See figures for PSO locations by USCG facility and in-water maintenance activity.
    a. Kodiak – maximum 2 PSOs
    b. Sitka – maximum 5 PSOs
    c. Ketchikan – maximum 5 PSOs
    d. Valdez – maximum 3 PSOs
    e. Cordova – maximum 3 PSOs
    f. Juneau – maximum 3 PSOs
    g. Petersburg – maximum 3 PSOs
    h. Seward – maximum 2 PSOs
- One land-/barge-based PSO ("Command" position) will be stationed with clear view of the shutdown zone and will be responsible for the collection of pile repair, removal, and/or installation start and stop times, identification of all marine protected species in the vicinity of the in-water maintenance activity, and notifying the contractor if activities must be delayed or stopped due to the presence of a marine protected species within the shutdown zone.
- For activities with monitoring zones beyond the visual range of the PSO/Command position, additional monitoring locations or the use of a vessel with captain and up to three other PSOs (depending on width of the monitoring zones) will conduct monitoring. Data will be collected on any marine protected species observed within the monitoring zones in accordance with monitoring a data collection procedures.
- Monitoring will be conducted before, during, and after maintenance activities. Pile-driving activities include the time to remove a single pile or series of piles, as long as the time elapsed between use of the pile driving equipment is no more than 30 minutes.
- During all observation periods, the on-duty PSOs will use binoculars and/or the naked eye to search continuously for marine listed species in the shutdown zones as well as the Level B monitoring zones.
- A 20-m (66-ft) physical interaction shutdown zone will be established around all in-water maintenance activities to avoid the potential for Level A injury of marine protected species. Beyond the physical interaction shutdown zone, a 250 m (820 ft) shutdown zone for low frequency cetaceans, 200 m (656 ft) shutdown zone for high frequency cetaceans, and 120 m (394 ft) shutdown zone for phocid pinnipeds will be established during impact driving of steel pile or DTH drilling as well as a 35 m (115 ft) shutdown zone for low and high frequency cetaceans during concrete pile impact driving.

- If a marine protected species enters the relevant shutdown zone(s), all in-water maintenance activities must be halted. The animal(s) must be allowed to remain in the zone (i.e., must leave of their own volition) and their behavior must be monitored and documented. Work will be allowed to restart once the animal has been observed either leaving the shutdown zone, or 15 minutes (MMPA) or 30 minutes (ESA) have elapsed since the last observation without re-detection of the animal. Following a lapse of in-water maintenance activities of more than 30 minutes, the PSO will authorize resumption of activities (using soft-start procedures for impact pile driving if applicable) only after providing assurance that listed species have not been present in the shutdown zone for at least 30 minutes immediately prior to resumption of operations.
- Results of all marine protected species observations during pre-activity, during activity, and post-activity monitoring will be recorded on electronic tablet or hardcopy datasheets.
- If an injured, sick, or dead marine mammal is observed, procedures outlined in Section 4 will be followed.

Pre-, during, and post-maintenance activities visual survey protocols are further described below.

3.6.1 Pre-Activity Monitoring

The following survey protocols will be implemented prior to the start of in-water maintenance activities:

- Visual surveys will occur for at least 30 minutes prior to the start of construction.
- If a marine mammal is present within the 20-m (66-ft physical interaction shutdown zone) or activity and species-specific shutdown zone (as appropriate), in-water activities will be delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone, or 15 minutes (MMPA) or 30 minutes (ESA) have elapsed since the last observation time without a re- detection of the animal.
- The shutdown zone may only be declared clear, and in-water maintenance started, when the entire shutdown zone is visible (i.e., when not obscured by poor light, rain, fog, etc.). If the shutdown zone is obscured by for or poor lighting conditions, activity at the location will not be initiated until the shutdown zone is visible.
- If marine mammals for which take is authorized are present within the Level B monitoring zone, in-water maintenance activities will not need to be delayed.

3.6.2 During Activity Monitoring

The Monitoring Zones will be monitored throughout in-water maintenance activities. The Level A and B Acoustic Monitoring Zones were calculated based on acoustic modeling at a notional pile location. If a Level A harassment zones is not applicable based on source sound levels, a 20-m (66-ft) shutdown zone will be monitored to avoid the potential for physical interaction between a marine protected species and operation of in-water maintenance equipment. Distances and activity monitoring protocols for these zones are described below:

- If any marine protected species approaches, or appears to be approaching, the 20-m (66-ft) physical interaction shutdown zone, or activity and species-specific Level A shutdown zone, the PSO who first observed the animal will alert the PSO/"Command," who will notify the construction crew of the animal's current status; in-water activities will be allowed to continue while the animal remains outside the Physical Interaction Shutdown Zone.
- If the marine protected species enters the 20-m (66-ft) physical interaction shutdown zone or the relevant activity and species-specific Level A shutdown zone, a shutdown will be called by the PSO/"Command." As the animal enters the shutdown zone, all in-water activities will be stopped, and the animal(s) will by continually tracked. Once a shutdown has been initiated, all in-water activities that

generate potentially impactful noise will be delayed until the animal has voluntarily left the shutdown zone and has been visually confirmed beyond the shutdown zone, or 15 minutes (MMPA) or 30 minutes (ESA) have passed without re-detection of the animal (i.e., the zone is deemed clear of marine protected species). The PSO/"Command" will inform the construction contractor that activities can re-commence.

- If shutdown and/or clearance procedures would result in an imminent concern for human safety, then the activity will be allowed to continue until the safety concern is addressed. During that timeframe, the animal will be continuously monitored, and the USCG point of contact will be notified and consulted prior to re-initiation of project-related activities.
- Shutdown shall occur if a species, for which authorization has not been granted, or for which the authorized numbers of takes have been met, approaches or is observed within the Level B harassment zones. The monitoring coordinator or lead PSO shall notify the USCG point of contact, who will then contact NMFS immediately. For non-authorized species, pile repair, removal, and installation will be allowed to proceed if the animal(s) is observed to leave the Level B harassment zones or if one hour has lapsed since the last observation.
- The number, species, and locations of all marine mammals observed will be documented using an electronic tablet or hardcopy datasheets in compliance with NMFS reporting requirements.
- If a marine mammal is observed entering the Level B monitoring zones, the pile being worked on will be completed with cessation (repaired, removed, or installed), unless the animal enters or approaches the shutdown zone. Regardless of location within the Level B monitoring zone, an initial behavior and the location of the animal will be logged. Behaviors will be continuously logged until the animal is either passed off to another PSO, the animal is no longer visible, or it has left the Level B monitoring zone.
- To the maximum extent practicable, the relevant activity and species-specific Level A shutdown zone for the required to power wash, remove, or install a pile. Based on the size of the Level A zones (except those for High Frequency cetaceans), the whole of the shutdown zone will be monitored during all in-water maintenance activities. If a marine mammal is observed entering their relevant Level A shutdown zone, work would cease until the marine mammal exits the shutdown zone or has not been observed within the shutdown area for 15 minutes (pinnipeds) or 30 minutes (cetaceans). For High Frequency cetaceans, the 200 m (656 ft) shutdown zone will be monitored and then an extrapolation of Level A take will be calculated based on the application of the listed species density for harbor and Dall's porpoises to the difference between the total Level A area for a given in-water activity and the 200 m (656 ft) radius area observed by the Protected Species Observer (PSO) (i.e., Local Species Density X [Total Level A Area – Observed 200 m Shutdown Zone Area]).
- To the maximum extent practicable the Level B harassment zones will be monitored throughout the time required to power wash, remove, or install a pile. Because many of the Level B harassment zones (depending on the activity and specific USCG facility) may be outside the visual range of a PSO, an extrapolation of take will be calculated based on the application of the listed species density to the difference between the total Level B area for a given in-water activity and the area observed by the PSO (i.e., Local Species Density X [Total Level B Area – Observed Area]). If a marine mammal is observed entering the Level B harassment zone, an exposure would be recorded, and behaviors documented. Work would continue without cessation, unless the animal approaches or enters the shutdown zone, at which point maintenance activity shall be halted.

3.6.3 Post-Activity Monitoring

Monitoring of all zones will continue for 30 minutes following completion of noise generating activities. These surveys will record all marine mammal observations following the same procedures as identified for the pre-construction monitoring time period and will focus on observing and reporting unusual or

abnormal behaviors.

4.0 INTERAGENCY NOTIFICATION FOR INJURED OR DEAD MARINE MAMMALS

In the unanticipated event that the construction or demolition activities clearly cause the take of a marine mammal in a prohibited manner, such as an injury, serious injury, or mortality, the lead PSO will notify the Construction Manager and the USCG, who will immediately cease all operations and immediately report the incident to NMFS Office of Protected Resources at 1-301 427-8401 and PR.ITP.MonitoringReports@noaa.gov, and ITP.hotchkin@noaa.gov, and the appropriate Alaska Marine Mammal Network Stranding Coordinator(s) at 877 925-7773, Alaska SeaLife Center Stranding Hotline: (888) 774-7325. If the stranded animal is a walrus, sea otter, or polar bear, call the Marine Mammals Management Office of the US Fish and Wildlife Service in Anchorage (1-800-362-5148) or the Alaska SeaLife Center in Seward (1-888-774-7325, 24-hrs).

The report will include the following information:

- Time, date, and location (latitude/longitude) of the incident (and updated location information if known and applicable);
- General circumstances under which the animal was discovered;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- Description of the incident;
- Status of all sound source use in the 24 hours preceding the incident;
- Environmental conditions (i.e., wind speed and direction, sea state, cloud cover, visibility, and water depth);
- Description of marine mammal observations in the 24 hours preceding the incident;
- Species identification (if known) or descriptions of the animal(s) involved (including observed behaviors if alive or carcass condition if dead);
- The fate of the animal(s); and
- Photographs or video footage of the animal (if equipment is available).

Activities will not resume until NMFS or USFWS are able to review the circumstances of the prohibited take. NMFS or USFWS shall work with the USCG to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA and ESA compliance. The USCG will not resume activities until notified by NMFS or USFWS via letter, email, or telephone.

In the event that an injured or dead marine mammal is discovered, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), the specified activities must immediately cease and the PSO will report to the USCG, who will immediately report the incident to the NMFS Office of Protected Resources, the USFWS Marine Mammals Management Office (for northern sea otters), and the appropriate Alaska Marine Mammal Network Regional Stranding Coordinators as noted above. The report will include the same information identified above. If the death or injury was likely caused by the specified activity, the Coast Guard must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the LOA and regulations. The Coast Guard must not resume their activities until notified by NMFS. NMFS of USFWS will work with the USCG to determine whether

modification in the activities are appropriate.

In the event that an injured or dead marine mammal is discovered, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the LOA (i.e., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the PSO will report the incident to the USCG, who will report the incident to the NMFS Office of Protected Resources, USFWS Marine Mammals Management Office (for northern sea otters), and the appropriate Alaska Marine Mammal Network Stranding Coordinators as noted above within 24 hours of the discovery. The PSOs will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to the USCG under such a case.

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 (e.g., the PSO) has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed.

Summary of Agency Contact Information from Alaska NMFS

Reason for Contact	**Contact Information**
Consultation Questions & Unauthorized Take	NMFS Alaska Region: Jenna Malek: jenna.malek@noaa.gov NMFS Headquarters: Cara Hotchkin; cara.hotchkin@noaa.govUSFWS: Heather Patterson: heather_patterson@fws.gov
Reports & Data Submittal	AKR.PRD.Section7@noaa.gov (please include NMFS AKRO tracking number in subject line) FW7_MMM_Reports@fws.gov
Stranded, Injured, or Dead Marine Mammal *(not related to project activities)*	Stranding Hotline (24/7 coverage) 877-925-7773
Oil Spill & Hazardous Materials Response	U.S. Coast Guard National Response Center: 1-800-424-8802 & AKRNMFSSpillResponse@noaa.gov
Illegal Activities *(not related to project activities; e.g., feeding, unauthorized harassment, or disturbance to marine mammals)*	NMFS Office of Law Enforcement (AK Hotline): 1-800-853-1964
In the event that this contact information becomes obsolete	NMFS Anchorage Main Office: 907-271-5006 Or NMFS Juneau Main Office: 907-586-7236 USFWS Alaska Region Marine Mammal Management Office: (800) 362-5148

5.0 DATA COLLECTION AND REPORTING

:**Annual Report**

- Within 90 calendar days of the completion of the first year of the program, interim annual PSO monitoring reports will be submitted for each site where maintenance activities occurred during that year. These reports will include a summary of marine mammal species and behavioral observations, shutdowns or delays, and work completed, in textual, graphical, and tabular formats and include summary metrics, as applicable.
- Annual reports will be submitted to NMFS, via AKR.PRD.Section7@noaa.gov and PR.ITP.MonitoringReports@noaa.gov and USFWS, via FW7_MMM_Reports@fws.gov.

Final Report

- Within 90 calendar days of the completion of the first year of the program, a final report will be submitted to NMFS, via AKR.PRD.Section7@noaa.gov and PR.ITP.MonitoringReports@noaa.gov and USFWS, via FW7_MMM_Reports@fws.gov. The report will summarize all in-water activities associated with the proposed action, and results of PSO monitoring conducted during the in-water project activities. The final report will include:
  - Summaries of monitoring efforts, including dates and times of construction, dates and times of monitoring, dates and times and duration of shutdowns due to marine mammal presence
  - Date and time of marine mammal observations, geographic coordinates of marine mammals at their closest approach to the project site, marine mammal species, numbers, age/size/gender categories (if determinable), and group sizes
  - Number of marine mammals observed (by species) during periods with and without project activities (and other variables that could affect detectability)
  - Observed marine mammal behaviors and movement types versus project activity at time of observation; e. numbers of marine mammal observations/individuals seen versus project activity at time of observation
  - Distribution of marine mammals around the action area versus project activity at time of observation
  - Digital, queryable documents containing PSO observations and records, and digital, queryable reports

Data Collection

PSOs will record the following:

- The date, shift start time, shift stop time, and PSO identifier.
- Date and time of each reportable event (e.g., a marine mammal observation, operation shutdown, reason for operation shutdown, change in weather).
- Construction activities occurring during each daily observation period, including:
  - The number and type of piles that were driven and the method (i.e., impact, vibratory, DTH drilling)
  - Total duration of driving time for each pile (vibratory driving, DTH drilling) and number of strikes for each pile (impact driving)
  - For DTH drilling, duration of operation for both impulsive and non-pulse components including estimated total number of strikes for each pile and estimated strike rate
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including: Beaufort sea state (https://www.weather.gov/mfl/beaufort),

cloud cover, fog, percent sun glare, overall visibility to the horizon, and estimated observable distance

- The number of sunflower sea stars moved, date and time of site inspection for sunflower sea stars, tidal stage at the time of scans, water clarity/visibility, number of sunflower sea stars observed and their proximity to the pile driving area within the 20 m shutdown zone.
- Upon observation of a marine mammal, the following information:
  - PSO location and activity at time of sighting
  - Shutdown zones to be implemented for specific marine mammal hearing groups (i.e., high and low frequency cetaceans and phocid pinnipeds) during impact pile driving and DTH drilling
  - Predominant anthropogenic sound-producing activities occurring during each marine mammal observation
  - Identification of the animal(s) (e.g., genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and composition of the group if there is a mix of species
  - Numbers, and, if possible, sex and age class of observed marine mammals
  - Distance, direction, and bearing of each marine mammal observed relative to the pile being driven for each sighting
  - Estimated number of animals (min/max/best-estimate)
  - Estimated number of animals by cohort (adults, juveniles, neonates, group composition, etc.)
  - Animal's closest point of approach and estimated time spent within the harassment zone
  - Description of any marine mammal behavioral observations (e.g., observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from anthropogenic sounds and presence (e.g., no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching)
  - Whether the presence of marine mammals necessitated the implementation of mitigation measures to avoid acoustic impact
  - Detailed information about any implementation of any mitigation triggered (e.g., shutdowns and delays), a description of specific actions that ensued, resulting behavior of the animal, if any, and the duration of time that normal operations were affected by the presence of marine mammals
  - Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals
  - Initial, closest, and last location of marine mammals, including distance from observer to the marine mammal, and minimum distance from the predominant sound-producing activity or activities to marine mammals
  - Geographic coordinates for the observed animals, with the position recorded using the most precise coordinates practicable (coordinates will be recorded in decimal degrees, or similar standard and defined coordinate system)

Data Reporting

- All observations of North Pacific right whales will be reported to NMFS within 24 hours. These observation reports will include the following information:
  - Date, time, and geographic coordinates of the observation(s)
  - Number of North Pacific right whales observed, including number of adults/juveniles/calves observed, if determinable
  - Environmental conditions as they existed during each observation event, including sea conditions, weather conditions, visibility, lighting conditions, and percent ice cover
- Observations of humpback whales will be transmitted to AKR.PRD.Section7@noaa.gov by the end of the calendar year, including:
  - Photographs (especially flukes) and video obtained
  - Geographic coordinates for the observed animals, with the position recorded by using the most precise coordinates practicable (coordinates will be recorded in decimal degrees, or similar standard and defined coordinate system)
  - Number of humpback whales observed, including number of adults/juveniles/calves observed (if determinable)
  - Environmental conditions as they existed during each observation event, including sea conditions, weather conditions, visibility, lighting conditions, and percent ice cover

Unauthorized Take

- If a listed marine mammal is determined by the PSO to have been disturbed, harassed, harmed, injured, or killed (e.g., a listed marine mammal(s) is observed entering a shutdown zone before operations can be shut down, or is injured or killed as a direct or indirect result of this action), the PSO will report the incident to NMFS within one business day, with information submitted to AKR.PRD.Section7@noaa.gov. These PSO records will include:
  - All information to be provided in the final report (see Mitigation Measures under the Final Report heading below)
  - Number of animals of each threatened and endangered species affected
  - The date, time, and location of each event (provide geographic coordinates)
  - Description of the event; e. the time the animal(s) was first observed or entered the shutdown zone, and, if known, the time the animal was last seen or exited the zone, and the fate of the animal
  - Mitigation measures implemented prior to and after the animal was taken; and
  - If a vessel struck a marine mammal, the contact information for the PSO on duty, or the contact information for the individual piloting the vessel if there was no PSO on duty
  - Photographs or video footage of the animal(s) (if available)

Stranded, Injured, Sick or Dead Listed Species (Not Associated with the Project)

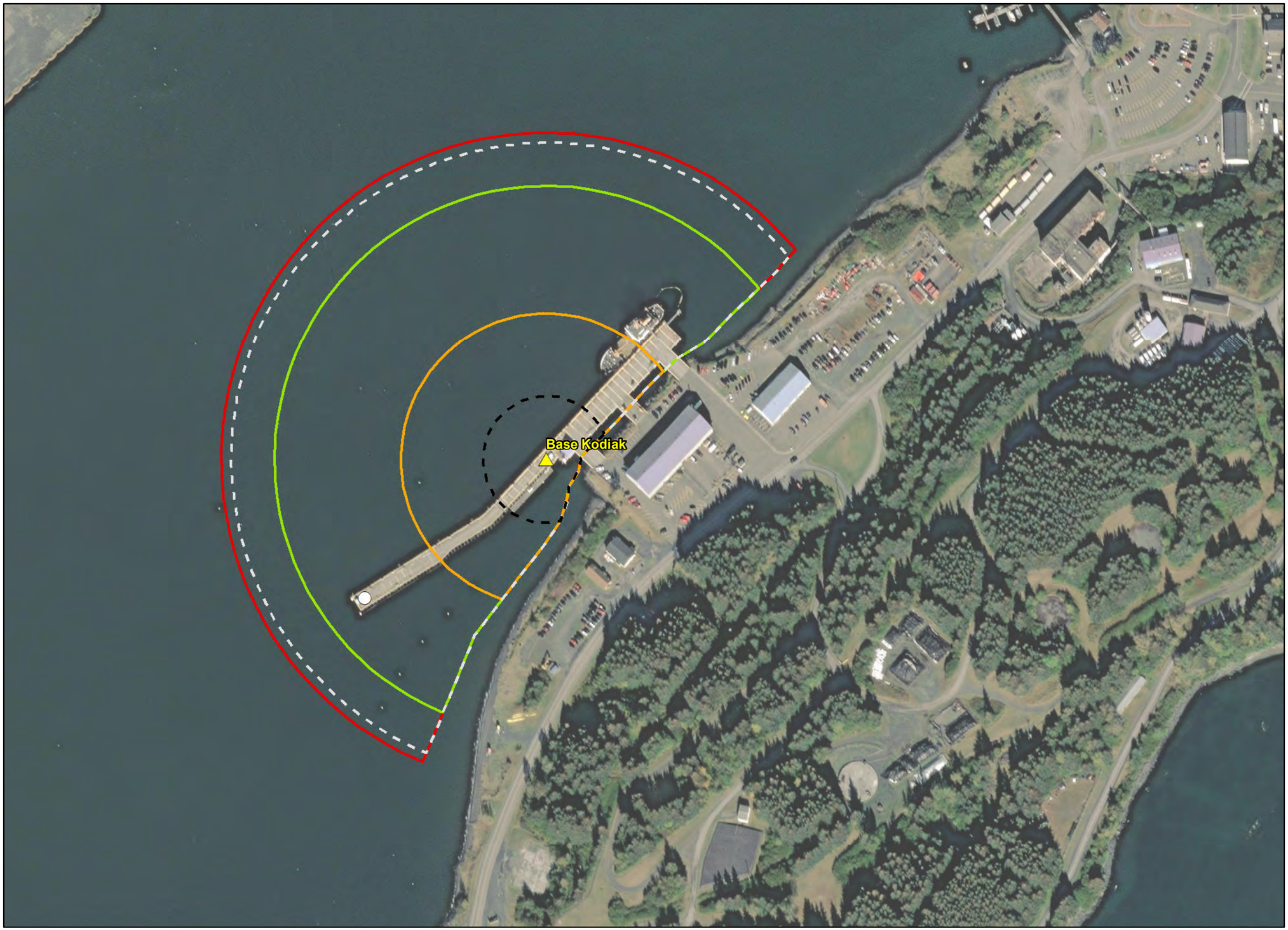
- If PSOs observe an injured, sick, or dead marine mammal (i.e., stranded marine mammal), they will notify the Alaska Marine Mammal Stranding Hotline at 877-925-7773. The PSOs will submit photos and available data to aid NMFS in determining how to respond to the stranded animal. If possible, data submitted to NMFS in response to stranded marine mammals will include date/time, location of stranded marine mammal, species and number of stranded marine mammals, description of the stranded marine mammal's condition, event type (e.g., entanglement, dead, floating), and behavior of live-stranded marine mammals.

- If divers and/or PSOs observe a sunflower sea star that has sea star wasting syndrome, or if any dead sunflower sea stars are observed, pictures of the individuals will be taken and counts of how many appear to be infected will be reported. Divers and PSOs should not touch or remove these individuals.

Illegal Activities

- If PSOs observe marine mammals being disturbed, harassed, harmed, injured, or killed (e.g., feeding and unauthorized harassment), these activities will be reported to NMFS Alaska Region Office of Law Enforcement (1-800-853-1964).
- Data submitted to NMFS will include date/time, locations, description of the event, and any photos or videos taken.

Attachment A Level A/B Harassment Zones by In-Water Maintenance Activity at USCG Facilities



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Impact Driving- Steel Piles

High Frequency Cetaceans: 257.9m

Low Frequency Cetaceans: 215.8m

Phocid Pinnipeds: 115.5m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

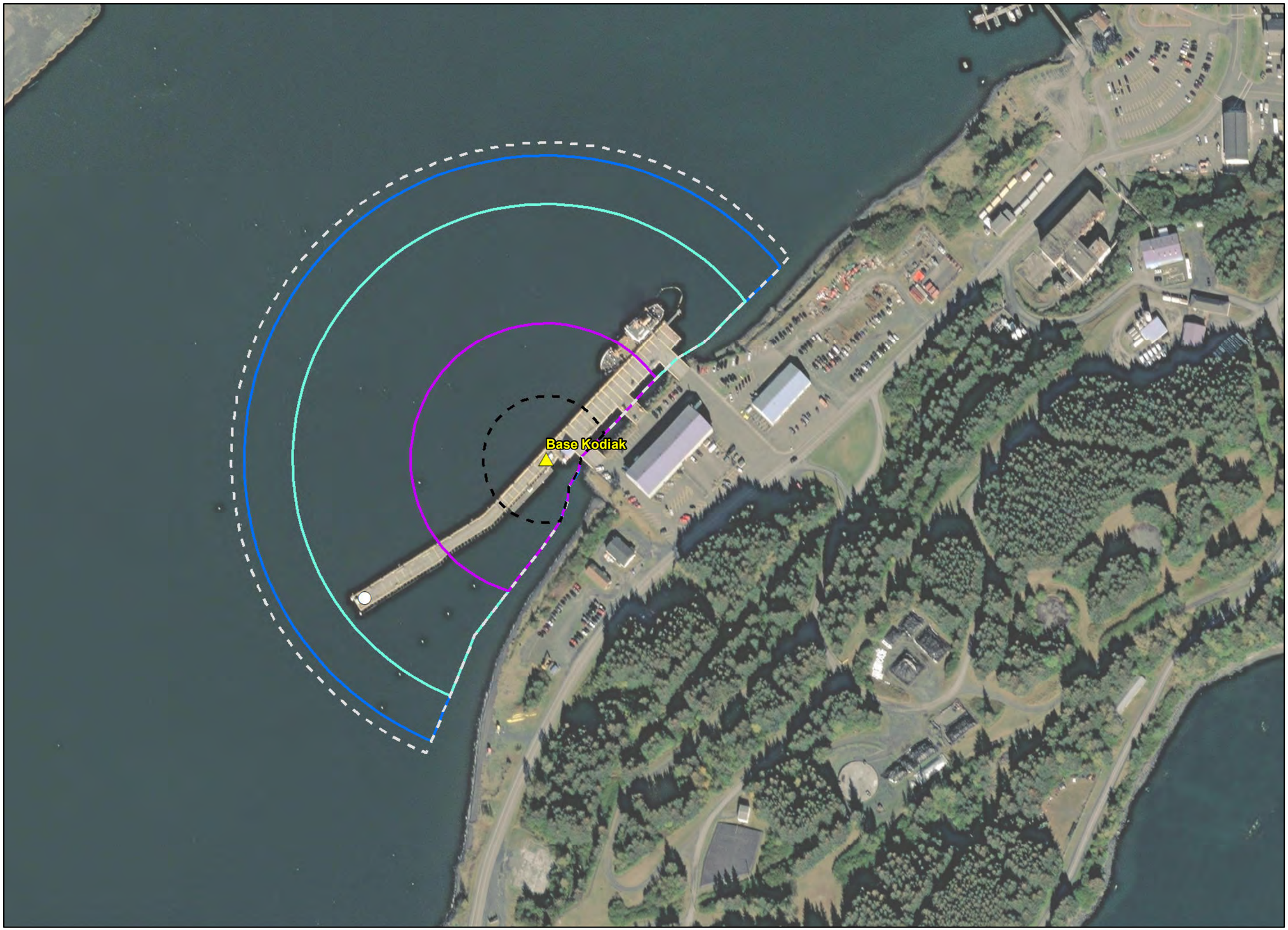
0 250 Feet

FIGURE 6-1

Level A Injury Zones for Impact Driving of Steel Piles at USCG Base Kodiak
Biological Assessment for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_1_NoiseZOI_ImpactDriving_SteelPiles_Kodiak.mxd, catharine.harwin, 6/10/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Down-the-Hole Drilling

High Frequency Cetaceans: 240m

Low Frequency Cetaceans: 201.5m

Phocid Pinnipeds: 107.8m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

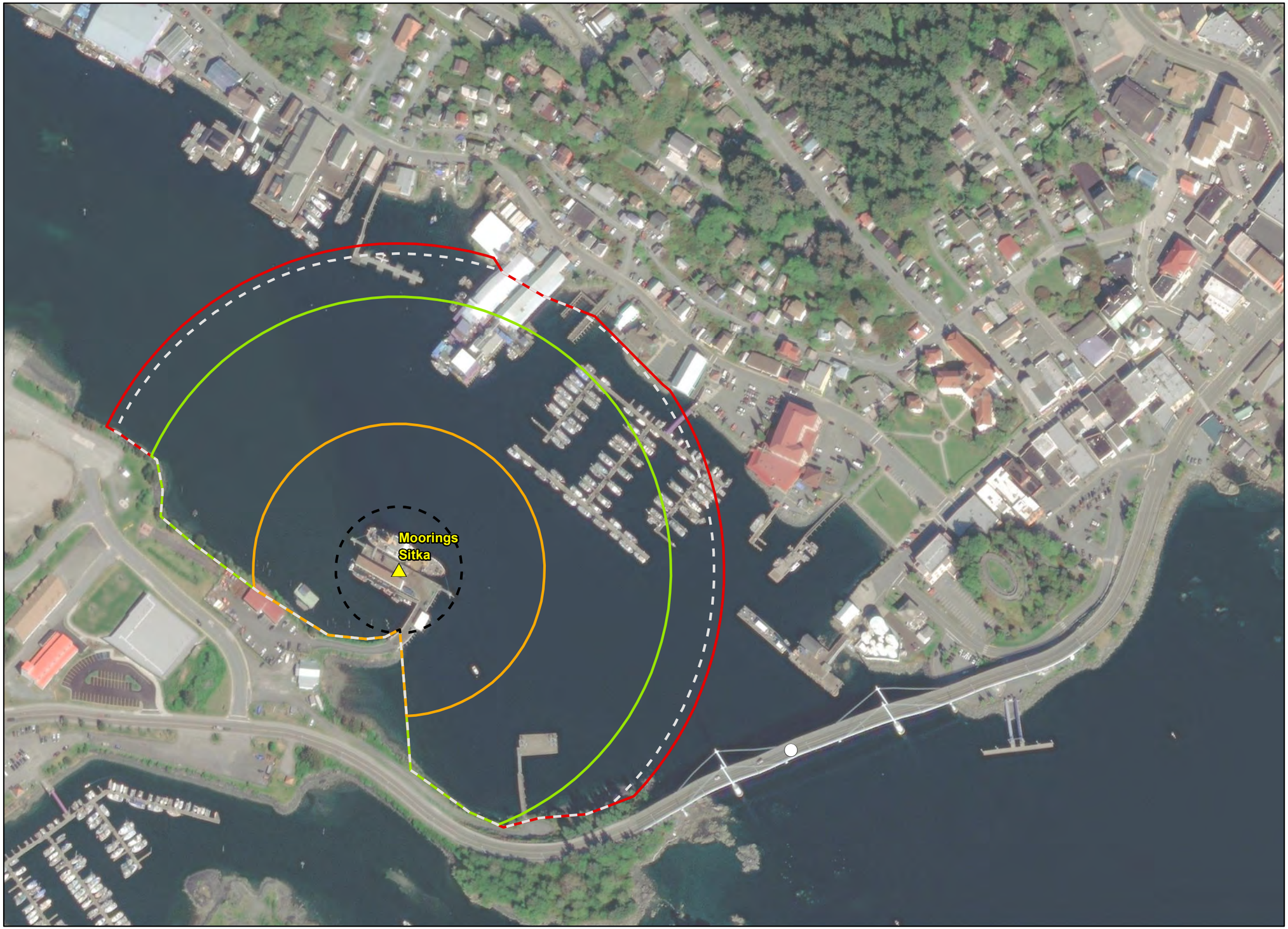
0 250 Feet

FIGURE 6-2

Level A Injury Zones for Down-the-Hole Drilling at USCG Base Kodiak
Biological Assessment for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_2_NoiseZOI_DownTheHoleDrilling_Kodiak.mxd, catharine.harwin, 6/10/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Impact Driving- Steel Piles

High Frequency Cetaceans: 257.9m

Low Frequency Cetaceans: 215.8m

Phocid Pinnipeds: 115.5m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:
* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

0 250 Feet

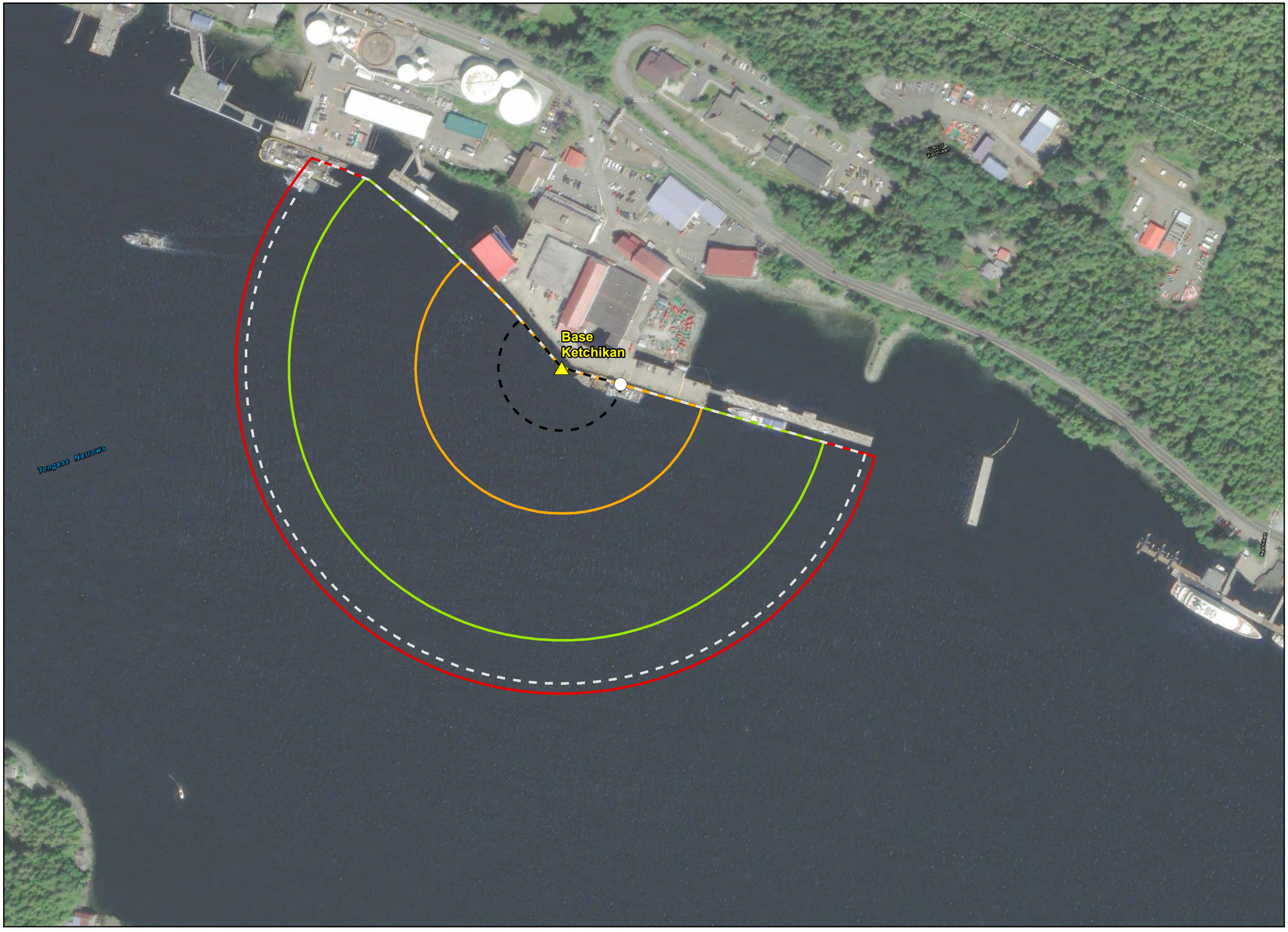
FIGURE 6-3

Level A Injury Zones for Impact Driving of Steel Piles at UCSG Moorings Sitka
Biological Assessment for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_3_NoiseZOI_ImpactDriving_SteelPiles_Sitka.mxd, catharine.harwin, 6/10/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Impact Driving- Steel Piles

High Frequency Cetaceans: 257.9m

Low Frequency Cetaceans: 215.8m

Phocid Pinnipeds: 115.5m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

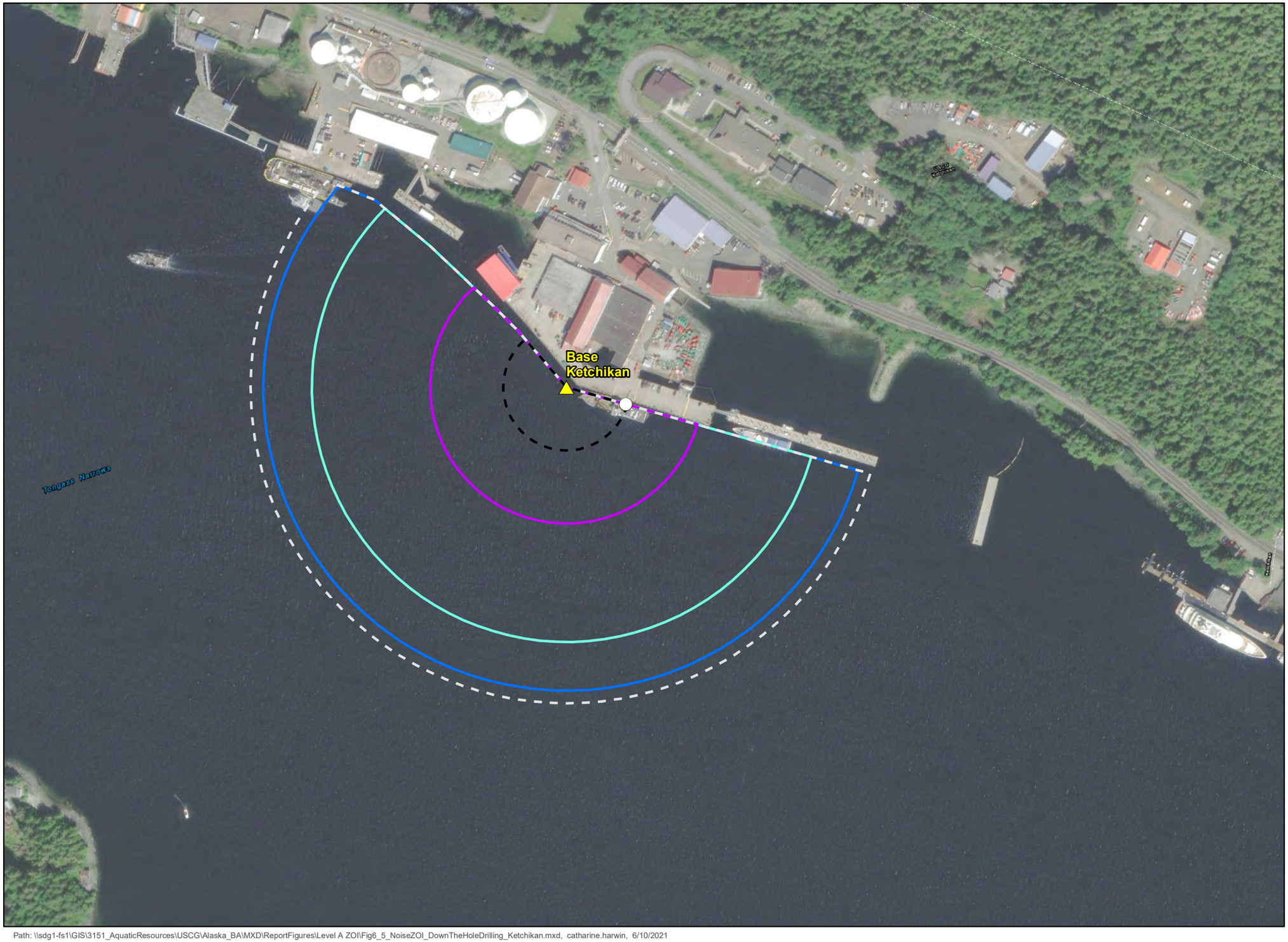
0 250 Feet

FIGURE 6-4

Level A Injury Zones for Impact Driving of Steel Piles at USCG Base Ketchikan Biological Assessment for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_4_NoiseZOI_ImpactDriving_SteelPiles_Ketchikan.mxd, catharine.harwin, 6/10/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Down-the-Hole Drilling

High Frequency Cetaceans: 240m

Low Frequency Cetaceans: 201.5m

Phocid Pinnipeds: 107.8m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

0 250 Feet

FIGURE 6-5

Level A Injury Zones for Down-the-Hole Drilling at USCG Base Ketchikan
Biological Assessment for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_5_NoiseZOI_DownTheHoleDrilling_Ketchikan.mxd, catharine.harwin, 6/10/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Impact Driving- Steel Piles

High Frequency Cetaceans: 257.9m

Low Frequency Cetaceans: 215.8m

Phocid Pinnipeds: 115.5m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

0 250 Feet

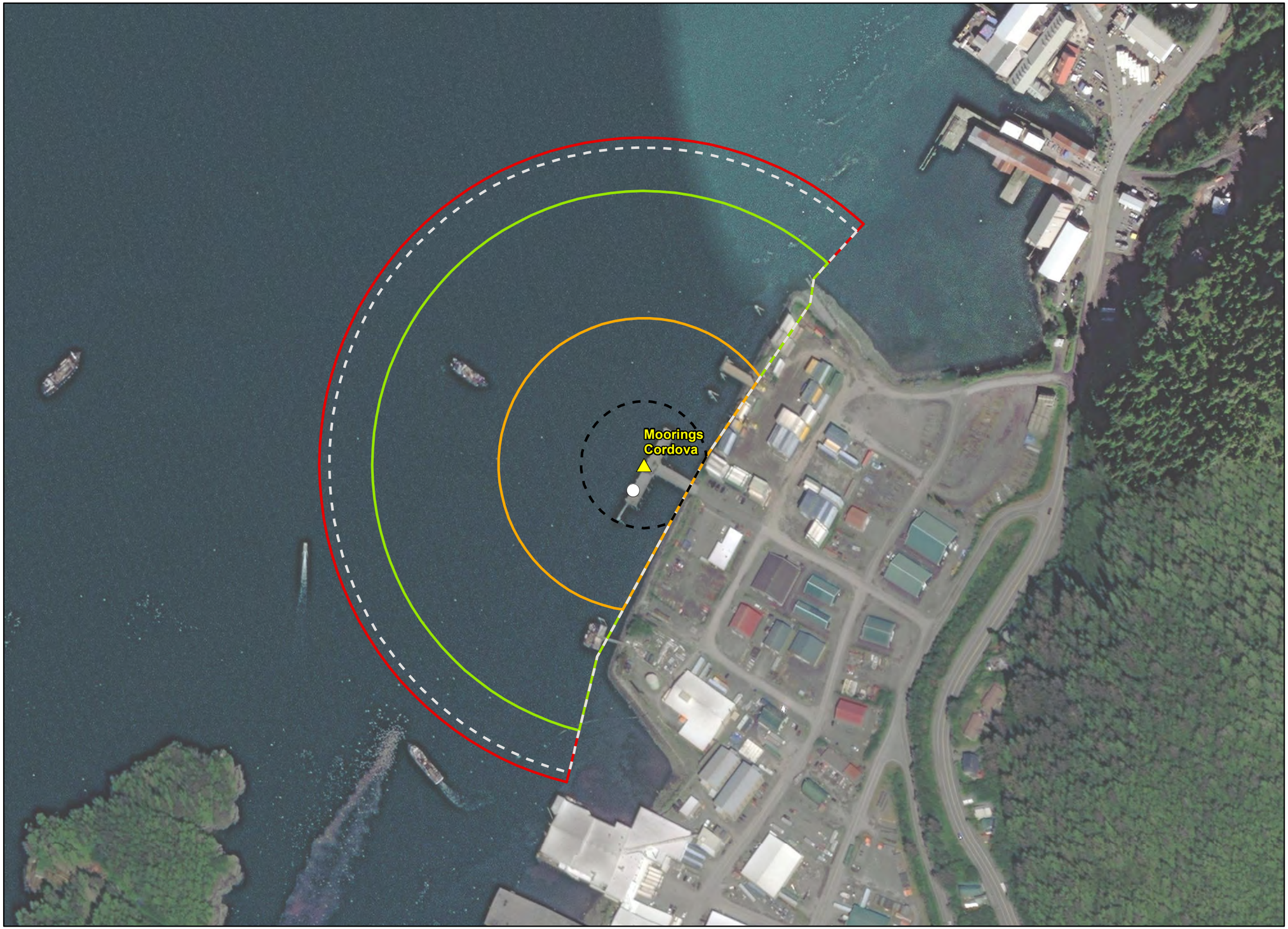
FIGURE 6-6

Level A Injury Zones for Impact Driving of Steel Piles at UCSG Moorings Valdez
Biological Assessment for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_6_NoiseZOI_ImpactDriving_SteelPiles_Valdez.mxd, aaron.johnson, 12/13/2022



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Impact Driving- Steel Piles

High Frequency Cetaceans: 257.9m

Low Frequency Cetaceans: 215.8m

Phocid Pinnipeds: 115.5m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

0 250 Feet

FIGURE 6-7

Level A Injury Zones for Impact Driving of Steel Piles at UCSG Moorings Cordova
Biological Assessment for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_7_NoiseZOI_ImpactDriving_SteelPiles_Cordova.mxd, catharine.harwin, 6/10/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Impact Driving- Steel Piles

High Frequency Cetaceans: 257.9m

Low Frequency Cetaceans: 215.8m

Phocid Pinnipeds: 115.5m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

0 250 Feet

FIGURE 6-8

Level A Injury Zones for Impact Driving of Steel Piles at UCSG Moorings Petersburg Biological Assessment for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_8_NoiseZOI_ImpactDriving_SteelPiles_Petersburg.mxd, catharine.harwin, 6/10/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Impact Driving- Steel Piles

High Frequency Cetaceans: 257.9m

Low Frequency Cetaceans: 215.8m

Phocid Pinnipeds: 115.5m

Shutdown Zone

General: 50m

Low Frequency Cetacean: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level A ZOI to be monitored.

1 inch = 250 feet

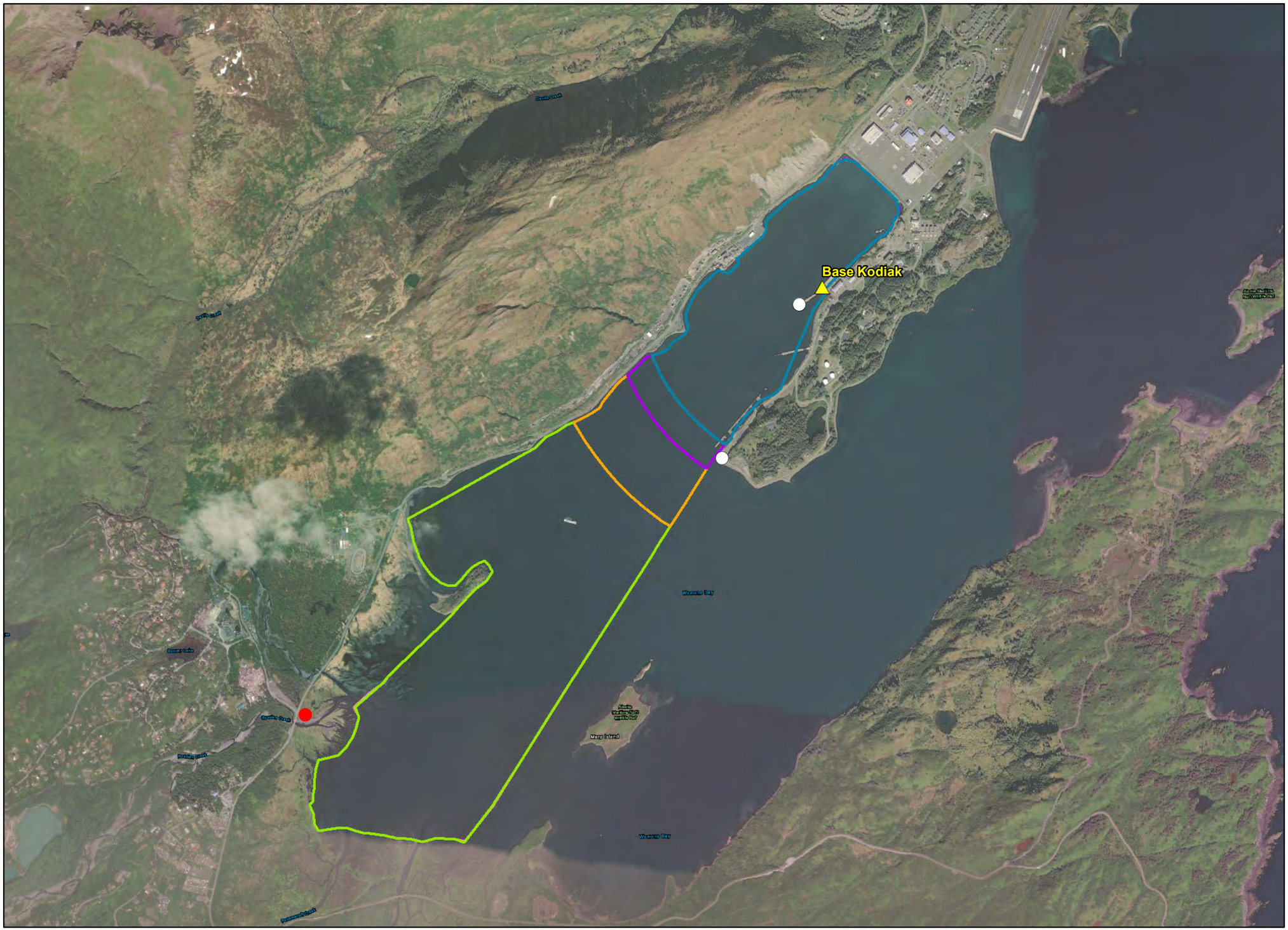
0 250 Feet

FIGURE 6-9

Level A Injury Zones for Impact Driving of Steel Piles at UCSG Moorings Seward
Biological Assessment for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level A ZOI\Fig6_9_NoiseZOI_ImpactDriving_SteelPiles_Seward.mxd, catharine.harwin, 6/10/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Power Washing/Pile Removal

- 24-inch Pile Clipper- Timber: 1,792m (153.8 dB RMS)
- Hydraulic Chainsaw: 1,166m (151 dB RMS)
- Power Washing of Timber and Steel Piles: 5,412m (161 dB RMS)
- Vibratory Extraction and Installation- Steel: 6,310m (162 dB RMS)
- Vibratory Extraction and Installation- Timber: 1,359m (152 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 2,000 feet

0 2,000 Feet

FIGURE 6-10

USCG Base Kodiak Pile Removal Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_1_NoiseZOI_PileRemoval_Kodiak.mxd, catharine.harwin, 2/16/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Power Washing/Pile Removal

24-inch Pile Clipper - Timber: 4m (153.8 db RMS)

Power Washing of Timber and Steel Piles: 12m (161.0 dB RMS)

Vibratory Extraction and Installation - Steel: 14m (162.0 dB RMS)

Vibratory Extraction and Installation - Timber: 3m (153 dB RMS)

Hydraulic Chainsaw: 3m (151.0 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 500 feet

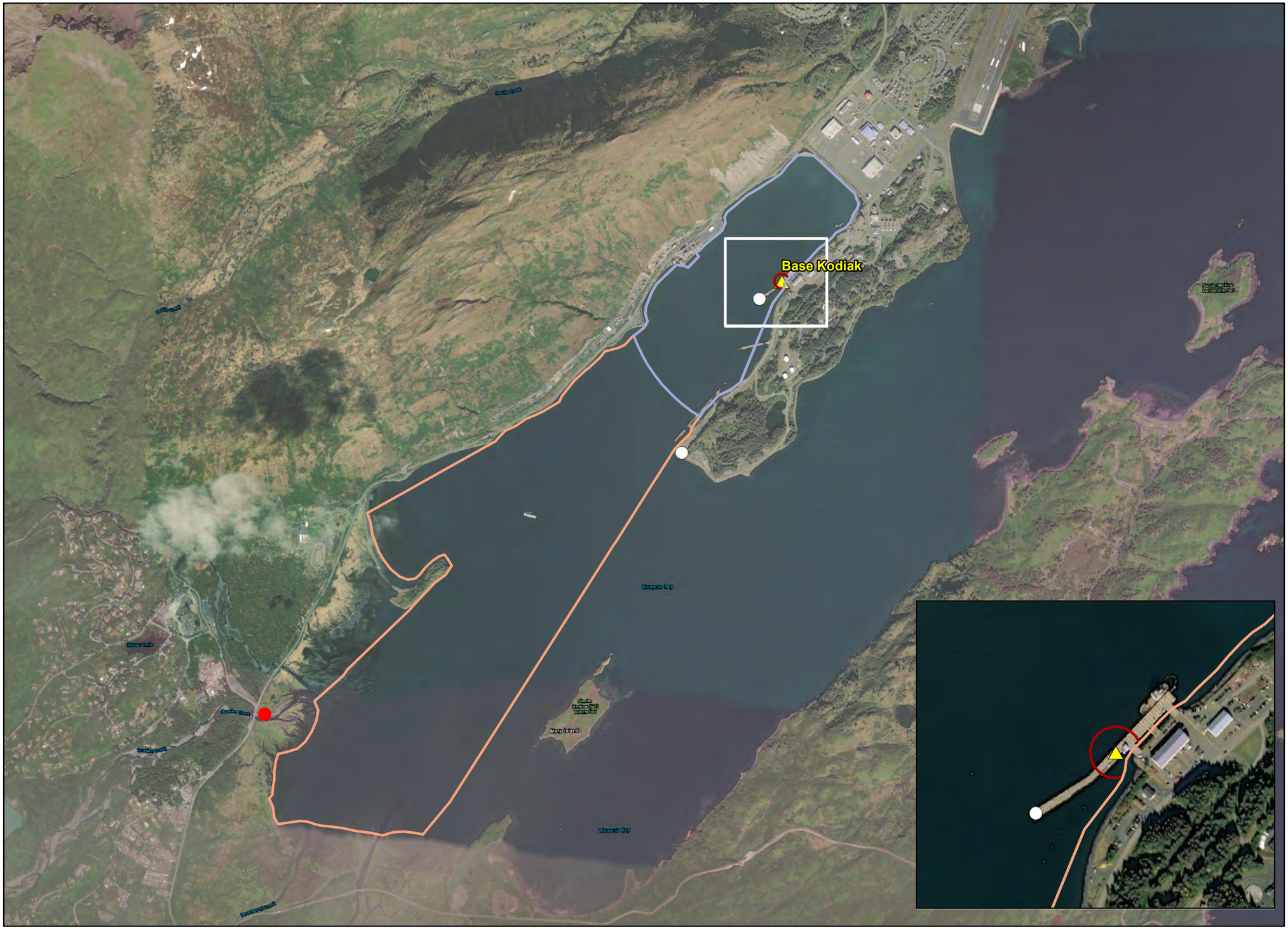
0 500 Feet

FIGURE 6-11

USCG Base Kodiak Pile Removal Distance to Level B Threshold for USFWS-Managed Species for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_26_NoiseZOI_PileRemoval_Kodiak.mxd, aaron.johnson, 9/17/2021



Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_2_NoiseZOI_PileInstallation_Kodiak.mxd, catharine.harwin, 5/19/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Pile Installation

DTH Drill- Non-Impulsive: 11,659m (166 dB RMS)

Impact Driver- Steel: 1,000m (190 dB RMS)

Impact Driver- Timber: 46m (170 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 2,000 feet

0 2,000 Feet

FIGURE 6-12

USCG Base Kodiak Pile Installation Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Pile Installation

DTH Drive - All Pile Types and Sizes: 215m (166 dB RMS)

Impact Driver - Steel: 1,000m (190 dB RMS)

Impact Driver - Timber: 46m (170 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 1,000 feet

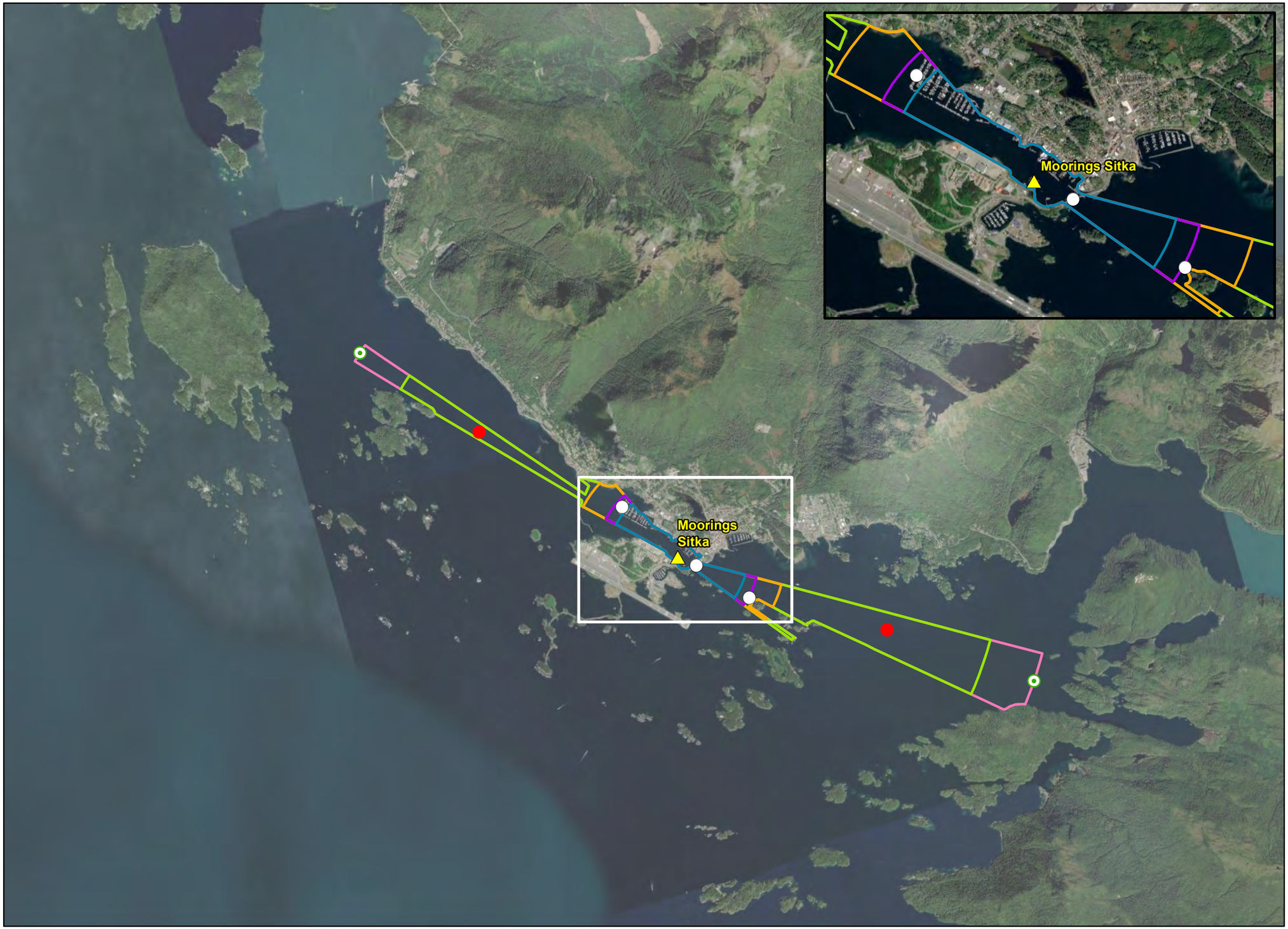
0 1,000 Feet

FIGURE 6-13

USCG Base Kodiak Pile Installation
Distance to Level B Threshold for
USFWS-Managed Species for
Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_27_NoiseZOI_PileInstallation_Kodiak.mxd, aaron.johnson, 9/17/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Provisional PSO Location **

Power Washing/Pile Removal

24-inch Pile Clipper- Timber: 1,792m (153.8 dB RMS)

Hydraulic Chainsaw: 1,166m (151 dB RMS)

Power Washing of Timber and Steel Piles: 5,412m (161 dB RMS)

Vibratory Extraction and Installation- Steel: 6,310m (162 dB RMS)

Vibratory Extraction and Installation- Timber: 1,359m (152 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

** Use of provisional PSOs would be limited only to those noise generating, in-water activities thatwould result in the largest ZOI's (i.e., power washing of piles to facilitate repairs).

1 inch = 1 miles

0 1 Miles

FIGURE 6-14

USCG Moorings Sitka Pile Removal Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_3_NoiseZOI_PileRemoval_Sitka.mxd, catharine.harwin, 5/19/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Power Washing/Pile Removal

24-inch Pile Clipper - Timber: 4m (153.8 db RMS)

Power Washing of Timber and Steel Piles: 12m (161.0 dB RMS)

Vibratory Extraction and Installation - Steel: 14m (162.0 dB RMS)

Vibratory Extraction and Installation - Timber: 3m (153 dB RMS)

Hydraulic Chainsaw: 3m (151.0 dB RMS)

Sea Otter Abundance

High : 0.322442

Low : 0.1464

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

** Use of provisional PSOs would be limited only to those noise generating, in-water activities thatwould result in the largest ZOI's (i.e., power washing of piles to facilitate repairs).

1 inch = 500 feet

0 500 Feet

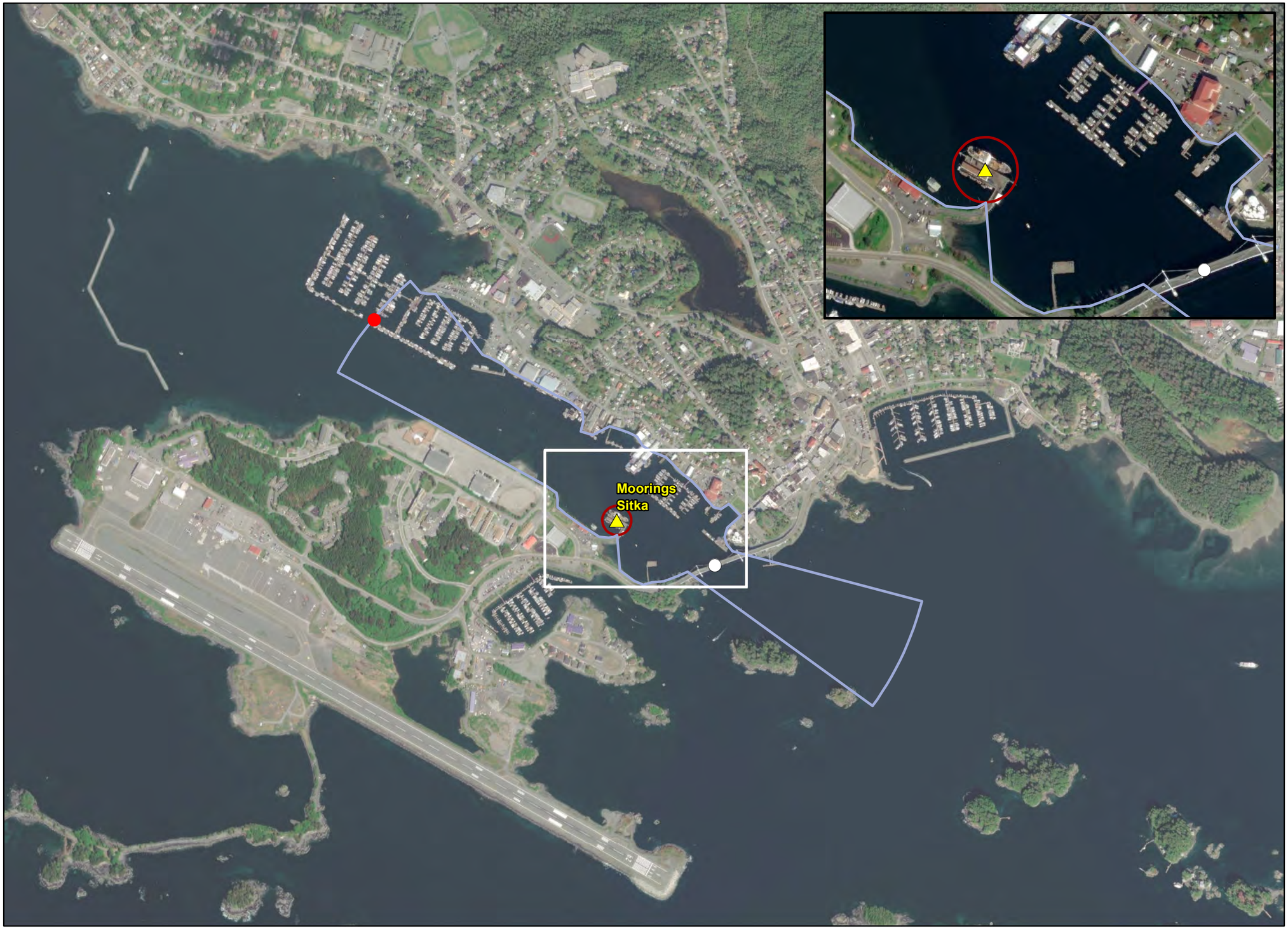
FIGURE 6-15

USCG Moorings Sitka Pile Removal
Distance to Level B Threshold for
USFWS-Managed Species for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_28_NoiseZOI_PileRemoval_Sitka.mxd, aaron.johnson, 9/17/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Pile Installation

Impact Driver- Steel: 1,000m (190 dB RMS)

Impact Driver- Timber: 46m (170 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 1,000 feet

0 1,000 Feet

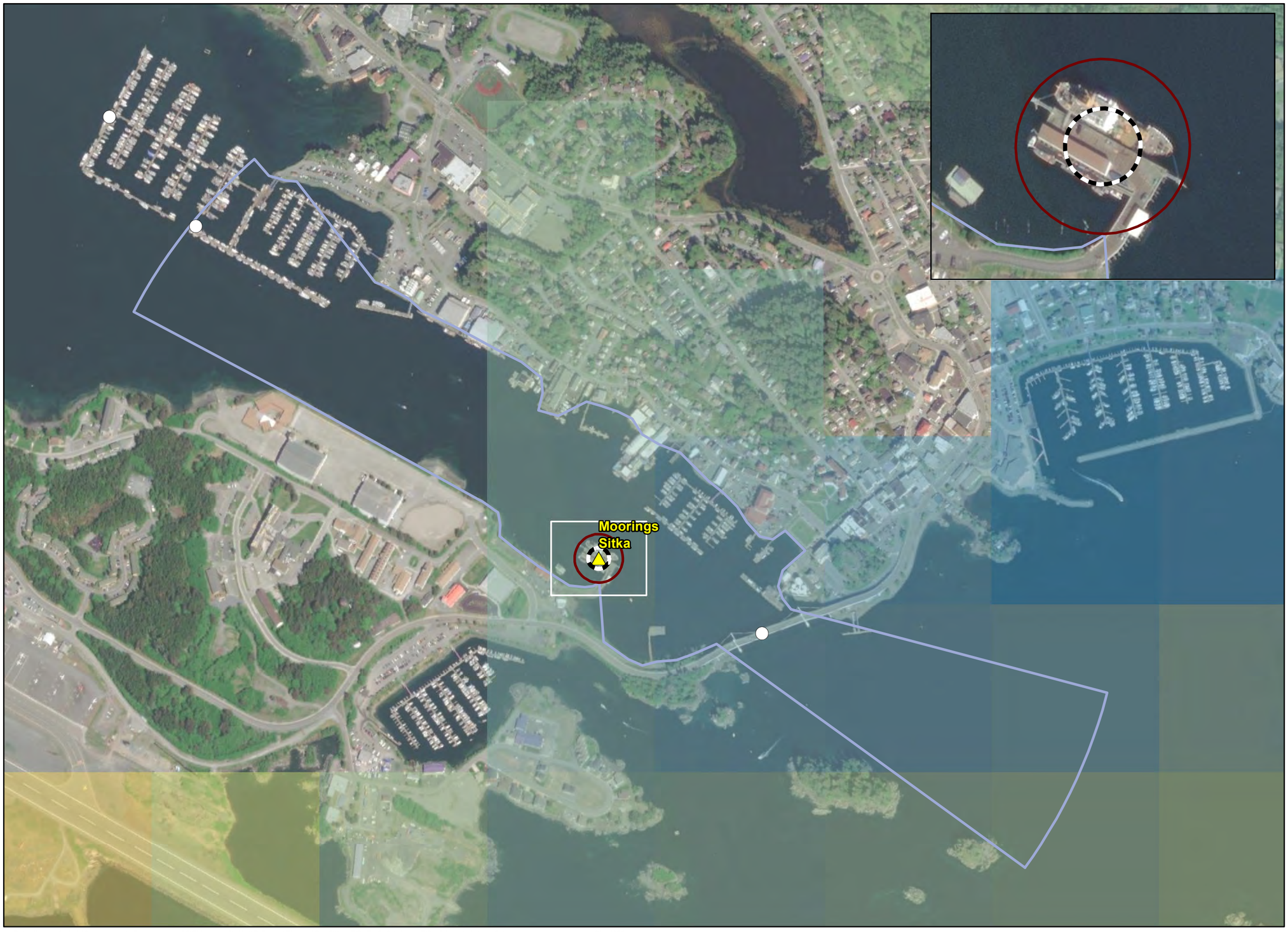
FIGURE 6-16

USCG Moorings Sitka Pile Installation
Distance to Level B Threshold for
NMFS-Managed Species for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_4_NoiseZOI_PileInstallation_Sitka.mxd, catharine.harwin, 2/16/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Pile Installation

Impact Driver - Steel: 1,000m (190 dB RMS)

Impact Driver - Timber: 46m (170 dB RMS)

Sea Otter Abundance

High : 0.322442

Low : 0.1464

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 600 feet

0 600 Feet

FIGURE 6-17

USCG Moorings Sitka Pile Installation Distance to Level B Threshold for USFWS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_29_NoiseZOI_PileInstallation_Sitka.mxd, aaron.johnson, 9/17/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Provisional PSO Location **

Power Washing/Pile Removal

24-inch Pile Clipper- Timber: 1,792m (153.8 dB RMS)

30-inch Pile Clipper- Concrete: 5,580m (161.2 dB RMS)

Diamond Wire Saw: 5,843m (161.5 dB RMS)

Hydraulic Chainsaw: 1,166m (151 dB RMS)

Power Washing of Timber and Steel Piles: 5,412m (161 dB RMS)

Vibratory Extraction and Installation- Steel: 6,310m (162 dB RMS)

Vibratory Extraction and Installation- Timber: 1,359m (152 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

** Use of provisional PSOs would be limited only to those noise generating, in-water activities thatwould result in the largest ZOI's (i.e., power washing of piles to facilitate repairs).

1 inch = 1 miles

0 1 Miles

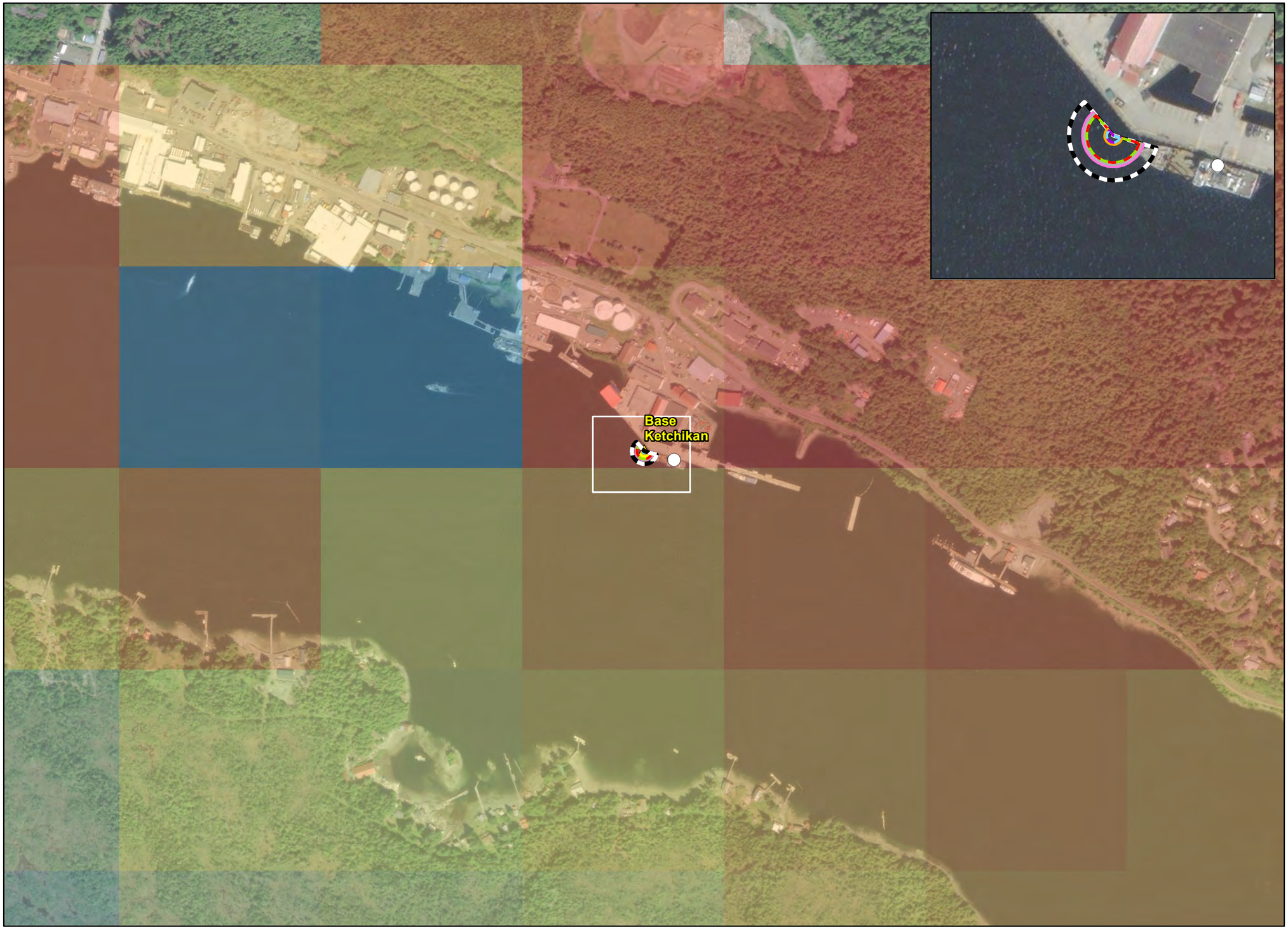
FIGURE 6-18

USCG Base Ketchikan Pile Removal Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_5_NoiseZOI_PileRemoval_Ketchikan.mxd, catharine.harwin, 5/19/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Power Washing/Pile Removal

24-inch Pile Clipper - Timber: 4m (153.8 db RMS)

Diamond Wire Saw: 13m (161.5 dB RMS)

Power Washing of Timber and Steel Piles: 12m (161.0 dB RMS)

Vibratory Extraction and Installation - Steel: 14m (162.0 dB RMS)

Vibratory Extraction and Installation - Timber: 3m (153 dB RMS)

30-inch Pile Clipper- Concrete: 12m (161.2 dB RMS)

Hydraulic Chainsaw: 3m (151.0 dB RMS)

Sea Otter Abundance

High : 0.271961

Low : 0.134922

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

** Use of provisional PSOs would be limited only to those noise generating, in-water activities thatwould result in the largest ZOI's (i.e., power washing of piles to facilitate repairs).

1 inch = 500 feet

0 500 Feet

FIGURE 6-19

USCG Base Ketchikan Pile Removal Distance to Level B Threshold for USFWS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_30_NoiseZOI_PileRemoval_Ketchikan.mxd, aaron.johnson, 9/17/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Pile Installation

DTH Drill- Non-Impulsive: 11,659m (166 dB RMS)

Impact Driver- Concrete: 46m (170 dB RMS)

Impact Driver- Steel: 1,000m (190 dB RMS)

Impact Driver- Timber: 46m (170 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 1 miles

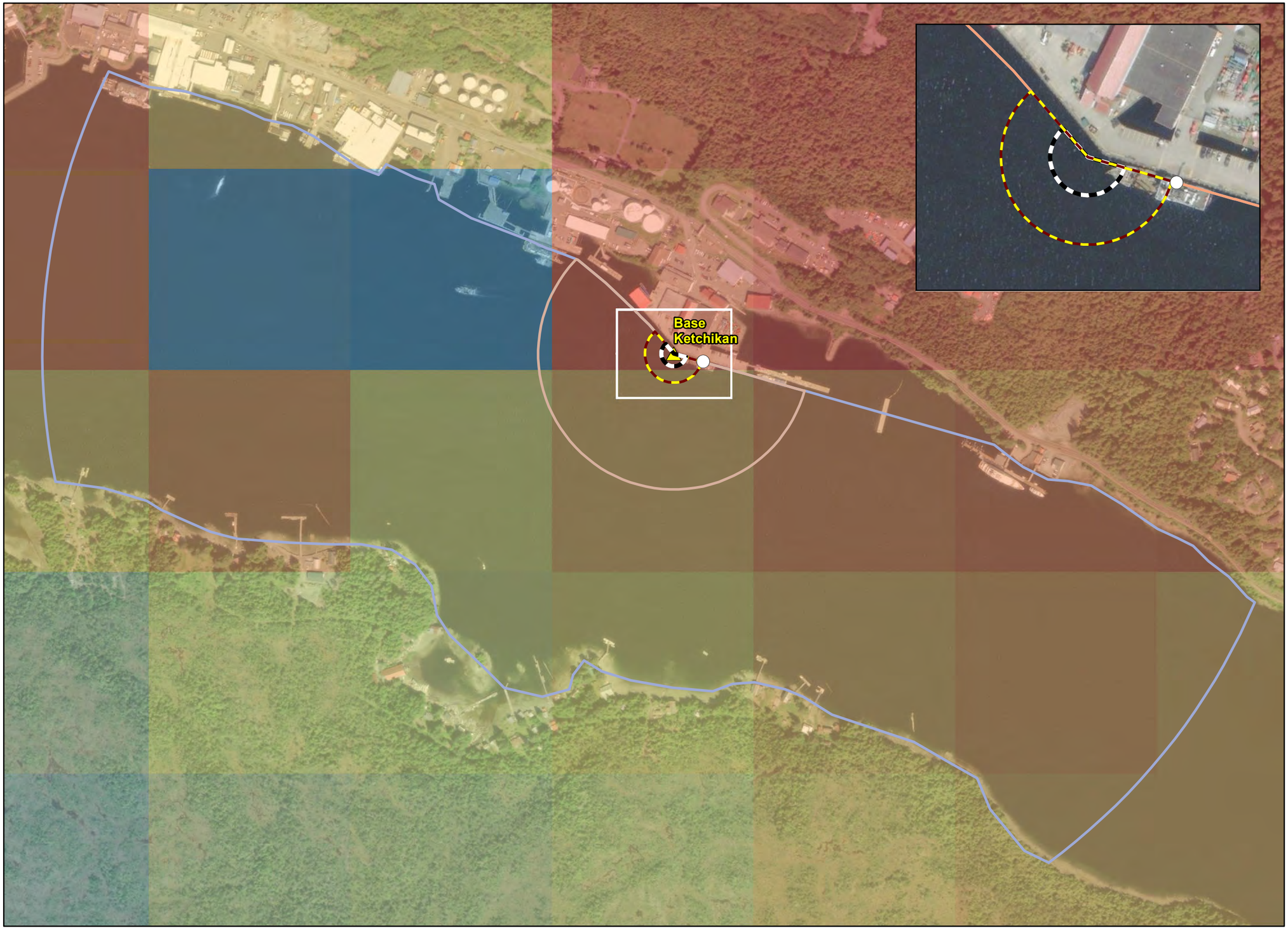
0 1 Miles

FIGURE 6-20

USCG Base Ketchikan Pile Installation Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_6_NoiseZOI_PileInstallation_Ketchikan.mxd, catharine.harwin, 5/19/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Pile Installation

DTH Drive - All Pile Types and Sizes: 215m (166 dB RMS)

Impact Driver - Steel: 1,000m (190 dB RMS)

Impact Driver - Timber: 46m (170 dB RMS)

Impact Driver - Concrete: 46m (170dB RMS)

Sea Otter Abundance

High : 0.271961

Low : 0.134922

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 500 feet

0 500 Feet

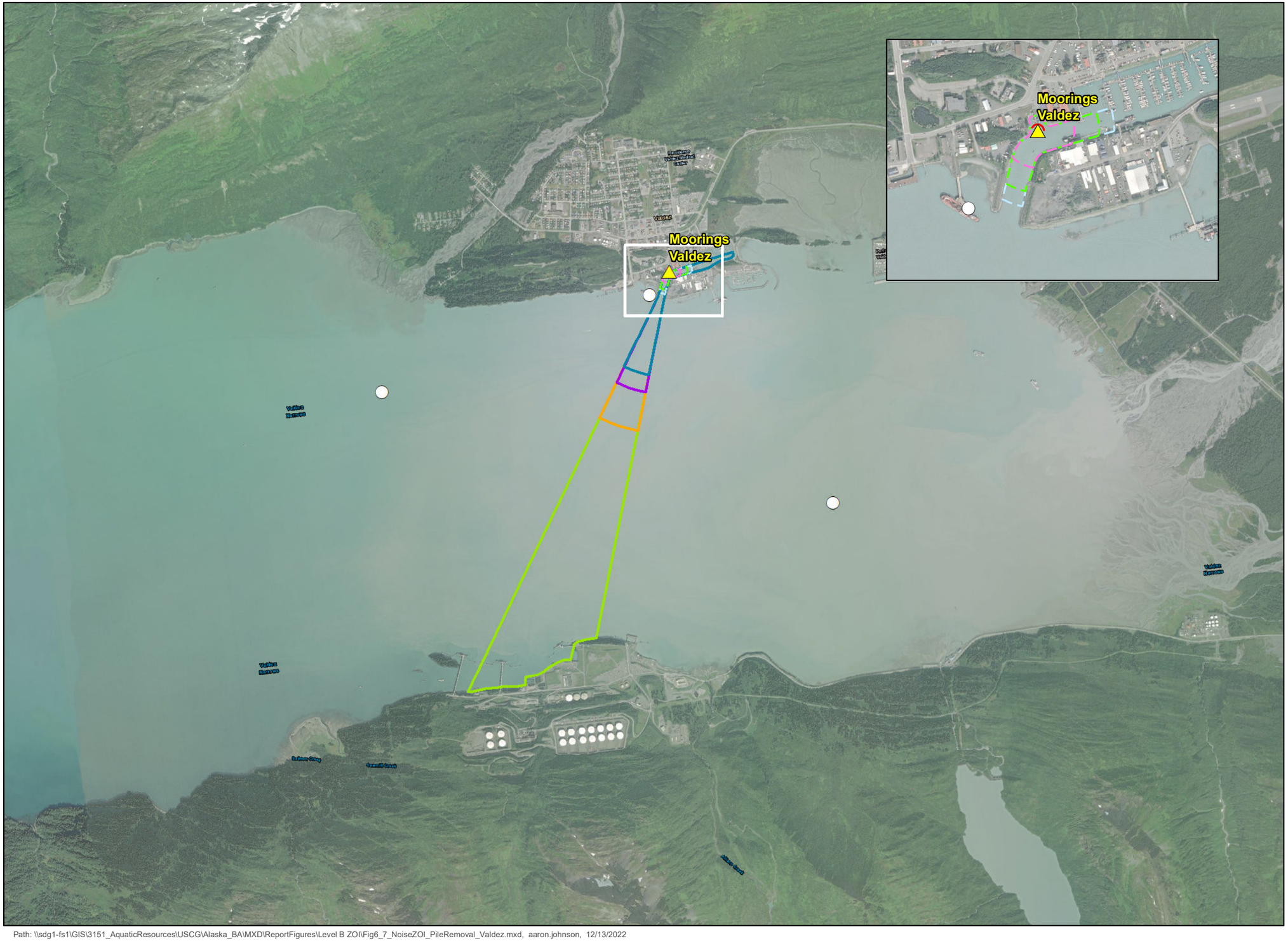
FIGURE 6-21

USCG Base Ketchikan Pile Installation Distance to Level B Threshold for USFWS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_31_NoiseZOI_PileInstallation_Ketchikan.mxd, aaron.johnson, 9/17/2021



Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level B ZOI\Fig6_7_NoiseZOI_PileRemoval_Valdez.mxd, aaron.johnson, 12/13/2022

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Power Washing/Pile Removal

- 24-inch Pile Clipper- Timber: 1,792m (153.8 dB RMS)
- Hydraulic Chainsaw: 1,166m (151 dB RMS)
- Power Washing of Timber and Steel Piles: 5,412m (161 dB RMS)
- Vibratory Extraction and Installation- Steel: 6,310m (162 dB RMS)
- Vibratory Extraction and Installation- Timber: 1,359m (152 dB RMS)
- Physical Interaction Shutdown Zone: 20m
- Phocid Pinniped Shutdown Zone: 120m
- High Frequency Cetacean Shutdown Zone: 200m
- Low Frequency Cetacean Shutdown Zone: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

** Use of provisional PSOs would be limited only to those noise generating, in-water activities thatwould result in the largest ZOI's (i.e., power washing of piles to facilitate repairs).

1 inch = 3,500 feet

0 3,500 Feet

FIGURE 6-7

USCG Moorings Valdez Pile Removal
Distance to Level B Threshold
Biological Assessment for
Programmatic Maintenance Activities

wood.

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Power Washing/Pile Removal

24-inch Pile Clipper - Timber: 4m (153.8 db RMS)

Power Washing of Timber and Steel Piles: 12m (161.0 dB RMS)

Vibratory Extraction and Installation - Steel: 14m (162.0 dB RMS)

Vibratory Extraction and Installation - Timber: 3m (153 dB RMS)

Hydraulic Chainsaw: 3m (151.0 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

** Use of provisional PSOs would be limited only to those noise generating, in-water activities thatwould result in the largest ZOI's (i.e., power washing of piles to facilitate repairs).

1 inch = 700 feet

0 700 Feet

FIGURE 6-32

USCG Moorings Valdez Pile Removal
Distance to Level B Threshold
Biological Assessment for
Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_32_NoiseZOI_PileRemoval_Valdez.mxd, aaron.johnson, 9/17/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Pile Installation

Impact Driver - Steel: 1,000m (190 dB RMS)

Impact Driver - Timber: 46m (170 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 1,000 feet

0 1,000 Feet

FIGURE 6-33

USCG Moorings Valdez Pile Installation
Distance to Level B Threshold
Biological Assessment for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Pile Installation

Impact Driver- Steel: 1,000m (190 dB RMS)

Impact Driver- Timber: 46m (170 dB RMS)

Physical Interaction Shutdown Zone: 20m

Phocid Pinniped Shutdown Zone: 120m

High Frequency Cetacean Shutdown Zone: 200m

Low Frequency Cetacean Shutdown Zone: 250m

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 600 feet

0 800 Feet

FIGURE 6-8

USCG Moorings Valdez Pile Installation
Distance to Level B Threshold
Biological Assessment for
Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Level B ZOI\Fig6_8_NoiseZOI_PileInstallation_Valdez.mxd, aaron.johnson, 12/13/2022

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Power Washing/Pile Removal

Vibratory Extraction and Installation- Steel H-Pile: 1,585m (153 dB RMS)

Vibratory Extraction and Installation- Steel: 6,310m (162 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 1 miles

0 1 Miles

FIGURE 6-26

USCG Moorings Cordova Pile Removal Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_9_NoiseZOI_PileRemoval_Cordova.mxd, catharine.harwin, 5/19/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Power Washing/Pile Removal

Vibratory Extraction and Installation - Steel: 14m (162.0 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 300 feet

0 300 Feet

FIGURE 6-27

USCG Moorings Cordova Pile Removal Distance to Level B Threshold for USFWS-Managed Species for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_34_NoiseZOI_PileRemoval_Cordova.mxd, aaron.johnson, 9/17/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Pile Installation

Impact Driver- Steel: 1,000m (190 dB RMS)

Impact Driver- Steel H-Pile: 136m (177 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 800 feet

0 800 Feet

FIGURE 6-10

USCG Moorings Cordova Pile Installation
Distance to Level B Threshold
Biological Assessment for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_10_NoiseZOI_PileInstallation_Cordova.mxd, catharine.harwin, 2/16/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Pile Installation

Impact Driver - Steel: 1,000m (190 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 800 feet

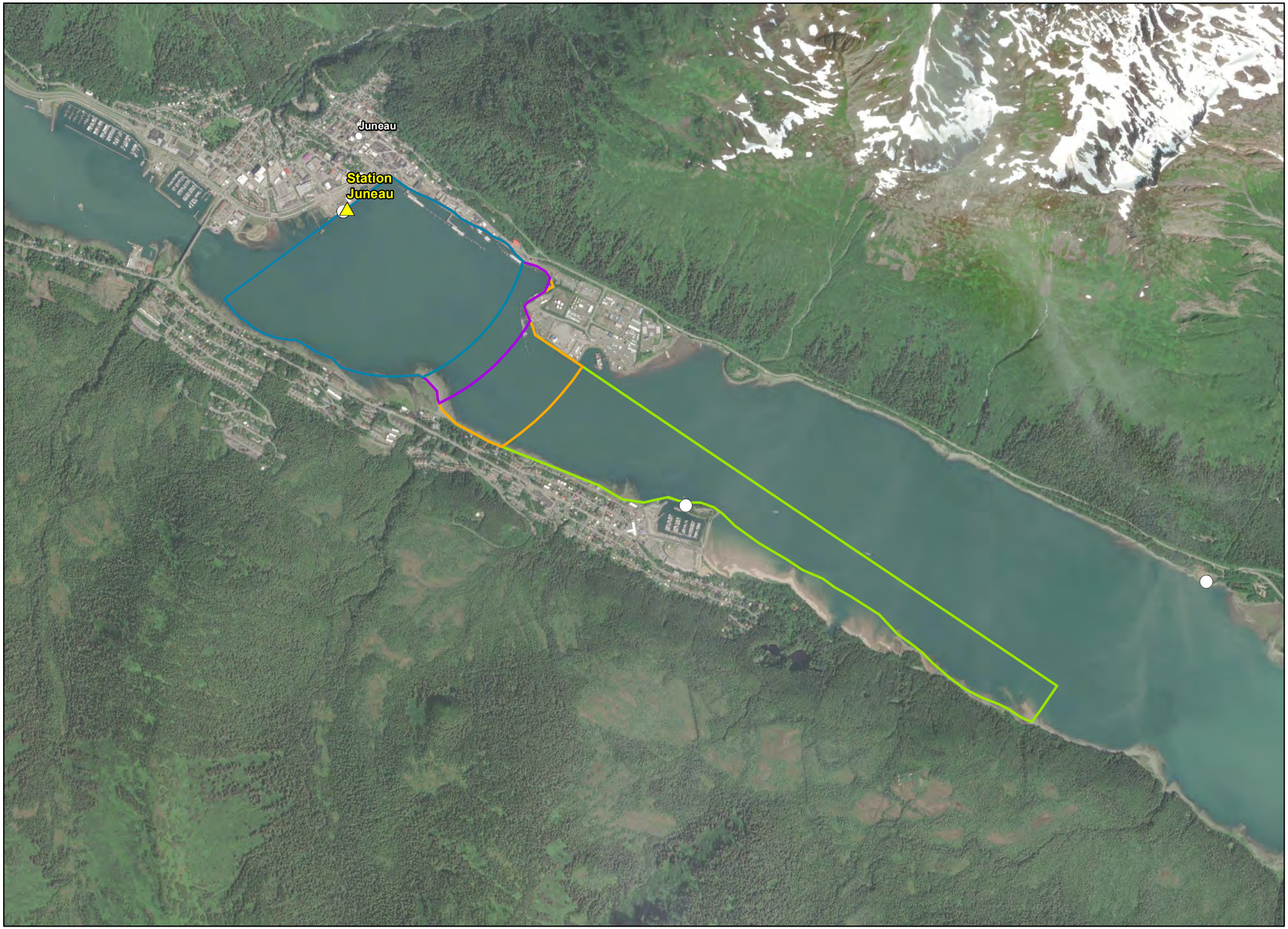
0 800 Feet

FIGURE 6-29

USCG Moorings Cordova Pile Installation Distance to Level B Threshold for USFWS-Managed Species for Programmatic Maintenance Activities

wood.

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_35_NoiseZOI_PileInstallation_Cordova.mxd, aaron.johnson, 9/17/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Power Washing/Pile Removal

- 24-inch Pile Clipper- Timber: 1,792m (153.8 dB RMS)
- Hydraulic Chainsaw: 1,166m (151 dB RMS)
- Power Washing of Timber and Steel Piles: 5,412m (161 dB RMS)
- Vibratory Extraction and Installation- Timber: 1,359m (152 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 2,000 feet

0 2,000 Feet

FIGURE 6-30

USCG Station Juneau Pile Removal Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_11_NoiseZOI_PileRemoval_Juneau.mxd, catharine.harwin, 5/19/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Power Washing/Pile Removal

24-inch Pile Clipper - Timber: 4m (153.8 db RMS)

Power Washing of Timber and Steel Piles: 12m (161.0 dB RMS)

Vibratory Extraction and Installation - Timber: 3m (153 dB RMS)

Hydraulic Chainsaw: 3m (151.0 dB RMS)

Sea Otter Abundance

High : 0.18562

Low : 0.0265418

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 600 feet

0 600 Feet

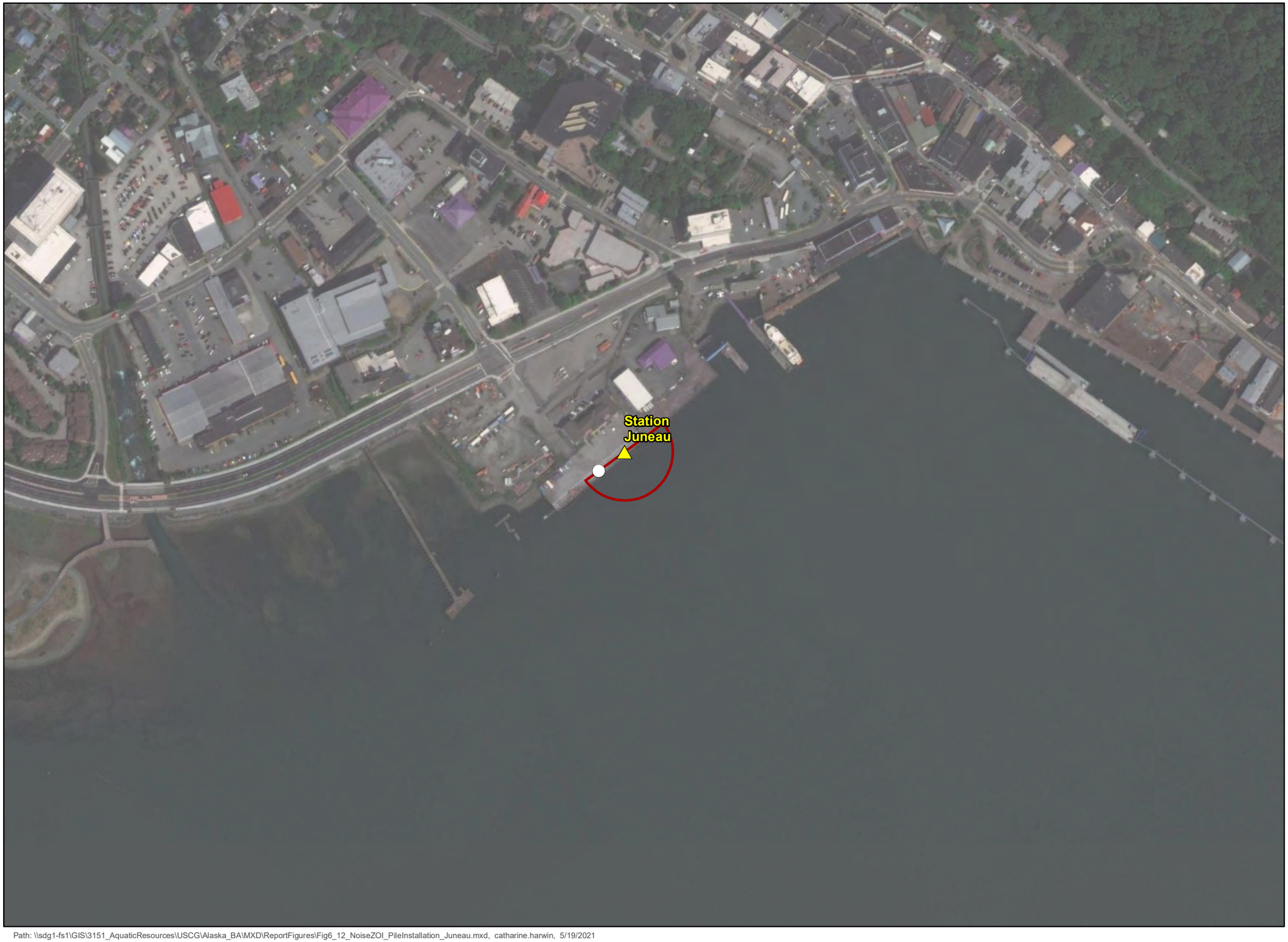
FIGURE 6-36

USCG Station Juneau Pile Removal
Distance to Level B Threshold
Biological Assessment for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_36_NoiseZOI_PileRemoval_Juneau.mxd, aaron.johnson, 9/17/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Pile Installation

Impact Driver- Timber: 46m (170 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 300 feet

0 300 Feet

FIGURE 6-32

USCG Station Juneau Pile Installation Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_12_NoiseZOI_PileInstallation_Juneau.mxd, catharine.harwin, 5/19/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Area

Pile Installation

Impact Driver - Timber: 46m (170 dB RMS)

Sea Otter Abundance

High : 0.18562

Low : 0.0265418

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 600 feet

0 600 Feet

FIGURE 6-33

USCG Station Juneau Pile Installation Distance to Level B Threshold for USFWS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_37_NoiseZOI_PileInstallation_Juneau.mxd, aaron.johnson, 9/17/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Provisional PSO Location **

Power Washing/Pile Removal

24-inch Pile Clipper- Timber: 1,792m (153.8 dB RMS)

Hydraulic Chainsaw: 1,166m (151 dB RMS)

Power Washing of Timber and Steel Piles: 5,412m (161 dB RMS)

Vibratory Extraction and Installation- Steel: 6,310m (162 dB RMS)

Vibratory Extraction and Installation- Timber: 1,359m (152 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

** Use of provisional PSOs would be limited only to those noise generating, in-water activities thatwould result in the largest ZOI's (i.e., power washing of piles to facilitate repairs).

1 inch = 3,000 feet

0 3,000 Feet

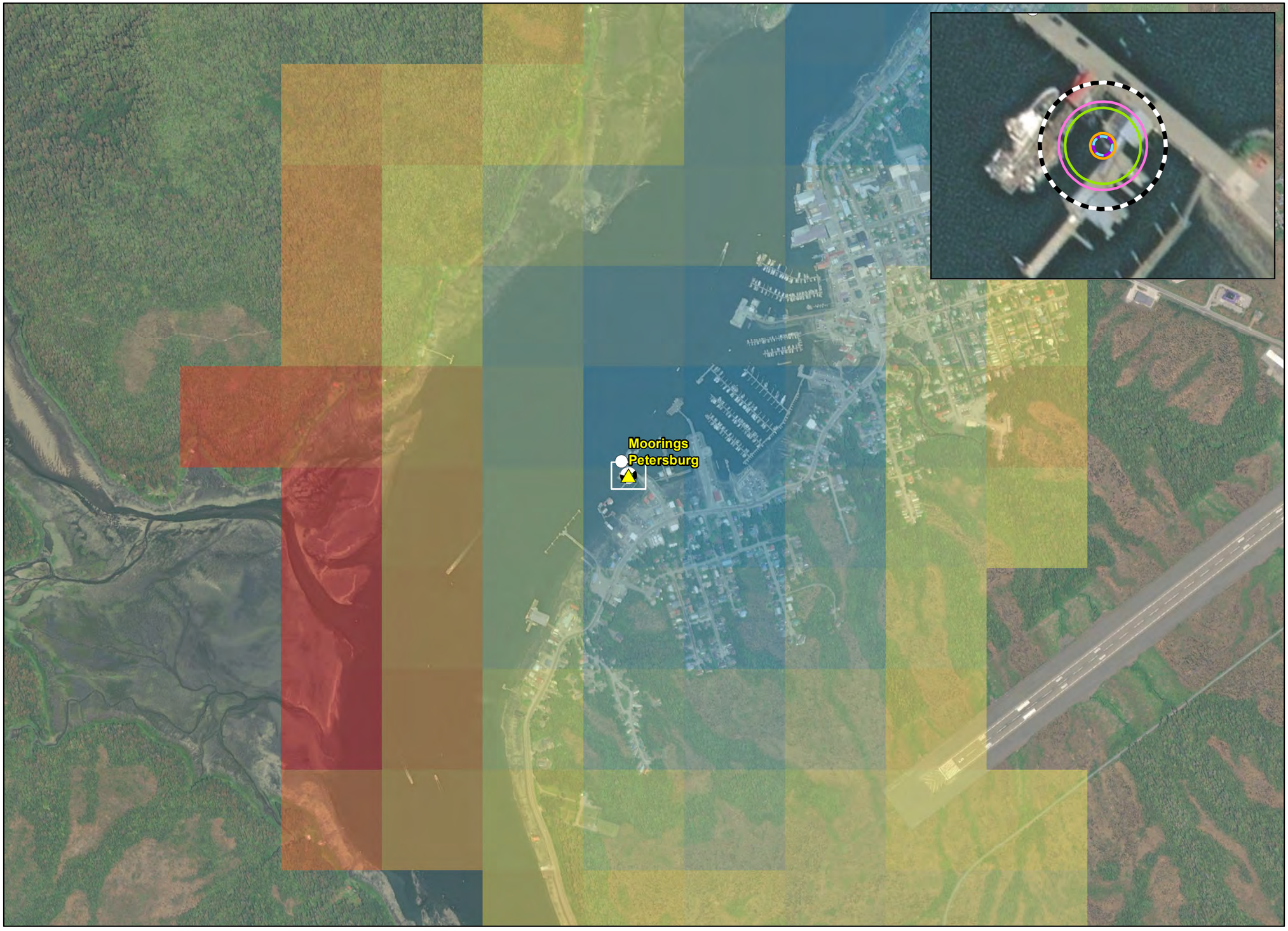
FIGURE 6-34

USCG Moorings Petersburg
Pile Removal
Distance to Level B Threshold for
NMFS-Managed Species for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_13_NoiseZOI_PileRemoval_Petersburg.mxd, catharine.harwin, 5/19/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Area

Power Washing/Pile Removal

24-inch Pile Clipper - Timber: 4m (153.8 db RMS)

Power Washing of Timber and Steel Piles: 12m (161.0 dB RMS)

Vibratory Extraction and Installation - Steel: 14m (162.0 dB RMS)

Vibratory Extraction and Installation - Timber: 3m (153 dB RMS)

Hydraulic Chainsaw: 3m (151.0 dB RMS)

Sea Otter Abundance

High : 0.29029

Low : 0.161914

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

** Use of provisional PSOs would be limited only to those noise generating, in-water activities thatwould result in the largest ZOI's (i.e., power washing of piles to facilitate repairs).

1 inch = 1,000 feet

0 1,000 Feet

FIGURE 6-35

USCG Moorings Petersburg
Pile Removal
Distance to Level B Threshold for
USFWS-Managed Species for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_38_NoiseZOI_PileRemoval_Petersburg.mxd, aaron.johnson, 9/17/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Pile Installation

Impact Driver- Steel: 1,000m (190 dB RMS)

Impact Driver- Timber: 46m (170 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 1,500 feet

0 1,500 Feet

FIGURE 6-36

USCG Moorings Petersburg
Pile Installation
Distance to Level B Threshold for
NMFS-Managed Species for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_14_NoiseZOI_PileInstallation_Petersburg.mxd, catharine.harwin, 2/16/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Area

Pile Installation

Impact Driver - Steel: 1,000m (190 dB RMS)

Impact Driver - Timber: 46m (170 dB RMS)

Sea Otter Abundance

High : 0.29029

Low : 0.161914

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 1,000 feet

0 1,000 Feet

FIGURE 6-37

USCG Moorings Petersburg
Pile Installation
Distance to Level B Threshold for
USFWS-Managed Species for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_39_NoiseZOI_PileInstallation_Petersburg.mxd, aaron.johnson, 9/17/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Power Washing/Pile Removal

Vibratory Extraction and Installation- Steel: 6,310m (162 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 500 feet

0 500 Feet

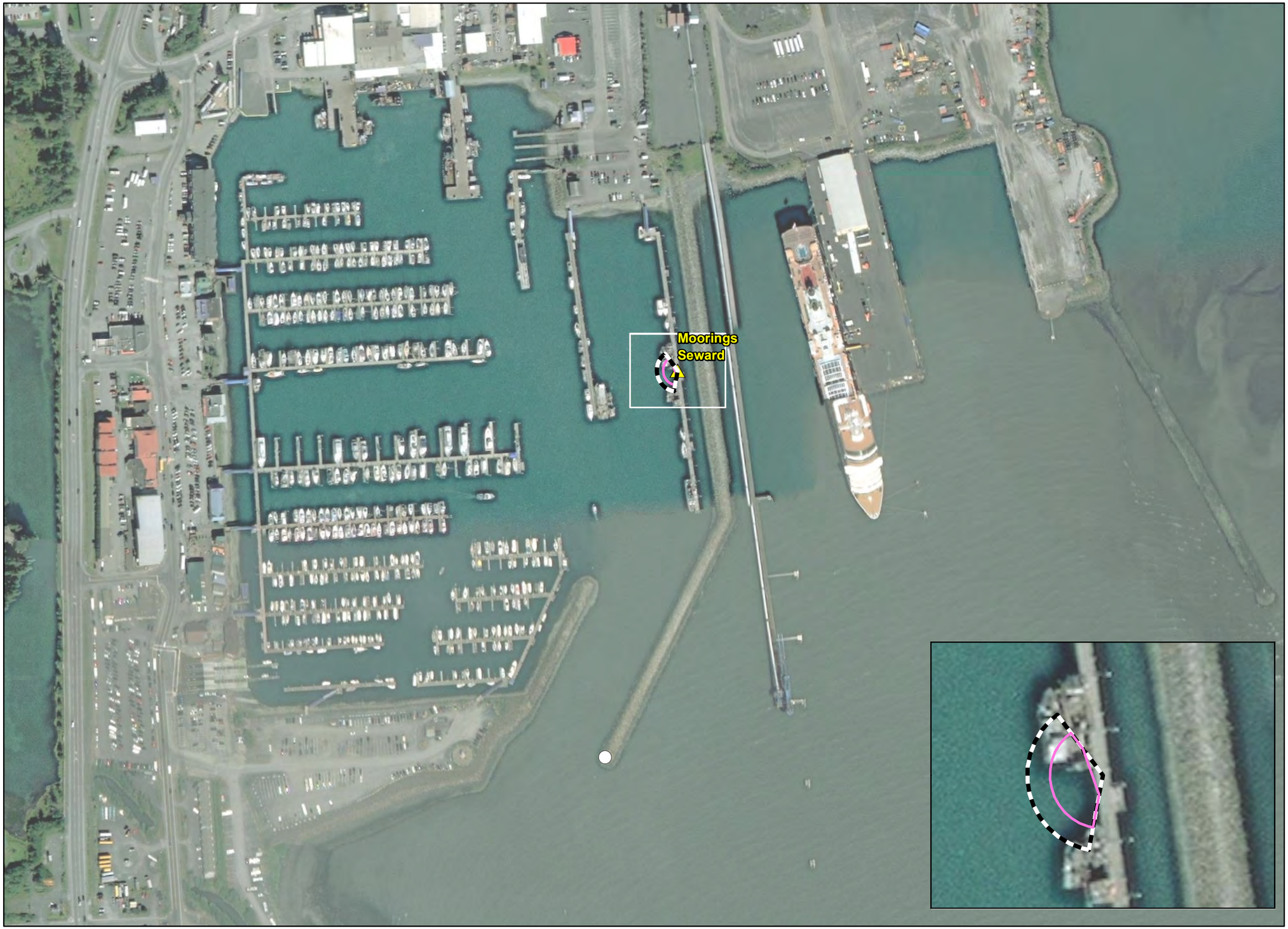
FIGURE 6-38

USCG Moorings Seward Pile Removal Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_15_NoiseZOI_PileRemoval_Seward.mxd, catharine.harwin, 2/16/2021



Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Power Washing/Pile Removal

Vibratory Extraction and Installation - Steel: 14m (162.0 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 300 feet

0 300 Feet

FIGURE 6-39

USCG Moorings Seward Pile Removal Distance to Level B Threshold for USFWS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_40_NoiseZOI_PileRemoval_Seward.mxd, aaron.johnson, 9/17/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Pile Installation

Impact Driver- Steel: 1,000m (190 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 500 feet

0 500 Feet

FIGURE 6-40

USCG Moorings Seward Pile Installation Distance to Level B Threshold for NMFS-Managed Species for Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\GIS\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\Fig6_16_NoiseZOI_PileInstallation_Seward.mxd, catharine.harwin, 2/16/2021

Waterfront Facilities Location

Protected Species Observer (PSO) Location *

Physical Interaction Shutdown Zone

Pile Installation

Impact Driver - Steel: 1,000m (190 dB RMS)

Notes:

* All PSO locations are subject to change based on local field conditions at the time of in-water work to account for maximizing visibility of the relevant Level B ZOI to be monitored.

1 inch = 500 feet

0 500 Feet

FIGURE 6-41

USCG Moorings Seward Pile Installation
Distance to Level B Threshold for
USFWS-Managed Species for
Programmatic Maintenance Activities

wood.

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\sdg1-fs1\gis\3151_AquaticResources\USCG\Alaska_BA\MXD\ReportFigures\SeaOtter_ZOI\Fig6_41_NoiseZOI_PileInstallation_Seward.mxd, aaron.johnson, 9/17/2021