Attachment P
Request for Incidental Harassment Authorization

REPORT
Produced for Port of Grays Harbor
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moffatt & nichol

REQUEST FOR INCIDENTAL HARASSMENT AUTHORIZATION

Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project

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Glossary

AGP	Ag Processing, Inc.
AMMs	Avoidance and Minimization Measures
BMPs	Best Management Practices
dB	Decibels
dBA	A-weighted Decibels
DPS	Distinct Population Segments
ESA	Endangered Species Act
ft.	Feet
FTA	Federal Transit Administration
FY	Fiscal Year
HTL	High Tide Line
IHA	Incidental Harassment Authorization
km	Kilometers
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
NMSDD	Navy Marine Species Density Database
NTU	Nephelometric Turbidity Units
OHWM	Ordinary High-Water Mark
Port	Port of Grays Harbor
PSOs	Protected Species Observers
PTS	Permanent Threshold Shift
RMS	Root Mean Square
RORO	Roll-on/Roll-off
SEL	Sound Exposure Level
SELcum	Cumulative Sound Exposure Level
SPCCP	Spill Prevention, Control, and Countermeasures Plan
sq. ft.	Square Feet
T2	Terminal 2
T4	Terminal 4
T4A	Terminal 4 Berth A
T4B	Terminal 4 Berth B
TTS	Temporary Threshold Shift
U.S.	United States
USACE	U.S. Army Corps of Engineers
WDFW	Washington Department of Fish &Wildlife
WSDOT	Washington State Department of Transportation
WSF	Washington State Ferries

1. Introduction

The Port of Grays Harbor (Port) is proposing the Terminal 4 (T4) Expansion and Redevelopment Project (Proposed Project) to increase rail and shipping capacity at T4. The Proposed Project consists of elements that will be carried out by the Port (the Port Project) or Ag Processing Inc (AGP) (the AGP Project). The Port Project includes rail upgrades; T4 cargo yard relocation and expansion; dock fender upgrades; and stormwater system upgrades. The AGP Project involves construction of a new export terminal at T4. The Proposed Project is necessary to accommodate growth of dry bulk, breakbulk, and roll-on/roll-off (RORO) cargos.

AGP, is a leading United States agribusiness with primary operations as a soybean processor/refiner, producing and marketing soybean meal, refined soybean oil, and biodiesel. Their products are marketed to domestic and global customers. AGP has been exporting soybean meal and related products through the Port's Terminal 2 (T2) export facility for over 20 years. The T2 facility receives product by train and has the capability to transfer the product either directly to a ship or to storage silos at the site. Export volumes will soon exceed T2's capacity, creating the need for a new export terminal at T4.

AGP's expanded operations at T4 would be facilitated by the Port's proposed new rail upgrades and improvements, which would facilitate the movement of trains to and through the proposed new Railcar Receiving Building to receiving pits for unloading, supporting the ship loader through efficient unit train offloading, railcar storage, and unit train assembly. AGP's operations would also be facilitated by the Port's proposed dock and fender system upgrades, which would allow for increased vessel traffic at T4.

The Project site is situated within both the City of Aberdeen and City of Hoquiam, Grays Harbor County, Washington (Figure 1), in Township 17 North, Range 9 West, Section 17. T4 is situated near the mouth of the Chehalis River where it discharges to Grays Harbor (Figure 1). Grays Harbor is known to support several marine mammal species which may occur near the Project site. The Marine Mammal Protection Act of 1972 (MMPA) prohibits the taking of marine mammals, which is defined as to "harass, hunt, capture or kill, or attempt to harass, hunt, capture or kill," except under certain situations. Section 101(a)(5)(D) of the MMPA allows for the issuance of an incidental harassment authorization (IHA), provided that an activity would result in no more than negligible impacts on marine mammals and would not adversely affect subsistence use of these animals.

The Project's timing, duration, and the specific types of activities (e.g., vibratory pile removal and vibratory and impact installation) may result in the incidental harming (Level A harassment) and/or taking by behavioral effects (Level B harassment) of marine mammals protected under the MMPA. The Port and AGP (as the Project applicants) are requesting an IHA for four marine mammal species (harbor seal, California sea lion, Steller sea lion, and harbor porpoise) that may occur near the Project during vibratory pile removal and vibratory and impact installation.

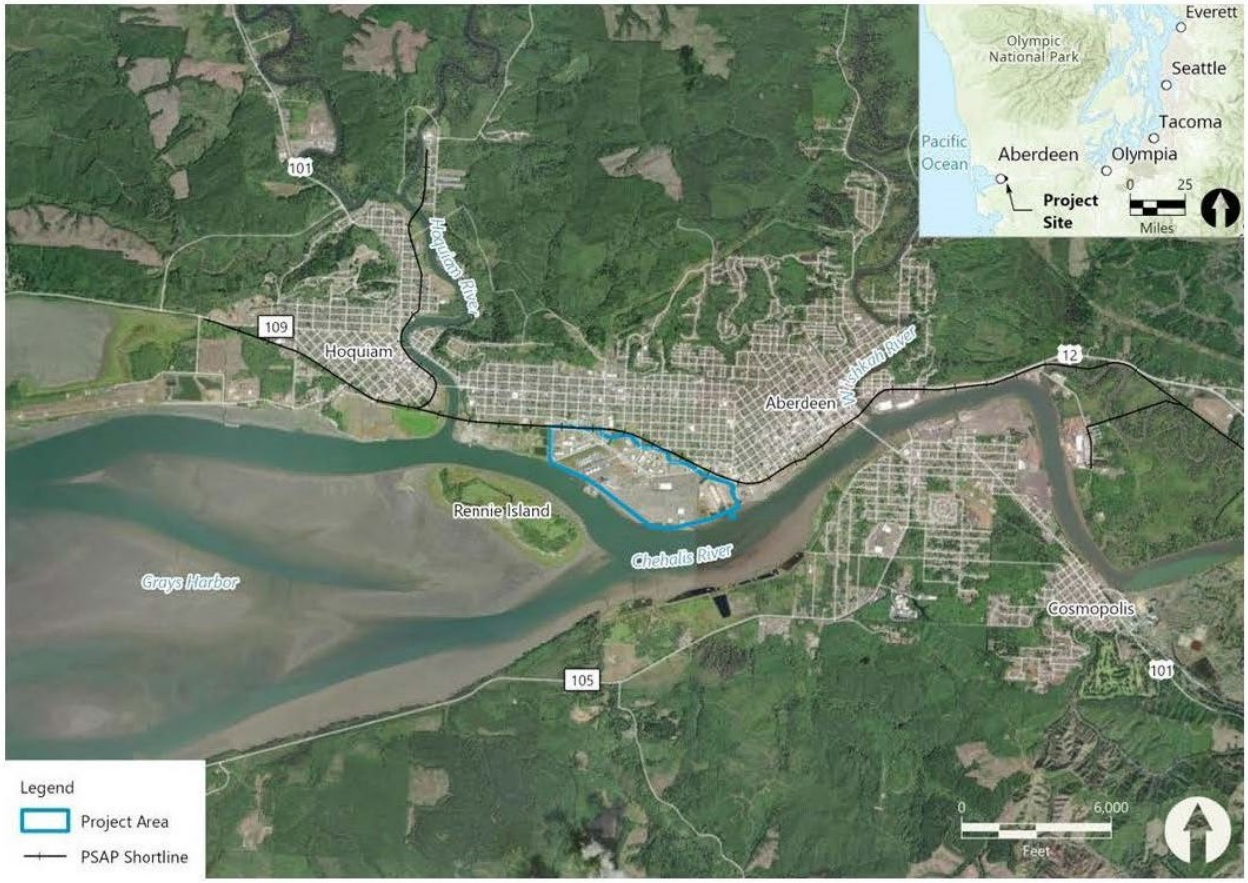

Figure 1. Project Location

1.1. Project Purpose and Need

The purpose of the Proposed Project is to strive toward the Port's mission: "To best utilize our resources to facilitate, enhance and stimulate international trade, economic development and tourism for the betterment of the region" (Port of Grays Harbor 2023). The Proposed Project will support the Port's mission by upgrading the Port's terminal and rail infrastructure, including increasing the capacity of the current rail loop, upgrading the existing T4 dock with new dock fenders and a shiploader, and replacing backland cargo storage capacity lost to the expanded rail footprint by redeveloping a vacant 55-acre industrial on the east side of T4 by filling the casting basin and returning the property to a viable industrial site to support marine activities.

The T4 facility currently is underutilized and the Port currently has an opportunity redevelop the Project area area into a robust multimodal terminal for agricultural products, breakbulk, logs, and other cargos needing a coastal marine terminal.

These improvements are needed to support Port economic resiliency and to increase the Port's operational capacity and efficiency to support increased growth, job creation and retention, and economic opportunities related to multimodal port operations, including the expansion of AGP's

agricultural export facilities, ship loading productivity, storage capacity, and the efficient movement of goods through the Port (Port of Grays Harbor 2022).

The Proposed Project will provide a key transportation link to international markets for thousands of U.S. soybean farmers, while creating jobs and economic benefits for the local community, the Port, and current Port tenants in this Historically Disadvantaged Community of Washington State (U.S. Department of Transportation 2023). These investments will provide AGP with the infrastructure to accommodate increased throughput of soybean meal and other bulk commodities to meet global market demand.

The Proposed Project will advance economic growth in the region and provide a link between the U.S. and Asian markets to meet demand for high-quality U.S. soybean meal. The increase of export capacity at the Port of Grays Harbor is also important to support the increased soybean meal production that will be generated at new Midwest soybean processing plants opening in 2025. Currently, U.S. domestic market demand for soybean meal has been reached.

1.2. Proposed Project

1.2.1. Project Overview

As noted in Section 1, the Proposed Project consists of Port-led improvements and the AGP Project. The Port improvements include the following: 1) rail upgrades; 2) T4 cargo yard relocation and expansion; and 3) dock fender and stormwater upgrades. AGP's project consists of constructing a new export terminal at T4 to accommodate an increase in exports through the Port. Figure 2 presents the configuration of all elements of the Proposed Project identified above. The rail upgrades and cargo yard expansion components of the Project would all occur landward of the Grays Harbor shoreline and will not have any effects on the marine environment and are therefore not included in this IHA application. The upgrades to the fender system on the T4 dock and installation of a ship loader facility will impact the marine environment of Grays Harbor and are the subject of this IHA request. Components of the fender system upgrades and new shiploader facility that will impact the marine environment are described in sections 1.2.1.1 and 1.2.1.2 below. Pile removal and installations methods are detailed in section 1.2.3.

1.2.1.1. Terminal 4 Dock Upgrades

The existing timber-piled fender system at the Terminal 4 Berth A (T4A) will be replaced with a modern pile-supported panel system and a modern suspended panel system at Berth B (T4B). Terminal 4's Berths A and B have distinctly different structural systems, necessitating piles to support the fender system at Berth A but not at Berth B. The new fender system will consist of a series of steel fender panels, each supported by one or more steel pipe piles at each fender location along T4A and supported by the existing deck only along T4B.

Lateral support will be provided by the existing deck for the steel fender panels at both berths. Existing fender piles located at or near proposed locations for the steel fender panels/steel support piles will

be removed, with the remaining fender piles left in place and attached to the existing concrete deck (T4A) and new steel pipe fender piles installed between panels at the three new shiploader tower foundation locations (at T4B - project elements related to the new shiploader foundation are discussed in more detail below under "New AGP Export Terminal"). Portions of the existing fender system will be removed along the entire 1,400-foot length of Terminal 4 to accommodate the new fender system and new shiploader foundations.

New steel fender panels with rubber fenders will be placed at a maximum spacing of 40 feet along the dock, with tighter spacing (20 feet maximum) at multiple locations along the dock. Existing fender piles that occur in locations that do not conflict with the new fender system and/or ship loader foundations will remain in place to provide continued protection to the pier. New steel pipe fender piles will also be added between the fender panels at the three ship loader foundations to maintain protection to the existing jet array system from debris in the river. Existing fender piles that project the jet array system and are not in conflict with proposed new project elements will also be left in place to provide continued protection of the jet array system against damage from debris.

Horizontally treated timber elements of the existing fender system (continuous timber walers and chocks between fender piles) and rubber fender elements will be modified and removed in some locations.

1.2.1.2. New AGP Export Terminal

The AGP Project at T4B involves the construction of facilities to support a new commodity transload facility. These facilities will be integrated with the Port's planned infrastructure improvements to maximize AGP's operational efficiency. The main components of the new AGP export terminal include rail receiving facilities, track modifications, and a new shiploader. Installation of the shiploader will require additional improvements to the T4B dock and would impact the marine environment.

The other proposed components of the new AGP Export Terminal (utility service upgrades, railcar receiving building, bulk scale tower, and landside and dockside motor control center buildings) are landward of the marine environment and thus not included in this IHA request. Components that have the potential to impact the marine environment are discussed in greater detail below.

Steel structures of the shiploader will be constructed upon driven pile systems. Pile and foundation systems will be installed utilizing driven pipe pile and reinforced concrete. AGP will install a new three-tower shiploader with three loading spouts on the T4B dock. Conveyor systems will be installed to convey products from the rail receiving building dump pits to the shiploader.

The existing dock structure lacks both the vertical load capacity and the lateral load capacity to support weight demands from the three towers for the new shiploader and a tower for the conveyor system proposed for the ship loading facility. To address this, AGP will support the vertical weight of each shiploader tower with four vertical legs, exceeding the vertical load-carrying capacity of the existing dock structure at each tower location.

Additionally, the existing dock was designed for lateral seismic forces based on a mass equal to 5 percent of the self-weight of the dock, using 1960s vintage building codes, and does not include the design live loads or equipment loads (such as the shiploader towers and conveyor system) on the dock as part of the mass. Current design codes and standards require designing for lateral seismic forces at least an order of magnitude larger than the 1960s vintage building codes and inclusion of equipment loads, such the shiploader towers. It is not feasible to attach the new tower foundations to the existing structure as this would require a structural upgrade of the entire dock structure to include the towers and their foundations. Instead, the shiploader tower foundations and the conveyor system foundation will be isolated from the existing dock structure.

One conveyor system foundation is also proposed within the existing dock structure. At this location, only local removal of gravel ballast and asphalt concrete paving will occur, followed by sawcutting the existing prestressed concrete deck panels. Approximately 200 square feet (sq. ft.) of deck system will be removed at this location. Gravel ballast and asphalt concrete paving above the concrete deck will be removed along with the deck elements.

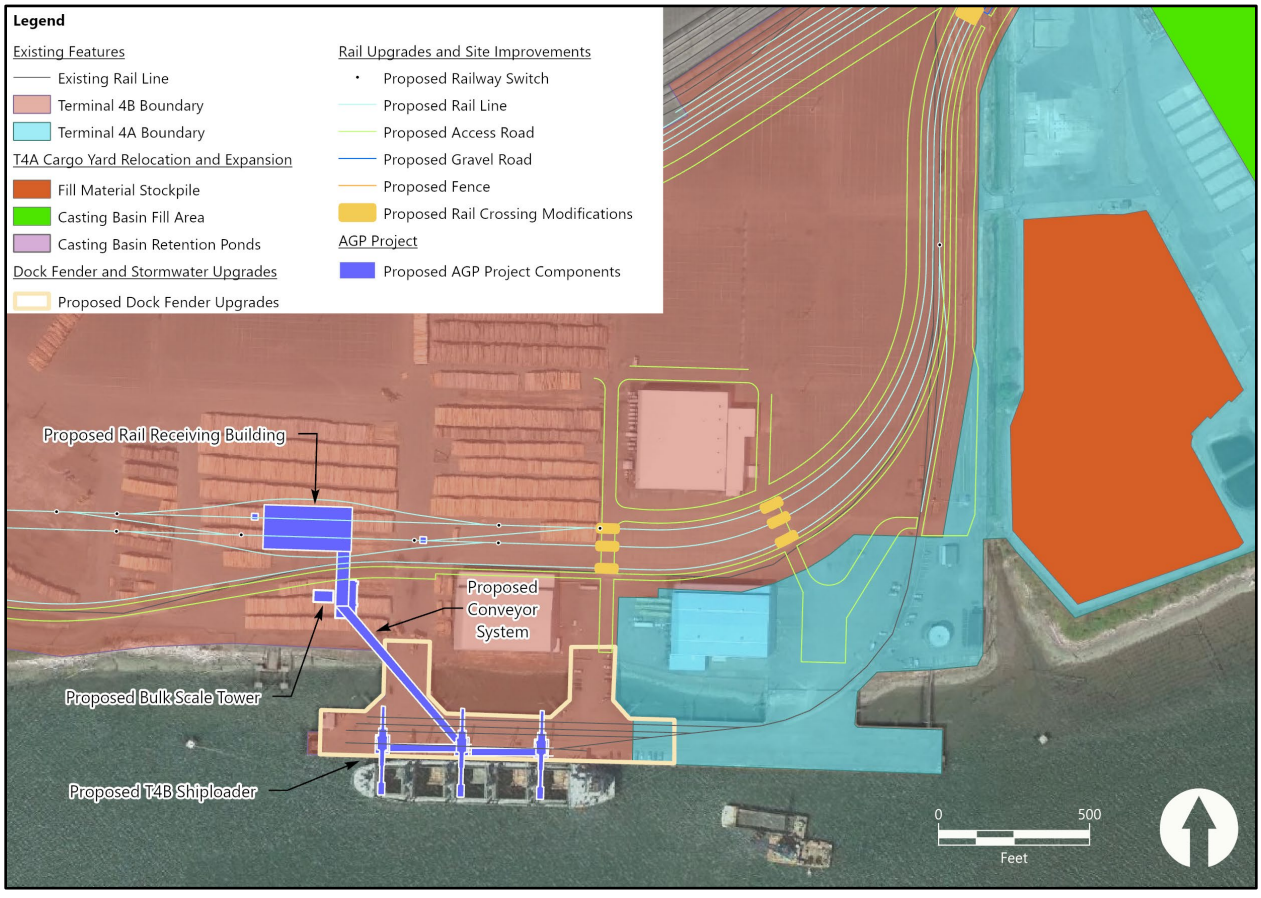

Figure 2. New AGP Export Terminal Components

1.2.2. Pile Removal and Installation Methods

The Proposed Project consists of vibratory pile driving installation and removal and impact pile installation, which will create elevated in-water and terrestrial noise that may impact marine mammals. Vibratory extractors are commonly used to remove steel pile where sediments allow. The vibratory hammer is mounted to the top of the pile, and the pile is then vibrated between 1,200 and 2,400 vibrations per minute. The vibrations liquefy and loosen the sediment surrounding the pile, allowing it to be removed with an upward lift from the crane.

Existing piles will be removed from the substrate using the direct pull method. If direct pulling is unsuccessful, vibratory extraction will be used. Broken or damaged piles that cannot be removed by either the vibratory hammer or direct pull will be cut off at or below the mudline. Based on the substrate conditions at the site, it is anticipated that most of the existing timber piles will be removed by direct pull. The Project will include the removal of up to:

- 50, 18-inch timber piles
- 6, 12-inch steel H-sections
- and 27, 16.5-inch prestressed concrete octagonal sections

New and replacement piles will be installed with a vibratory hammer or combination of a vibratory hammer and impact hammer. Impact pile driving has been avoided to the extent feasible. Piles will be aligned with steel templates to ensure the correct position of the piles relative to each other. The proposed Project will also install up to:

- 50, 36-inch steel pipe piles
- 24, 24-inch steel pipe piles
- 6, 12-inch steel H-sections
- 15, 18-inch steel pipe piles,
- and 24, 24 to 30-inch steel pipe piles.

Additionally, a total of up to 24 temporary 24-inch steel piles may be installed for temporary construction use or to address unforeseen conditions. The temporary piles will be placed and removed as necessary.

The proposed pile removal and installation work window is July 15 to February 15. A summary of the proposed pile removal and installation methods for the dock upgrades and the ship loader facility are presented below in Table 1 and Table 2.

Table 1. Planned In-water Pile Removal and Installation for Terminal 4 Dock Upgrades

Location	Pile Type and Size	Activity	Removal/ Installation Method	Number of Piles	Total Days of Operation	Piles Per day	Hours Vibratory Install	Impact Strikes per Pile
Permanent Piles								
Terminal 4A and 4B	Up to 18-inch timber piles	Removal	Vibratory hammer, direct pull	Up to 50	Up to 12	Up to 10	Up to 5.0/ day or ~0.5/ pile	None
Terminal 4B	18-inch steel pipe pile	Installation	Vibratory hammer	Up to 15	Up to 6	Up to 6	Up to 3.0/ day or ~0.5/ pile	None
Terminal 4A	24-to-30-inch steel pipe pile	Installation	Vibratory hammer	Up to 24	Up to 18	Up to 6	Up to 6.0/ day or ~1.0/ pile	None

Table 2. Summary of In-water Pile Removal and Installation for New AGP Export Terminal, Shiploader

Location	Pile Type and Size	Activity	Installation/ Removal Method	Number of Piles	Total Days of Operation	Piles per day	Avg. Hours Vibratory per Pile	Impact Strikes per Pile
Permanent Piles								
Terminal 4B	12-inch steel H sections	Removal	Vibratory hammer or direct pull	Up to 6	Up to 3	Up to 3	Up to 1.5/ day or ~0.5/ pile	None
Terminal 4B	16.5-inch concrete octagonal pile	Removal	Vibratory hammer, direct pull	Up to 27	Up to 9	Up to 8	Up to 8/ day or ~1.0/ pile	None
Terminal 4B	36-inch-diameter steel pipe pile	Installation	Vibratory and impact hammer	Up to 50	Up to 30	Up to 4	Up to 8/ day or ~2/ pile	Up to 2,400/ day or ~600/ pile
Terminal 4B	New 24-inch steel pipe pile	Installation	Vibratory and impact hammer	Up to 24	Up to 12	Up to 4	Up to 6/ day or ~1.5/ pile	Up to 2,000/ day or ~500/pile
Terminal 4B	12-inch steel H-piles	Installation	Vibratory hammer	Up to 6	Up to 3	Up to 3	Up to 1.5/ day or ~0.5/ pile	None
Temporary Piles								
Terminal 4B	24-inch steel pipe pile	Installation	Vibratory hammer	Up to 24	Up to 6	Up to 8	Up to 4/ day or ~0.5/ pile	None
Terminal 4B	24-inch steel pipe pile	Removal	Vibratory hammer	Up to 24	Up to 6	Up to 8	Up to 4/ day or ~0.5/ pile	None

1.2.3. Construction Schedule

Due to in-water work timing restrictions to protect Endangered Species Act (ESA)-listed salmonids, all planned in-water construction including pile removal and installation is limited to July 16–February 15. All piling removal and installation activities will occur within the in-water work window from July 16, 2024 to February 15, 2025.

The most conservative estimate of time required to complete pile installation and removal is 105 intermittent days. Pile installation will be conducted during standard daylight working hours between civil dawn and civil twilight. The daily construction window for pile removal will begin no sooner than 30 minutes after sunrise and will end 30 minutes prior to sunset to allow for pre- and post-pile removal marine mammal monitoring.

2. Avoidance and Minimization Measures

The Project has been designed to avoid and minimize impacts to aquatic resources to the greatest extent practicable. The sizes and configuration of the structures have been kept to the minimum necessary to support their needed functions. The following outlines avoidance and minimization measures (AMMs), and best management practices (BMPs) to minimize the extent of any effects on marine mammals and the aquatic environment.

2.1. Pile Driving Best Management Practices

The Project will implement BMPs during pile installation to limit impacts to marine mammals. Pile-driving BMPs include:

- To reduce underwater noise produced by impact pile driving, a bubble curtain will be used during impact pile installation.
- A vibratory hammer will be used to drive steel piles to the greatest extent possible to minimize underwater noise levels.
- Pile installation will be conducted during the pile installation work window of July 15 to February 15.
- Pile installation will occur only during daylight hours, when visual monitoring of marine mammals can be conducted.
- Prior to impact pile driving, the Contractor will be required to use a soft start. Soft start for impact drivers requires that Contractors provide an initial set of three strikes at reduced energy, followed by a 30-second waiting period and then two subsequent reduced-energy strike sets. No soft start will be required for vibratory pile installation or removal.
- Soft start shall be implemented at the start of each day's pile driving and at any time following cessation of pile driving for a period of 30 minutes or longer.
- Monitoring for marine mammals shall be completed in accordance with Section 8 of this document. The monitoring areas shall encompass all areas in which in-water or in-air noise could exceed Level A or Level B thresholds. Marine mammal monitoring shall avoid Level A harassment of sea lions and minimize Level A harassment of harbor seals and harbor porpoises during pile removal and driving activities.
- Visual monitoring of the monitoring zones (Figures 3 through 11) shall commence at least 30 minutes prior to the beginning of pile driving and removal activities each day and after each break of more than 30 minutes. Pile installation activities shall not occur if any part of the monitoring zones is obscured by weather or sea conditions. Take will be tallied against allowed take authorized by the IHA (Table 14). Level A harassment and/or Level B harassment of ESA-listed species is not proposed. If a species enters or approaches the Level B harassment

zone and that species is not authorized for take, pile driving and removal activities must shut down immediately.

2.2. Overwater Work Best Management Practices

The Project will employ typical construction BMPs for working over and near water. During construction, the Contractor is expected to mobilize cranes, tugs, and floating barges, including a derrick barge that will be moved into location with a tugboat. The crane will be used to conduct pile installation from barges, which are anticipated to remain on-site for the duration of construction. Impact minimization measures include the following:

- Netting or a similar system will be used to prevent demolition debris from falling into the Chehalis River.
- Excess or waste materials will not be disposed of or abandoned waterward of the ordinary high-water mark (OHWM) or allowed to enter surface waters. Waste material will be disposed of in an appropriate manner consistent with applicable local, State, and federal regulations.
- Construction materials will not be stored where wave action can cause materials to enter surface waters.

2.3. Spill Response and Prevention

Several measures have been incorporated into the Project to prevent a spill and minimize the potential effects in the unlikely event of a spill associated with tug and barge operation. These include:

- Fuel hoses, oil drums, oil or fuel transfer valves, fittings, and similar equipment will be checked regularly for leaks, and materials will be maintained and stored properly to prevent spills.
- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water. These actions will include beginning containment and cleanup efforts immediately upon discovery of the spill and completing them in an expeditious manner in accordance with all applicable local, State, and federal regulations. Spill response will take precedence over normal work. Cleanup will include proper disposal of any spilled material and used cleanup material.
- Oil-absorbent materials will be present on-site for use in the event of a spill or if any oil product is observed in the water.
- Vessel operators will have industry-standard spill containment equipment on board, including oil booms.
- Crane and pile hammer operators will evaluate the use of vegetable oil as a lubricant, rather than hydrocarbon-based lubricants, to the greatest extent possible.
- AGP will require that the selected Contractor create a Spill Prevention, Control, and Countermeasures Plan (SPCCP). The SPCCP will be developed, implemented, and maintained

to manage toxic materials associated with construction activities (e.g., equipment leakage, disposal of oily wastes, cleanup of spills, and storage of petroleum products/chemicals in contained areas away from streams and wetlands). The SPCCP will outline BMPs, responsive actions in the event of a spill or release, and notification and reporting procedures. The SPCCP will also outline management elements such as personnel responsibilities, site security, site inspections, and training.

- Applicable spill response equipment and material designated in the SPCCP will be maintained at the job site.

3. Affected Species Status and Distribution

Washington's coastal waters support many species of marine mammals, including pinnipeds and cetaceans, some of which are found within Grays Harbor and its tributaries. Several MMPA protected species could occur within the project vicinity (Table 3). Take is proposed for the California sea lion (*Zalophus californianus*), Stellar sea lion (*Eumetopias jubatus*), harbor seal (*Phoca vitulina richardii*), and harbor porpoise (*Phocoena phocoena*).Take is not proposed for any species listed under the ESA. Any species and critical habitat not discussed in this IHA were determined to not be present and/or it was determined that the proposed activities will have no effect on the species and critical habitat.

Table 3. Marine Mammals with Potential to Occur in Project Vicinity

Species	Functional Hearing Group	ESA Listing Status	MMPA Status	Timing and Occurrence/ Frequency of Occurrence	Stock Abundance[1]
Harbor Seal (*Phoca vitulina richardii*)	Phocid	Not listed	Non-depleted	Year-round/ Common	24,732
California Sea Lion (*Zalophus californianus*)	Otariid	Not listed	Non-depleted	August–April/ Common	257,606
Eastern DPS Steller Sea Lion (*Eumetopius jubatus*)	Otariid	Delisted	Non-depleted	August–April/ Occasional	43,201
Harbor Porpoise (*Phocoena phocoena*)	High frequency	Not listed	Non-depleted	May–June (peak)/ Common	21,487

Note: DPS = Distinct Population Segment; ESA = Endangered Species Act; MMPA = Marine Mammal Protection Act.

[1] Stock abundance was obtained from NOAA marine mammal stock assessment reports (Carretta et al. 2022;U.S. Pacific marine mammal stock assessments: 2021 (noaa.gov); M.M. Muto et al. 2020; STELLER SEA LION (Eumetopias jubatus): Eastern U.S. Stock (noaa.gov)). NULL

3.1. Affected Species Status and Distribution

This section provides a description of the status, distribution, and seasonal distribution (when applicable) of each of the affected species or stocks of marine mammals likely to be affected by project activities.

3.1.1. Harbor Seal

The harbor seal (*Phoca vitulina richardii*) is protected under the MMPA and inhabits temperate coastal habitats (NMFS 2023a). The species hauls out on rocks, reefs, and beaches to rest, regulate body temperature, give birth, nurse pups, and molt. Harbor seals feed in both deep and shallow coastal waters and their diet consists primarily of fish, crustaceans, and mollusks. The harbor seal is not listed as "endangered" or "threatened" under the ESA or designated as "depleted" under the MMPA.

Harbor seals in Grays Harbor are part of the Oregon/Washington Coast Stock. In Grays Harbor, pups are born from mid-April through July (Washington Department of Fish and Wildlife [WDFW] 2012). Harbor seals are the most common and the only pinniped that breeds and remains in the inland

marine waters of Washington year-round (Calambokidis and Baird 1994). According to the 2014 Stock Assessment Report, the most recent estimate (2003) for the Oregon/Washington Coast Stock is 24,732 (Carretta et al. 2022).

3.1.1.1. Distribution

Harbor seals are the most common and widely distributed pinniped found in Washington waters and the most numerous marine mammal species in Grays Harbor (Jeffries et al. 2000). Harbor seals are non-migratory and generally remain in the same area throughout the year for breeding and feeding. Pupping seasons in coastal estuaries vary geographically; in Willapa Bay, and Grays Harbor, pups are born from mid-April through June (Jeffries et al. 2003). Their local movements are associated with such factors as tides, weather, season, food availability and reproduction (Fisher 1952; Bigg 1969). They are not known to make extensive pelagic migrations, although some long-distance movements of tagged animals in Alaska (108 miles) and along the U.S. west coast (up to 342 miles) have been recorded (Pitcher and McAllister 1981; Brown and Mate 1983; Herder 1983).

Harbor seals haul out on rocks, reefs, and beaches, and feed in marine, estuarine, and occasionally fresh waters. Harbor seals display strong fidelity for haul-out sites (Pitcher and Calkins 1979; Pitcher and McAllister 1981). According to WDFW's atlas of seal and sea lion haulout sites (Jeffries et al. 2000), all haul-outs in Grays Harbor are associated with tidal flats; at high tide it is assumed that these animals are foraging elsewhere in the estuary. The nearest documented harbor seal haul-out site to the Project site is a low-tide haul-out located 6 miles to the west.

There are no harbor seal density estimates for Grays Harbor, but the Navy Marine Species Density Database (NMSDD) estimates the density of harbor seals in the waters offshore of Grays Harbor as 0.3424 animals per square kilometer (NMFS 2020a). However, harbor seals are anticipated to be more common within Grays Harbor than within offshore areas. Therefore, this density estimate may underestimate densities for the project site. To better estimate harbor seal densities at the project site, recent IHA's (NMFS 2020b), aerial surveys (WDFW 2014), and marine mammal monitoring reports (WSDOT 2019) were reviewed. Additionally anecdotal statements from Port staff were gathered. In 2014, a harbor seal aerial survey was completed for Grays Harbor (WDFW 2014). Approximately 5,674 individuals (2,176 of which were pups) were identified on 6/3/2014 within grays harbor and 4,994 (1,522 of which were pups) on 6/17/2014. A 2020 IHA used these results to estimate a harbor seal abundance of 30.85 individuals per km^2 in Grays Harbor. This was used in this IHA analysis as a conservative surrogate for density within Grays Harbor. However, these aerial survey counts included large haulout areas near the outlet of Grays Harbor over 4.5 miles from the Project site. The majority of these areas are outside of the area of ensonification for this project. Additionally, the aerial surveys were completed in June during the pupping season when populations would be anticipated to be higher. Pile driving would occur during the in-water work window (July 15 to February 15) and outside of the pupping season. Therefore, this density estimate is anticipated to be an overestimate

3.1.2. California Sea Lion

The California sea lion (*Zalophus californianus*) is protected under the MMPA and occurs in the shallow waters of the eastern North Pacific Ocean (NMFS 2023b). California sea lions on the West Coast are divided into three stocks based on the locations of breeding concentrations on islands located in southern California, western Baja California, and the Gulf of California. The California sea lion is not listed as "endangered" or "threatened" under the ESA or as "depleted" under the MMPA.

Washington's California sea lions are part of the U.S. stock, which begins at the U.S./Mexico border and extends northward into Canada. Total population size in 2014 was estimated at 257,606 animals, with a pup count of 47,691 along the U.S. West Coast (Carretta et al. 2022).

3.1.2.1. Distribution

California sea lions breed on islands off Baja, Mexico, and southern California, with primarily males migrating north to feed in the northern waters (Everitt et al. 1980). Females remain in the waters near their breeding rookeries off California and Mexico. All age classes of males are seasonally present in Washington waters (Jeffries et al. 2000).

The California sea lion is the most frequently sighted sea lion found in Washington waters and uses haulout sites along the outer coast, the Strait of Juan de Fuca, and in Puget Sound. Haulout sites are located on jetties, offshore rocks and islands, log booms, marina docks, and navigation buoys. California sea lions do not avoid areas with heavy or frequent human activity, but rather may approach certain areas to investigate. The nearest documented California sea lion haulout sites to the Project site are at the Westport Docks, approximately 13 miles west of the Project site near the entrance to Grays Harbor (Jeffries et al. 2015), and another haulout observed in 1997 referred to as the mid-harbor flats located approximately 5.65 miles west of the Project site (WDFW 2022).

During six aerial surveys conducted in 2014 and 2015, a total of 113 California sea lions were observed in Grays Harbor on the Westport docks (Jeffries et al. 2015), located approximately 13 miles west of the Project site. According to the NMFS National Stranding Database, there were 10 confirmed California sea lion strandings in Grays Harbor between 2006 and 2015 (NMFS 2016).

No California sea lion density estimates are available for Grays Harbor. Because only 10 strandings have been documented between 2006 and 2015 (NMFS 2016) and 113 California sea lions observed at the Westport docks approximately 13 miles west of the Project site, it is expected that the density of California sea lions in Grays Harbor is low. The NMSDD estimates the density of California sea lions in the waters offshore of Grays Harbor as 1.4919 animals per km^2 in the spring, 0.02880 in the summer, 0.5573 in the fall, and 0.64930 in the winter (NMFS 2020a). Pile driving will occur from July 15 to February 15, and therefore 0.64930 animals per km^2 is used in the analysis as a conservative surrogate for density within Grays Harbor.

3.1.3. Steller Sea Lion

The Steller sea lion (*Eumetopias jubatus*) was delisted from the ESA and is protected under the MMPA. Stellar sea lions that occur along the Washington coast, including the project vicinity, are members of the Eastern Distinct Population Segment (DPS), ranging from Southeast Alaska to central California, including Washington. The species prefers beaches, ledges, and rocky reefs for breeding and hauling out (NMFS 2023c). Their diet varies throughout their range and at different times of the year and consists of a wide range of fish and cephalopods (including squid and octopus). The total count estimate of pups and non-pups for the U.S. portion of the Eastern DPS Steller sea lions (excluding Canada) is 43,201 (32,510 non-pups plus 10,691 pups), which is considered a minimum estimate (M.M. Muto et al. 2021).

3.1.3.1. Distribution

In Washington, Steller sea lions occur mainly along the outer coast from the Columbia River to Cape Flattery (Jeffries et al. 2000). Smaller numbers use the Strait of Juan de Fuca, the San Juan Islands, and Puget Sound south to about the Nisqually River mouth in Thurston and Pierce counties (Wiles 2015). The Eastern DPS of Steller sea lions has historically bred on rookeries located in Southeast Alaska, British Columbia, Oregon, and California. However, within the last several years, a new rookery has become established on the outer Washington coast at the Carroll Island and Sea Lion Rock complex (M.M. Muto et al. 2021). Most pups (86 percent) are born in rookeries in Southeast Alaska and British Columbia (Wiles 2015). Steller sea lions occupy 22 haulouts in Washington, the largest of which are on the outer Olympic coast (Wiles 2015).

During aerial surveys of Grays Harbor in 2014 and 2015, no Steller sea lions were observed, or no surveys were conducted for Steller sea lions in Grays Harbor (Jeffries et al. 2015). WDFW Priority Habitat and Species Data does not indicate any observances of Steller sea lions in Grays Harbor (WDFW 2022). The nearest documented Steller sea lion haul-out sites to the Project site are at Split Rock, 35 miles north of the entrance to Grays Harbor, and at the mouth of the Columbia River, 46 miles south of the entrance to Grays Harbor (Jeffries et al. 2000). A few Steller sea lions may haul out on buoys near the Westport marina, located 13 miles west of the Project site, or at Westport docks, similar to California sea lions.

According to the National Marine Fisheries Service (NMFS) National Stranding Database, there were four confirmed Steller sea lion strandings in Grays Harbor between 2006 and 2015 (NMFS 2016). No other confirmed Steller sea lion observations have been located specific to Grays Harbor.

No density estimates are available for Grays Harbor. Only four strandings have been documented between 2006 and 2015 (NMFS 2016), and no haulouts have been identified, it is expected that the density of Steller sea lions in Grays Harbor is low. The NMSDD estimates the density of Steller sea lions in the waters offshore of Grays Harbor as 0.1993 animals per km^2 in the summer, 0.16780 in the winter/spring, and 0.1390 in the fall (NMFS 2020a). The summer density estimate of 0.1993 per km^2 has been used as a conservative surrogate for density within Grays Harbor.

3.1.4. Harbor Porpoise

The harbor porpoise (*Phocoena phocoena*) is protected under the MMPA and occurs globally in temperate, subarctic, and arctic coastal and offshore waters. Diet consists primarily of schooling fish and occasionally includes squid and octopus (NMFS 2023d). The harbor porpoise is not listed as "endangered" or "threatened" under the ESA or as "depleted" under the MMPA.

Harbor porpoises are found in coastal and inland waters from Point Barrow, along the Alaskan coast, and down the west coast of North America to Point Conception, California. The Northern Oregon/Washington Coast Stock of harbor porpoise may be found near Grays Harbor. This stock occurs in waters from Lincoln City, Oregon, to Cape Flattery, Washington. The most recent abundance estimate (2010–2011) for the Northern Oregon/Washington Coast Stock in the coastal waters of northern Oregon (north of Lincoln City) and Washington is 21,487 harbor porpoises (Carretta et al. 2022).

3.1.4.1. Distribution

Harbor porpoises are known to occur year-round in the inland trans-boundary waters of Washington and British Columbia and along the Oregon/Washington coast (NOAA 2022). Little information exists on harbor porpoise movements and stock structure in Grays Harbor. The WDFW Puget Sound Ambient Monitoring Program data show that peaks in Washington waters occur during winter. Hall (2004) found that the frequency of sightings of harbor porpoises decreased with increasing depths beyond 150 meters, with the highest numbers observed at water depths ranging from 61 to 100 meters. Although harbor porpoises have been spotted in deep water, they tend to remain in shallower shelf waters (less than 150 meters), where they are most often observed in small groups of few individuals (Baird 2003).

According to the NMFS National Stranding Database, there were seven confirmed harbor porpoise strandings in Grays Harbor between 2006 and 2015 (NMFS 2016). The NMSDD estimates the density of harbor porpoises in the waters offshore of Grays Harbor as 0.467 animals per km^2 (NMFS 2020a) Therefore, an estimate of 0.467 animals per km^2 was used for this analysis as a conservative surrogate for density within Grays Harbor and the Project area.

4. Type of Incidental Taking Authorization Requested

Under Section 101(a)(5)(D) of the MMPA, the Port and AGP (as Project Applicants) are requesting an IHA for in-water pile driving and removal activities that could result in in-water noise levels above established noise thresholds.

Exposure to substantial in-water noise can result in a noise-induced hearing threshold shift in marine mammals. If the hearing threshold returns to normal after the exposure, this is considered a temporary threshold shift (TTS). If the hearing threshold does not return to normal for some extended period after the exposure, this is considered a permanent threshold shift (PTS). Using TTS and PTS data, NMFS has identified Level A (PTS) and Level B (potential behavioral disturbance) noise thresholds for marine mammals (NMFS 2020c). Level A harassment is defined as "*any act of pursuit, torment, or annoyance that has the potential to injure a protected marine mammal or marine mammal stock in the wild*". Level B harassment is defined as "a*ny act of pursuit, torment, or annoyance that has the potential to disturb a protected marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering, but does not have the potential to injure a marine mammal or marine mammal stock in the wild*" (NMFS 2020c).

Pile driving activities are anticipated to exceed Level A and Level B in-water noise thresholds. As discussed in additional detail in Section 6, project-related noise is not anticipated to exceed in-air noise thresholds at distances at which hauled out individuals could occur. No Level A harassment threshold has been established for in-air noise; therefore, only underwater noise Level A thresholds are considered. The requested authorization is for incidental harassment of any of four species of marine mammals that might enter areas in which project-related noise levels would exceed established Level A or Level B noise thresholds. These thresholds are summarized in Table 4. As discussed in further detail in Sections 6 and 8, marine mammal monitoring has been designed to avoid Level A harassment of sea lions and to minimize Level A harassment of harbor seals and harbor porpoises during pile removal and driving activities.

Table 4. Marine Mammal Injury and Disturbance Thresholds for Impulsive and Non-impulsive Sounds for the Species That Potentially Occur in the Area of Ensonification

Hearing Group	In-Air Thresholds	Underwater Thresholds				
	Level B	Impulsive (Impact)			Non-Impulsive (Vibratory)	
		Level A		Level B	Level A	Level B
	dB RMS	SPL_{peak}	dB SEL_{cum}	dB_{rms}	dB SEL_{cum}	dB_{rms}
Phocid Pinnipeds (harbor seal)	90	218	185	160	201	120
Otariid Pinnipeds (sea lions)	100	232	203	160	219	120
High-Frequency Cetaceans (harbor porpoise)	NA	202	155	160	173	120

5. Noise Analysis

5.1. Estimated Sound Production

Sound levels for each activity are estimated based on the pile type, size and the installation or removal methodology. Ideally, sound levels would be available for the same project area, pile type, size, and installation method; however, this is often not possible. Sound source levels were estimated using the beast available reference data.

5.1.1. In-water Noise Levels

Table 5 lists the method of installation, pile type, and anticipated sound levels for the various types of piles to be removed and installed below the high tide line for the proposed Project. A standard bubble curtain will be used during impact pile driving to attenuate noise and provide a 5-decibel (dB) noise reduction (NMFS 2022).

Table 5. Estimates of Unattenuated Underwater Sound Source Levels Generated during Vibratory and Impact Pile Installation and Vibratory Pile Removal

Method and Pile Type	Sound Level at 10 Meters		
Vibratory Hammer	dB_{rms}		
36-inch steel piles (installation)[1]	170		
30-inch steel pipe piles (installation)[2]	170		
24-inch steel piles (installation and removal)[3]	166		
18-inch steel pipe piles (installation)[4]	158		
12-inch steel H-piles (installation and removal)[5]	153		
18-inch creosote timber piles (removal)[6]	162		
16.5-inch concrete octagonal sections (removal)[6]	162		
Impact Hammer	dB_{rms}	dB_{SEL}	dB_{peak}
24-inch steel piles (single strike)[7]	193 (188)	180 (175)	205 (200)
36-inch steel piles (single strike)[8]	193 (188)	183 (178)	210 (205)

[1] Laughlin 2012 as cited in WSDOT 2020

[2] Laughlin 2010a as cited in WSDOT 2020. Noise levels were back-calculated to a 10 meter measurement distance assuming a 15 log transmission loss

[3] Laughlin 2010b as cited in WSDOT 2020

[4] Caltrans 2020

[5] Laughlin 2019 as cited in WSDOT 2020

[6] Data not available, anticipated noise levels are based on available noise levels for the vibratory removal of 20-inch diameter concrete piles (Naval Facilities Engineering Systems Command Southwest 2022). Noise levels were back-calculated to a 10 meter measurement distance assuming a 15 log transmission loss. Based on prior coordination with NMFS for the Johnson Pier Expansion and Dock Replacement Project IHA Request (M&N 2022) this data source is an acceptable surrogate for timber piles (Pers. comm. Cara Hotchkin 2023).

[7] Laughlin 2005, unattenuated data used as reference for 24-inch steel pipe piles driven in sandy/silt substrate. A 5dB attenuation applied in parenthesis for the use of a bubble curtain.

[8] Caltrans 2020, unattenuated data used as reference. A 5dB attenuation applied in parenthesis for the use of a bubble curtain.

Note: It is assumed that noise levels during vibratory pile installation and vibratory pile removal are similar.

5.1.2. Airborne Sound Source Levels

In-air noise data is based on reference data provided by the Washington State Department of Transportation (WSDOT) *Biological Assessment Preparation Manual* (WSDOT 2020). Impact and vibratory hammers are anticipated to produce in-air noise levels of up to 105 dBA (WSDOT 2020).

5.2. Estimated Zones of Influence

Determining the area(s) exceeding each threshold level (Level A and Level B) is necessary to estimate the number of animals that may be potentially exposed to Level A harassment or potential injury and Level B acoustical harassment, and to establish a monitoring area. Potential in-air and in-water threshold exceedances are identified in Sections 5.2.1 and 5.2.2.

5.2.1. In-air Zones of Influence

As discussed in Section 5.1.2, pile driving equipment could produce in-air noise levels of up to 105 dBA. The Project vicinity is predominantly flat with little to no trees or shrub cover. Within these "hard-site" conditions, Project-related noise will attenuate according to the spherical spreading loss model at approximately 6 dB per doubling distance (Federal Transit Administration [FTA] 2018).

Applying the spherical spreading loss model and considering hard site conditions, terrestrial noise generated during pile driving will attenuate to the phocid (harbor seal) behavioral disturbance threshold (90 dB) at 86 meters, and to the otariid (sea lion) threshold (100 dB) at 27 meters (Figure 3).

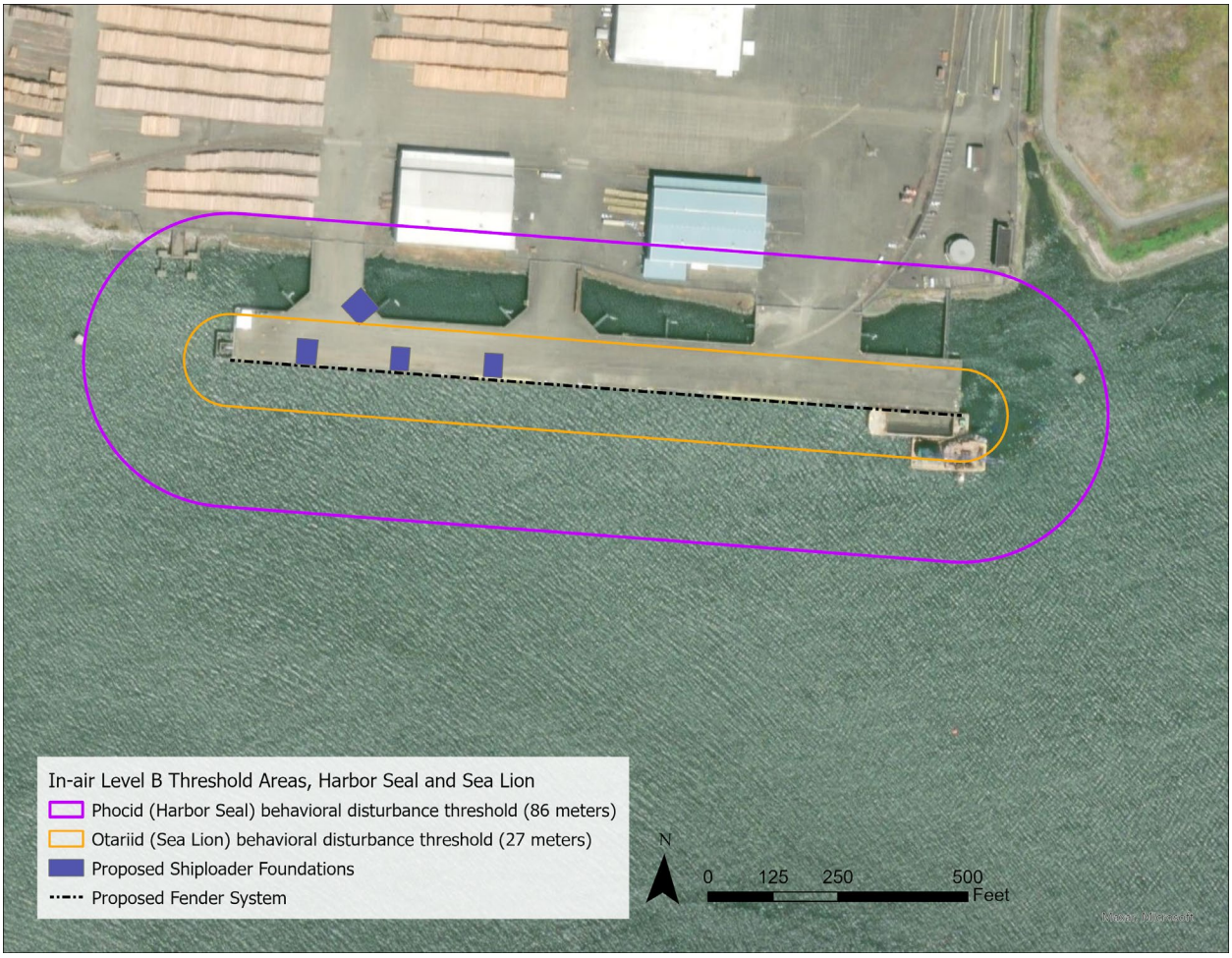

Figure 3. In-air Level B Threshold Areas, Harbor Seal and Sealions

5.2.2. In-water Zones of Influence

The NMFS User Spreadsheet (NMFS 2020c) was used to calculate in-water distances to Level A harassment isopleths from pile driving activities. The in-water distances to Level B (potential disturbance) were calculated using the practical spreading loss model assuming a 4.5 dB attenuation rate for each doubling distance (NMFS 2012). Distances to thresholds were calculated using the anticipated in-water pile removal and pile installation methods identified in Tables 1 and 2 and the anticipated noise levels discussed in Section 5.1.1 and 5.1.2. Distances to established Level A (PTS) and Level B (behavioral) thresholds are shown in Tables 6 through 9 and Figures 4 through 11.

The sizes of these zones are bounded by the shoreline of Grays Harbor. Additionally, at low tide the shallow bathymetry offshore creates a wide area of exposed intertidal mudflat that is not accessible to marine mammals swimming through the area.

Table 6. Level A Harassment Zones, Vibratory Installation and Removal of Piles

Pile Type	Level A Threshold		
	High-Frequency Cetaceans *173 dB SELcum*	**Phocid Pinnipeds** *201 dB SELcum*	**Otariid Pinnipeds** *219 dB SELcum*
36-inch steel piles (installation)	*161 meters*	*67 meters*	*5 meters*
24-to-30-inch steel pipe piles (installation)	*133 meters*	*55 meters*	*4 meters*
24-inch steel piles, permanent (installation)	*72 meters*	*30 meters*	*3 meters*
24-inch steel piles, temporary (installation and removal)	*55 meters*	*23 meters*	*2 meters*
18-inch steel pipe piles (installation)	*13 meters*	*6 meters*	*1 meter*
12-inch steel H-piles (installation and removal)	4 meters	2 meters	1 meter
18-inch creosote timber piles (removal)	35 meters	15 meters	1 meter
16.5-inch concrete octagonal sections (removal)	48 meters	20 meters	2 meters

Table 7. Level A Harassment Zones, Impact Installation of Piles

Pile Type	Level A Threshold		
	High-Frequency Cetaceans 155 dB SELcum	**Phocid Pinnipeds** 185 dB SELcum	**Otariid Pinnipeds** 203 db SELcum
36-inch steel piles (installation)	990 meters	445 meters	33 meters
24-inch steel piles, permanent (installation)	554 meters	249 meters	19 meters

Table 8. Level B Harassment Zones, Vibratory Pile Installation and Removal

Pile Type	Level B Threshold **All Marine Mammals** 120 dBrms
36-inch steel piles (installation)	21,545 meters
24-to-30-inch steel pipe piles (installation)	21,545 meters
24-inch steel piles, (installation and removal)	11,660 meters
18-inch steel pipe piles (installation)	3,415 meters
12-inch steel H-piles (installation and removal)	1,585 meters
18-inch creosote timber piles (removal)	6,310 meters
16.5-inch concrete octagonal sections (removal)	6,310 meters

Table 9. Level B Harassment Zones, Impact Pile Installation

Pile Type	Level B Threshold **All Marine Mammals** 160 dBrms
36-inch steel piles (installation)	736 meters
24-inch steel piles, permanent (installation)	736 meters

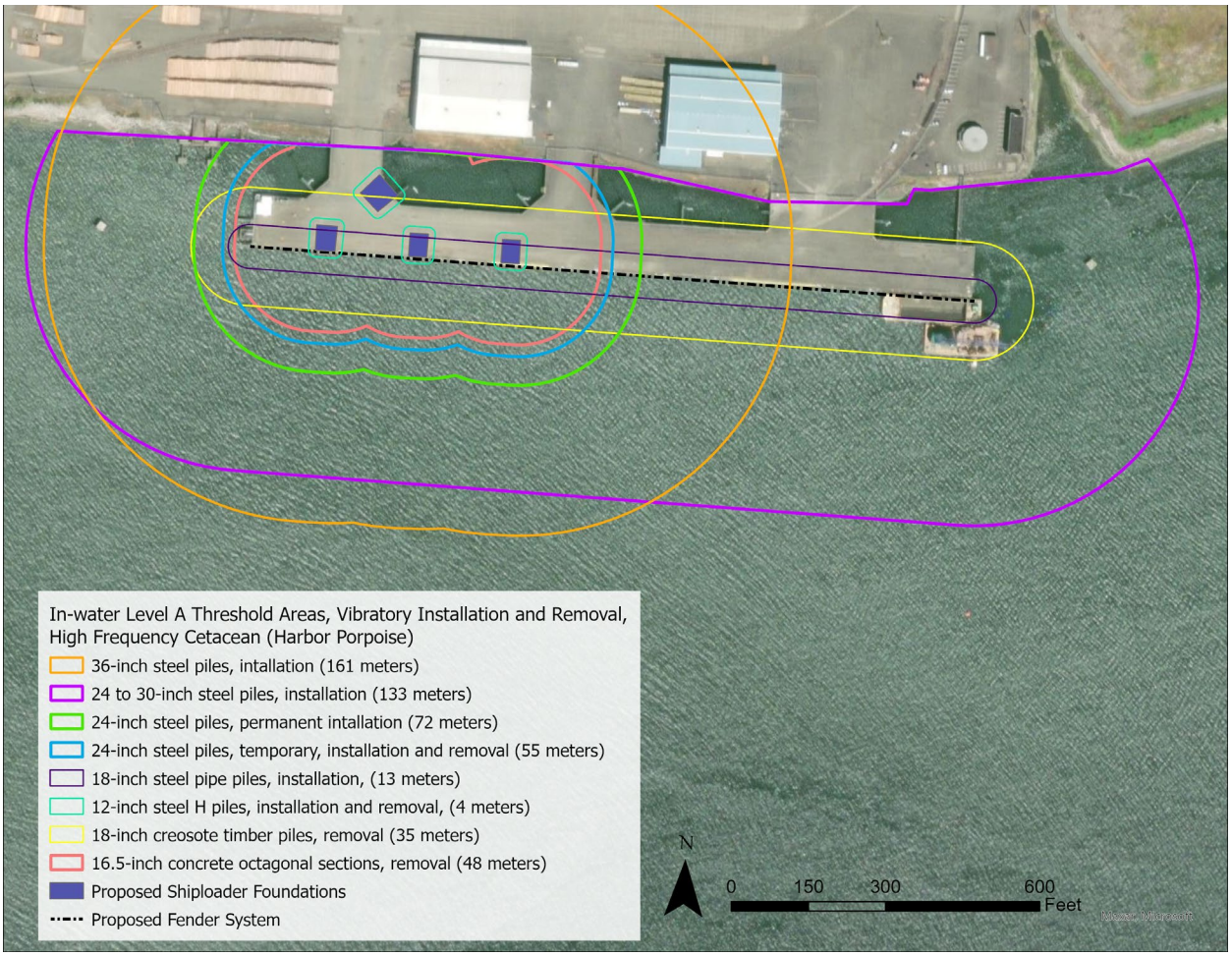

Figure 4. In-water Level A Threshold Areas, Vibratory Installation and Removal, High Frequency Cetacean (Harbor Porpoise)

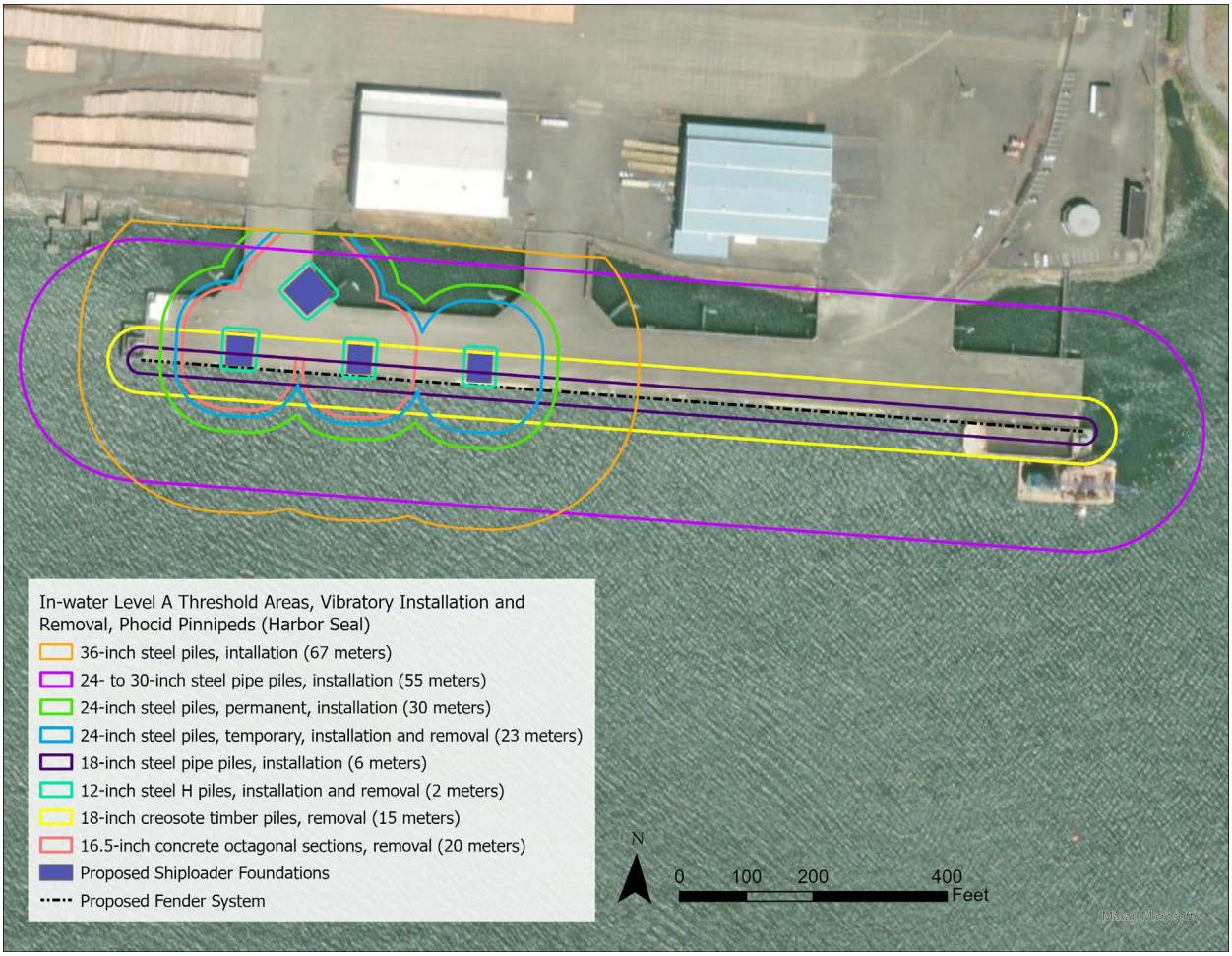

Figure 5. In-water Level A Threshold Areas, Vibratory Installation and Removal, Phocid Pinnipeds (Harbor Seal)

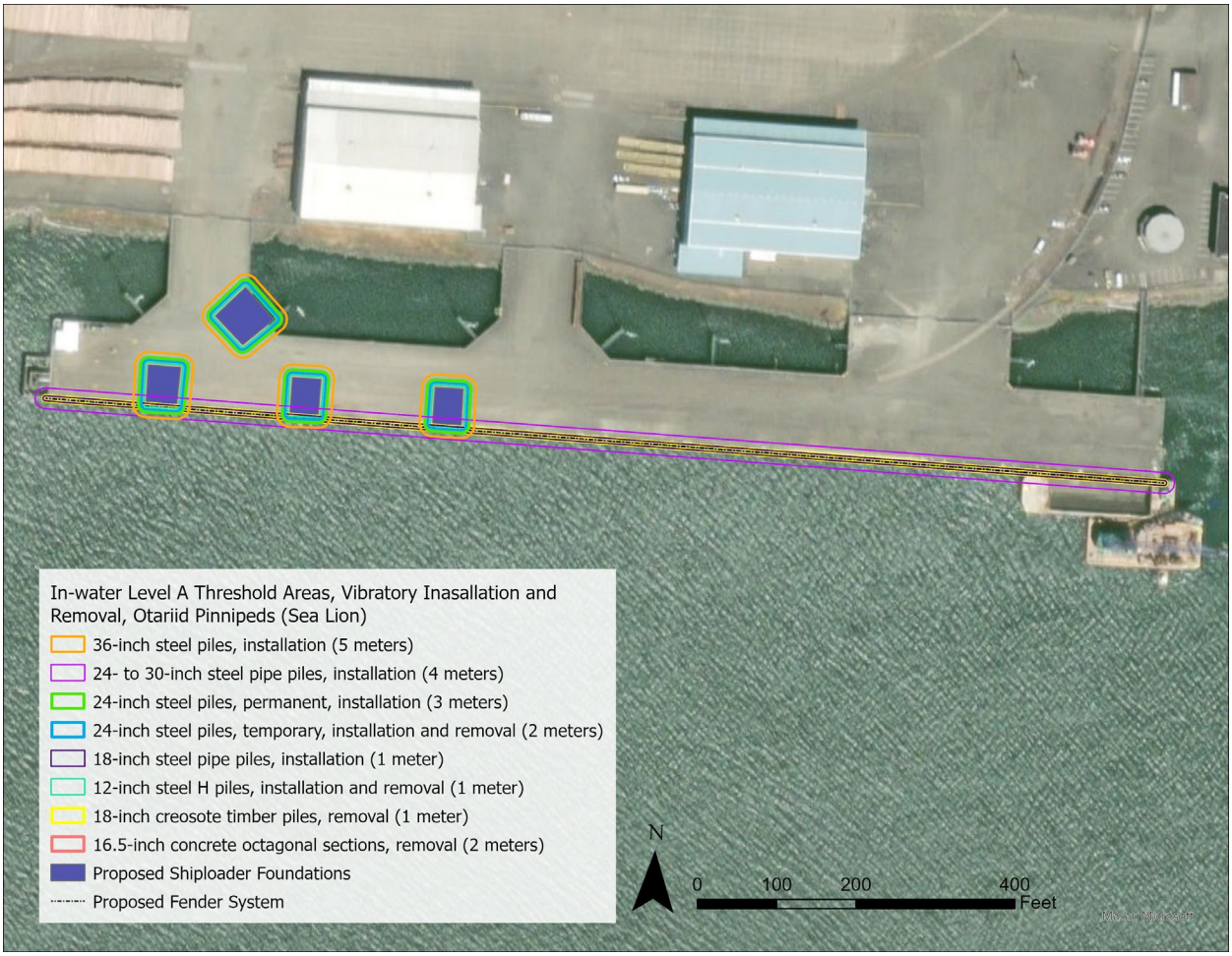

Figure 6. In-water Level A Threshold Areas, Vibratory Installation and Removal, Otariid Pinnipeds (Sea Lion)

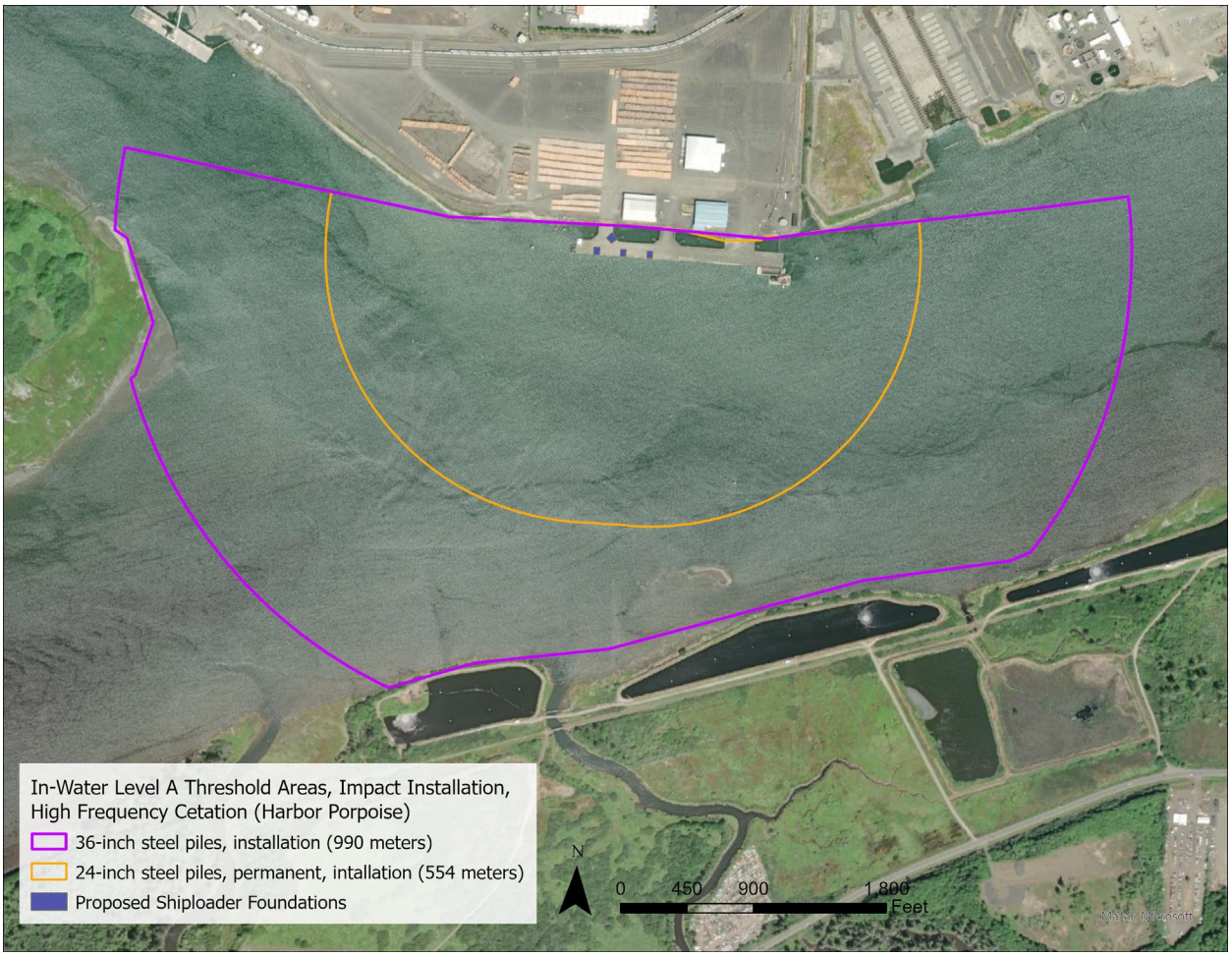

Figure 7. In-water Level A Threshold Areas, Impact Installation, High Frequency Cetacean (Harbor Porpoise)

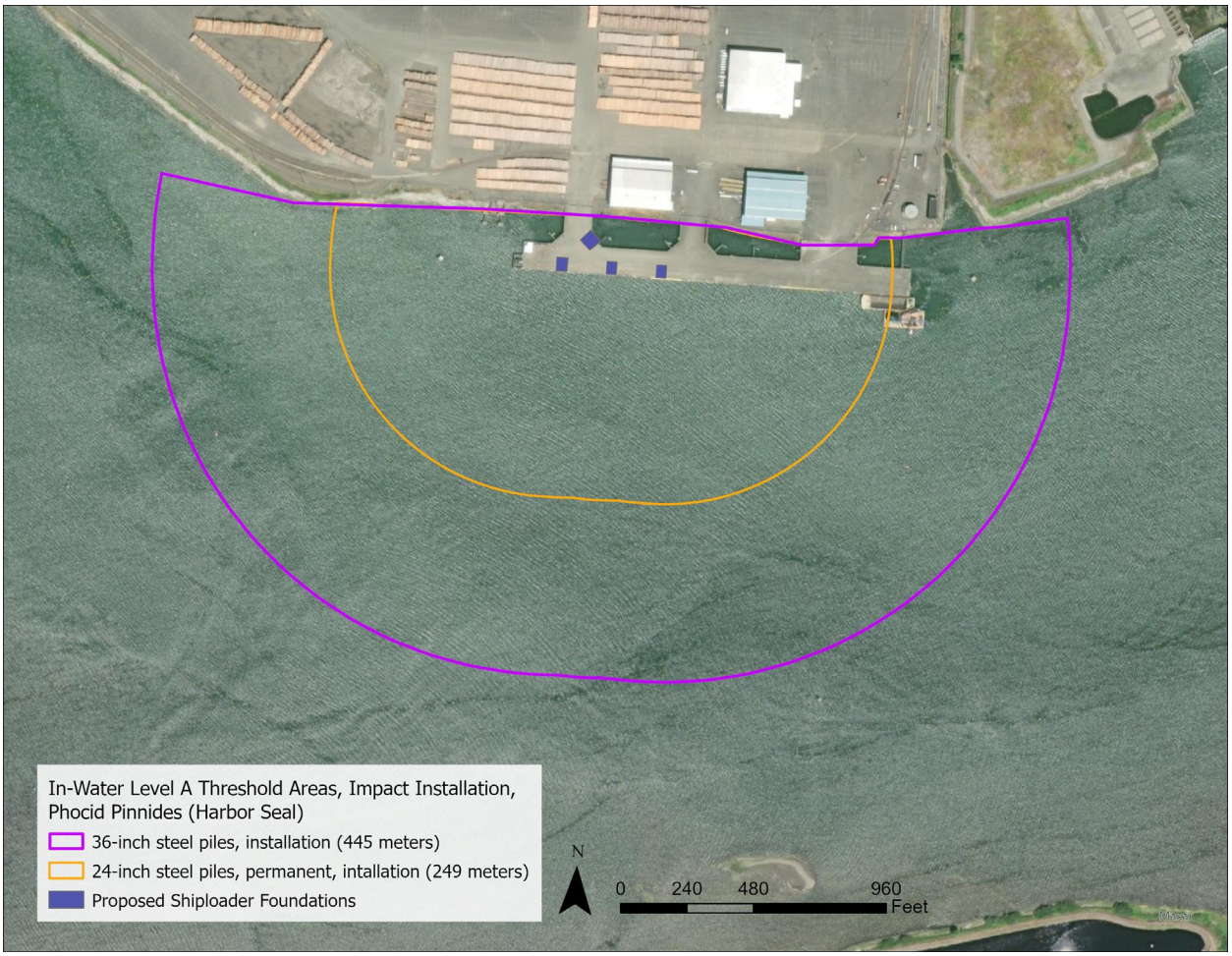

Figure 8. In-water Level A Threshold Areas, Impact Installation, Phocid Pinnipeds (Harbor Seal)

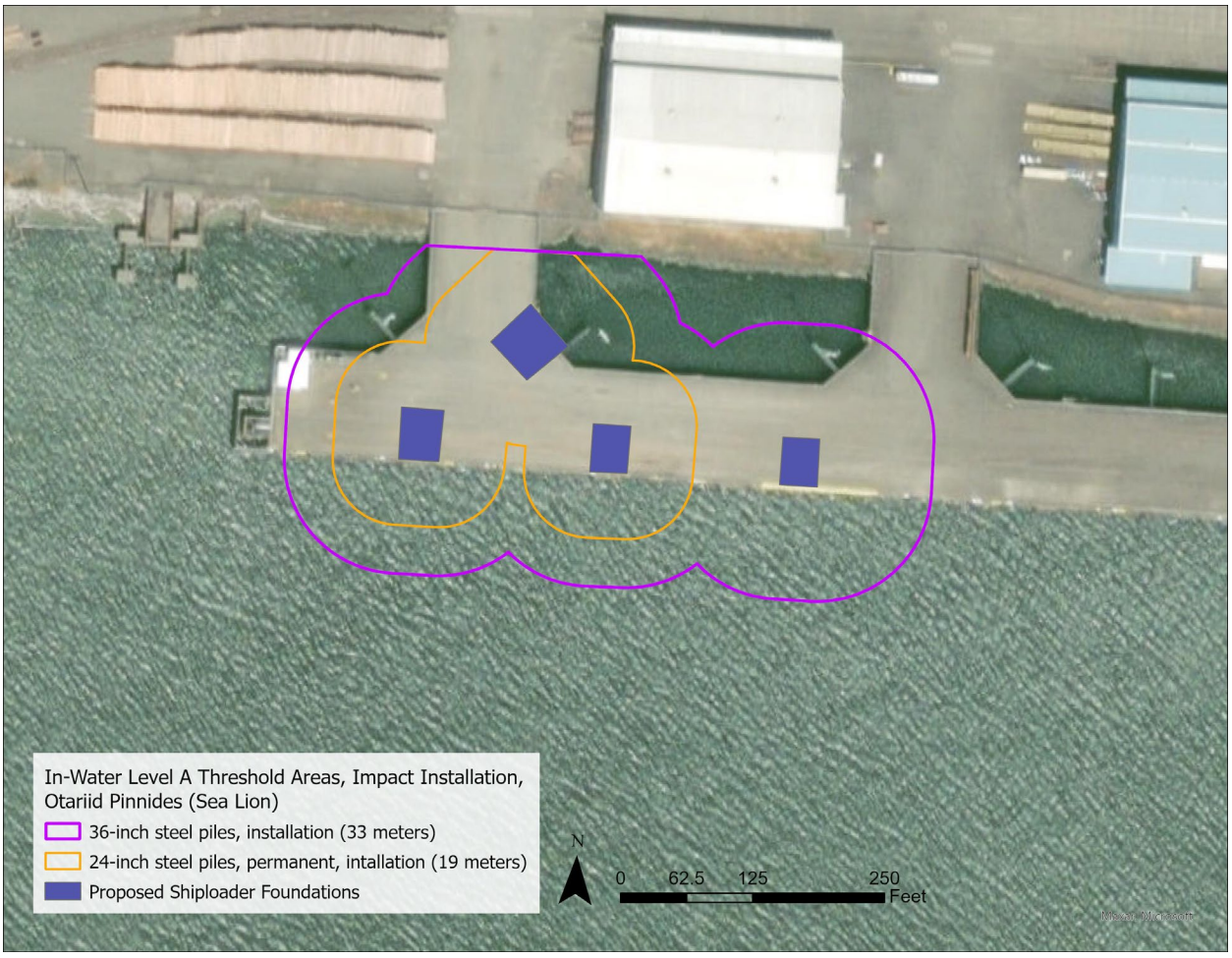

Figure 9. In-water Level A Threshold Areas, Impact Installlation, Otariid Pinnipeds (Sea Lion)

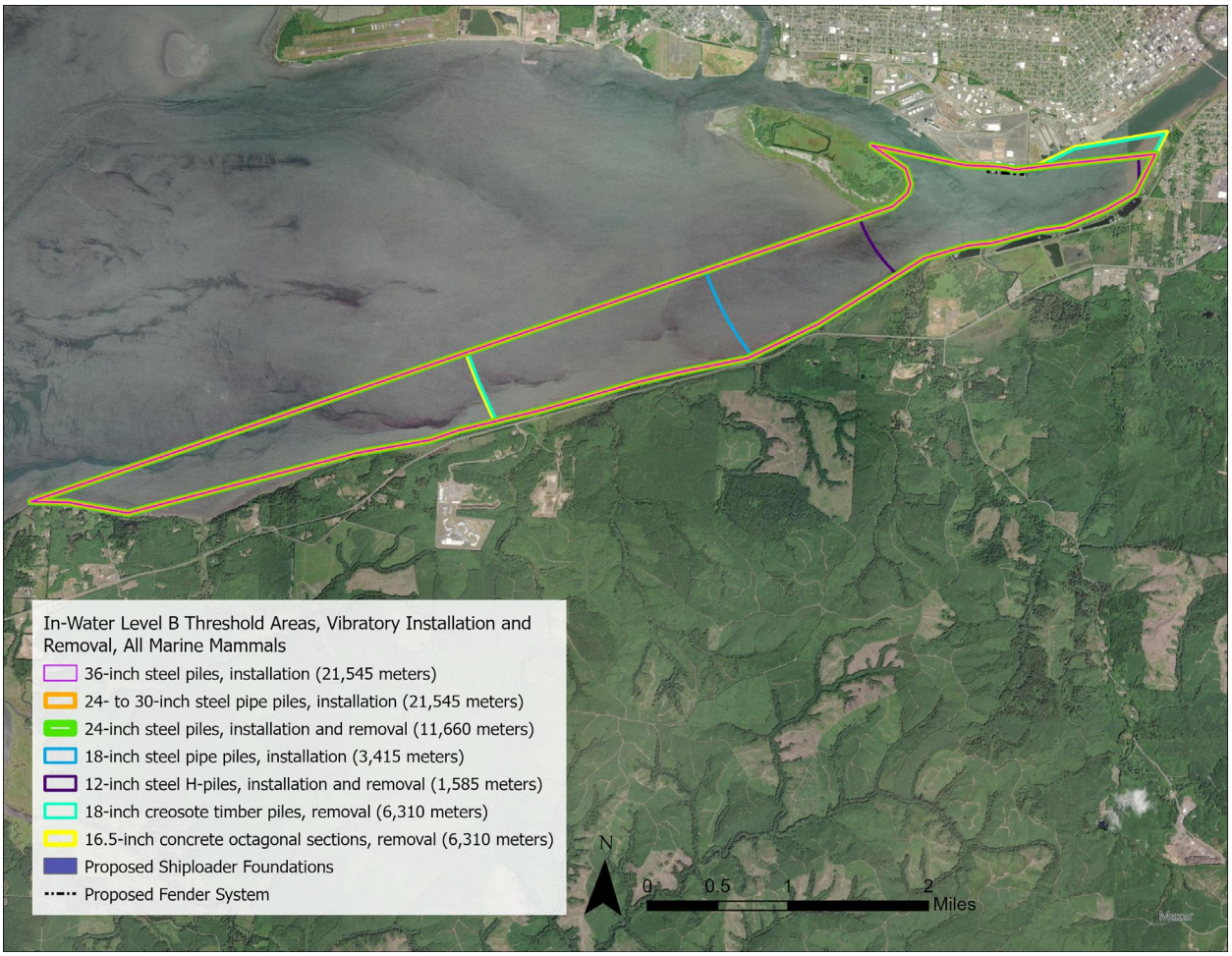

Figure 10. In-water Level B Threshold Areas, Vibratory Installation and Removal, All Marine Mammals

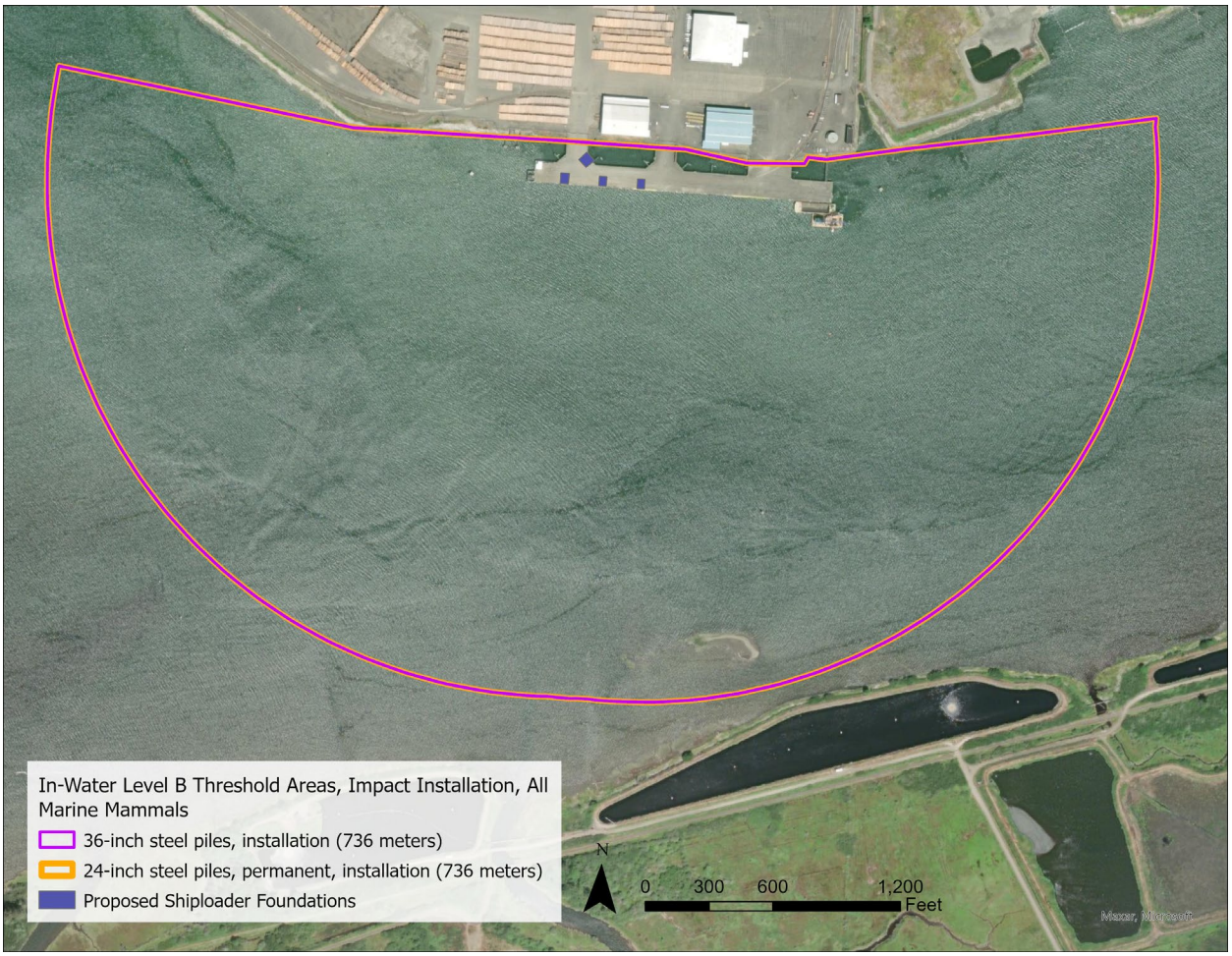

Figure 11. In-water Level B Threshold Areas, Impact Installation, All Marine Mammals

6. Take Estimates for Harbor Seals, Sea Lions and Harbor Porpoises

Take estimates are based on the calculated zones of influence (Section 5.2, Figures 3 through 11), anticipated likelihood of species occurrence within these zones, and total duration of the pile removal/driving activity. Expected marine mammal presence is determined by past observations and general abundance near the Project site during the construction window. Typically, potential take is estimated by multiplying the area of the Level A or Level B harassment zone by the local animal density. This provides an estimate of the number of animals that might occupy the Level A or Level B harassment zone at any given moment.

Incidental take for each activity is estimated by the following equation:

Incidental take estimate = species density × harassment zone area × days of pile installation + removal

The primary source for density estimates is from the Navy Marine Species Density Database (NMSDD) Phase III for the Northwest Training and Testing Study Area (Navy 2019). These density estimates will be used to calculate take due to the lack of site-specific data that is available. These represent conservative estimates, and the actual level of take is expected to be lower.

6.1. Harbor Seal

The only harbor seals expected to be present within this area during pile-driving activities are adult males and females. Juvenile harbor seals are not expected to be exposed, as there are no documented breeding rookeries within the area that could potentially be exposed to noise levels above the Level A or Level B harassment thresholds.

6.1.1. Level B Take

Estimated density of harbor seals in Grays Harbor is 30.85 animals per km^2 (NMFS 2020). This estimate was used to calculate estimated Level B take for harbor seals during driving of the various types of piles for the Project. However, as discussed in further detail in Section 3.1.1, this density estimate is likely an overestimate, but provides the best available data for the site. Anticipated take numbers are presented in Table 10. AGP and the Port are requesting authorization for incidental Level B take of 28,672 harbor seals. It is assumed that this number will include multiple harassments of the same individuals.

All the distances within which behavioral harassment (Level B) terrestrial noise levels could be exceeded are within the distances that will be monitored for underwater noise. Because no pinniped haulout sites occur within the Project-generated area of in-air noise, no pinnipeds are expected to haul out within the area exceeding the Level B disturbance in-air noise thresholds. As a result, any marine mammal that enters the area in which Level B terrestrial noise levels could be exceeded will be in an aquatic environment and will be recorded as a Level B take resulting from underwater noise. Therefore, no additional takes are anticipated as a result of temporarily elevated terrestrial noise levels.

Table 10. Level B Harassment Zone Take Estimates for Harbor Seals

Pile Type	Installation/ Removal Method	Harbor Seal Density per km²	Days of Pile Driving	Level B Area (km²)	Level B Take Estimate
36-inch steel piles (installation)	Vibratory, impact to proof	30.85	Up to 30	10.2	9,440.1
24-to-30-inch steel pipe piles (installation)	Vibratory	30.8	Up to 18	10.2	5,664.1
24-inch steel piles, permanent (installation)	Vibratory Impact to proof	30.85	Up to 12	10.2	3,776.0
24-inch steel piles, temporary (installation and removal)	Vibratory	30.85	Up to 12	10.2	3,776.0
18-inch steel pipe piles (installation)	Vibratory	30.85	Up to 6	4.3	795.9
12-inch steel H-piles (installation and removal)	Vibratory	30.85	Up to 6	2.3	425.7
18-inch creosote timber piles (removal)	Vibratory	30.85	Up to 12	7.4	2,739.5
16.5-inch concrete octagonal sections (removal)	Vibratory	30.85	Up to 9	7.4	2,054.6
Total					**28,672**

6.1.2. Level A Take

The Level A harassment zone varies from two to 67 meters during vibratory pile installation. Harbor seals are not anticipated to occur within these small areas. During impact pile driving, the Level A threshold area varies from 245 to 449 meters. Due to the large size of the Level A harassment zone during impact pile driving and relatively common occurrence of harbor seals in the area (WDFW 2014, WSDOT 2019), Level A take of eighty (80) harbor seals is requested.

6.2. California Sea Lion

The nearest documented California sea lion haulout sites to the Project site are at the Westport Docks, approximately 13 miles west of the Project site near the entrance to Grays Harbor (Jeffries et al. 2015), and another haulout observed in 1997 referred to as the mid-harbor flats located approximately 5.65 miles west of the Project site. California sea lions have been documented to use haulout sites in Grays Harbor (Jeffries et al. 2000), but most individuals expected to be present in the Project Area are adult males and females foraging or moving through the area.

6.2.1. Level B Take

The NMSDD (Navy 2019) estimates the density of California sea lions in the waters offshore of Grays Harbor as 0.0288 and 0.5573 animals per square kilometer in summer and fall, respectively. This higher fall density estimate will be used as a surrogate for Grays Harbor to coincide with the in-water work window when pile driving will occur. Based on this density estimate, the number of California sea lions that may be present in the Level B harassment zone is presented in Table 11. AGP and the Port are therefore requesting authorization for Level B take of 518 California sea lions. It is assumed that this number will include multiple harassments of the same individuals.

All the distances within which behavioral harassment (Level B) terrestrial noise levels could be exceeded are within the distances that will be monitored for underwater noise. Because no pinniped haulout sites occur within the Project-generated area of in-air noise, no pinnipeds are expected to haul out within the area exceeding the Level B disturbance in-air noise thresholds. As a result, any marine mammal that enters the area in which Level B terrestrial noise levels could be exceeded will be in an aquatic environment and will be recorded as a Level B take resulting from underwater noise. Therefore, no additional takes are anticipated as a result of temporarily elevated terrestrial noise levels.

Table 11. Level B Harassment Zone Take Estimates for California Sea Lions

Pile Type	Installation/ Removal Method	California Sea Lion Density per km^2	Days of Pile Driving	Level B Area (km^2)	Level B Take Estimate
36-inch steel piles (installation)	Vibratory, impact to proof	0.64930	Up to 30	10.2	198.7
24-to-30-inch steel pipe piles (installation)	Vibratory	0.64930	Up to 18	10.2	119.2
24-inch steel piles, permanent (installation)	Vibratory, Impact to proof	0.64930	Up to 12	10.2	79.5
24-inch steel piles, temporary (installation and removal)	Vibratory	0.64930	Up to 12	10.2	79.5
18-inch steel pipe piles (installation)	Vibratory	0.64930	Up to 6	4.3	16.8
12-inch steel H-piles (installation and removal)	Vibratory	0.64930	Up to 6	2.3	9.0
18-inch creosote timber piles (removal)	Vibratory	0.64930	Up to 12	7.4	57.7
16.5-inch concrete octagonal sections (removal)	Vibratory	0.64930	Up to 9	7.4	43.2
Total					**604**

6.2.2. Level A Take

The Level A harassment zone varies from one (1) to five (5) meters during vibratory pile installation and 19 to 33 meters during impact pile driving. California sea lions are not anticipated to occur within

these small areas. No Level A take is anticipated or requested for California sea lions due to the small area of the Level A harassment zone.

6.3. Steller Sea Lion

Steller sea lions that may be in Grays Harbor are expected to be a mix of solitary adult males and females. Juvenile Steller sea lions are not anticipated to be exposed to Level B harassment zones, as there are no documented breeding rookeries within or near the area that could potentially be exposed to noise levels above the Level B harassment threshold.

6.3.1. Level B Take

The NMSDD (Navy 2019) estimates the density of Steller sea lions in the waters offshore of Grays Harbor as 0.1993 and 0.1390 animals per square kilometer in summer and fall, respectively. The lower density fall estimate will be used as a surrogate for Grays Harbor to coincide with the in-water work window when pile driving will occur. Based on this density estimate, the number of Steller sea lions that may be present in the Level B harassment zone is presented in Table 12. AGP and the Port are therefore requesting authorization for Level B take of 129 Steller sea lions. It is assumed that this number will include multiple harassments of the same individuals.

The distances within which behavioral harassment (Level B) terrestrial noise levels could be exceeded are within the distances that will be monitored for underwater noise. Because no pinniped haulout sites occur within the Project-generated area of in-air noise, no pinnipeds are expected to haul out within the area exceeding the Level B disturbance in-air noise thresholds. As a result, any marine mammal that enters the area in which Level B terrestrial noise levels could be exceeded will be in an aquatic environment and will be recorded as a Level B take resulting from underwater noise. Therefore, no additional takes are anticipated as a result of temporarily elevated terrestrial noise levels.

Table 12. Level B Harassment Zone Take Estimates for Steller Sea Lions

Pile Type	Installation/ Removal Method	Stellar Sea Lion Density per km^2	Days of Pile Driving	Level B Area (km^2)	Level B Take Estimate
36-inch steel piles (installation)	Vibratory, impact to proof	0.1993	Up to 30	10.2	61.0
24-to-30-inch steel pipe piles (installation)	Vibratory	0.1993	Up to 18	10.2	36.6
24-inch steel piles, permanent (installation)	Vibratory Impact to proof	0.1993	Up to 12	10.2	24.4
24-inch steel piles, temporary (installation and removal)	Vibratory	0.1993	Up to 12	10.2	24.4
18-inch steel pipe piles (installation)	Vibratory	0.1993	Up to 6	4.3	5.1
12-inch steel H-piles (installation and removal)	Vibratory	0.1993	Up to 6	2.3	2.8

Pile Type	Installation/ Removal Method	Stellar Sea Lion Density per km²	Days of Pile Driving	Level B Area (km²)	Level B Take Estimate
18-inch creosote timber piles (removal)	Vibratory	0.1993	Up to 12	7.4	17.7
16.5-inch concrete octagonal sections (removal)	Vibratory	0.1993	Up to 9	7.4	13.3
Total					**186**

6.3.2. Level A Take

The Level A harassment zone varies from one (1) to five (5) meters during vibratory pile installation and 19 to 33 meters during impact installation. Steller sea lions are not anticipated to occur within these small areas. No Level A take is anticipated or requested for Steller sea lions due to the small area of the Level A harassment zone.

6.4. Harbor Porpoise

6.4.1. Level B Take

The NMSDD (Navy 2019) estimates the density of harbor porpoises in the waters offshore of Grays Harbor as 0.467 animals per km². Because this estimate is based on offshore observations, it is a very conservative estimate for the number of harbor porpoises that are expected to be within Grays Harbor, and in particular the number that would move upstream into areas impacted by the Project. As described in Section 3.1.5, a seasonal factor was applied to the density estimate for harbor porpoise to account for potential seasonal presence during the in-water work window when pile-driving activities would occur. The resulting estimate of 0.131 was used for this analysis as a conservative surrogate for density within Grays Harbor and the Project Area. Based on this density estimate, the number of harbor porpoises that may be present in the Level B harassment zone is presented in Table 13. AGP and the Port are therefore requesting authorization for Level B take of 122 harbor porpoises. It is assumed that this number will include multiple harassments of the same individuals.

Table 13. Level B Harassment Zone Take Estimates for Harbor Porpoise

Pile Type	Installation/ Removal Method	Harbor Porpoise Density per km²	Days of Pile Driving	Level B Area (km²)	Level B Take Estimate
36-inch steel piles (installation)	Vibratory, impact to proof	0.467	Up to 30	10.2	142.9
24-to-30-inch steel pipe piles (installation)	Vibratory	0.467	Up to 18	10.2	85.7
24-inch steel piles, permanent (installation)	Vibratory Impact to proof	0.467	Up to 12	10.2	57.2
24-inch steel piles, temporary (installation and removal)	Vibratory	0.467	Up to 12	10.2	57.2
18-inch steel pipe piles (installation)	Vibratory	0.467	Up to 6	4.3	12.0

Pile Type	Installation/ Removal Method	Harbor Porpoise Density per km²	Days of Pile Driving	Level B Area (km²)	Level B Take Estimate
12-inch steel H-piles (installation and removal)	Vibratory	0.467	Up to 6	2.3	6.4
18-inch creosote timber piles (removal)	Vibratory	0.467	Up to 12	7.4	41.5
16.5-inch concrete octagonal sections (removal)	Vibratory	0.467	Up to 9	7.4	31.3
Total					**434**

6.4.2. Level A Take

The Level A harassment zone varies from 48 to 161 meters during vibratory pile installation. It is considered unlikely that harbor porpoises would occur within these small threshold areas. During impact pile driving, the Level A threshold area varies from 554 to 990 meters. Due to the large size of the Level A harassment zone during impact pile driving, Level A take of twenty (20) harbor porpoises is being requested.

6.5. Summary of Requested Takes

The total number of takes for which Level B acoustical harassment authorization is requested is summarized in Table 14. Many takes will very likely be multiple takes of individuals, rather than single takes of unique individuals. The stock take calculations below assume takes of individual animals, instead of repeated takes of a smaller number; therefore, the stock take percentage calculations are very conservative. The take request for each species is below the 20-percent-of-stock threshold.

Table 14: Summary of Requested Takes

Species	Stock	Level A Take Request	Level B Take Request	% of Stock (take/ abundance*100)
Pacific harbor seal	OR/WA coastal stock	80	318	<20%*
California sea lion	U.S. stock	0	604	~1.3%
Steller sea lion	Eastern DPS	0	186	<1%
Harbor porpoise	Northern Oregon/ Washington Coast	20	434	~2%

Take as a percentage of the overall stock for harbor seals is representative of the proportion of the total west coast stock (OR, WA, CA) that are known to reside within Grays Harbor. To yield the estimated harbor seal abundance within Grays Harbor, the total adult counts from 2015 Grays Harbor aerial surveys (Jefferies et. al. 2015) were multiplied by the regional correction factor of 1.43 (Huber *et al.,* 2001) to account for missing animals. The Grays Harbor population represents approximately 20% of the overall stock.

(6,970 total average adult count * 1.43) / (2 surveys)) / 24,732 total stock abundance = 0.2

While actual Take numbers are higher, it is assumed that this number will include multiple harassments of the same individuals.

7. Anticipated Impact of the Activity

7.1. Noise

7.1.1. In-water

If incidental takes occur, they are expected to mainly result in only short-term changes in behavior and potential temporary hearing threshold shift. Level A take has been avoided to the extent feasible. The proposed take requests are not anticipated to impact stock recruitment or survival and therefore would have a negligible impact on the stocks of these species. The estimated Level A and Level B take is low compared to the overall marine mammal stocks.

Noise can produce short-term and long-term effects on marine mammals. Exposure to elevated noise for sufficient duration can result in a loss of hearing sensitivity or a threshold shift. If the hearing threshold shift returns to baseline this is considered a TTS, which can occur due to noise exposures over the Level B threshold (NMFS 2023e). If hearing thresholds do not return to baseline and remain elevated for an extended period, this is a PTS, which can result from exposures to noise levels above the Level A threshold (NMFS 2023e). Level A threshold exceedances can also result in lung or gastrointestinal tract injury.

Risk of exposure to Level A threshold exceedances is limited. It is anticipated that up to eighty (80) harbor seals and twenty (20) harbor porpoises could be exposed to noise levels that exceed the Level A threshold. Sea lions are not anticipated to be exposed to Level A threshold exceedances. As discussed in Section 8, many takes will likely be multiple takes of the same individuals, rather than single takes of unique individuals. Exposure to noise levels above the Level B threshold may occur regularly during the duration of the project. Noise levels above the Level B threshold can result in temporary threshold shifts and behavioral responses. However, it is likely that harbor seals, sea lions and harbor porpoises that occur within proximity to the project and that are exposed to noise levels above the Level B threshold, are habituated to high levels of in-water and in-air noise given the level of human and Port activities within the vicinity.

Marine mammals may exhibit behavior that indicates that they are startled by noise, and they may swim away from the project area. This could result in increased swimming by marine mammals, increased time spent out of water, including haul out time and surface time, which may result in a temporary decrease in their foraging in the affected area. This avoidance behavior is expected to be short-term in duration, and upon conclusion of the pile driving period, it is anticipated that marine mammal activity will return to baseline levels. It is unlikely that work will result in a permanent displacement of marine mammals from the area. No population-level impacts are anticipated to the species nor are any population-level impacts anticipated to the long-term fitness of any of the marine mammal species covered in this application.

7.1.2. In-air

The in-air Level B threshold area for harbor seals and sea lions is small and would not overlap with any known haulouts. Given the small threshold area and uncommon occurrence of hauled out Harbor seals and sea lions within the vicinity, it is considered unlikely that they will be behaviorally disturbed by in-air noise levels.

7.2. Anticipated Impacts on Subsistence Uses

The Project will take place at the mouth of the Chehalis River in the west end of Grays Harbor, Washington. No activities will take place in or near a traditional tribal hunting place. Therefore, the Project will have no impact on subsistence.

7.3. Anticipated Impacts on Habitat

Construction activities will have temporary impacts on marine mammal habitat through increases in in-water and in-air noise levels from vibratory pile removal and installation. Other potential temporary impacts are changes to water quality (increases in turbidity levels) and prey species distribution. AGP will use BMPs and minimization practices, outlined in Section 11, to minimize potential environmental effects from Project activities.

Project-related pile removal will not obstruct movements of marine mammals. Pile removal will occur within approximately 60 meters of the shoreline, leaving approximately 630 meters at the narrowest point of the Chehalis River for marine mammals to pass. Any temporary obstruction due to barge placement will be localized and limited in duration, and a traveling barge with tugs is too slow to strike marine mammals.

7.3.1. Benthic Habitat Impacts

The Project will not measurably alter river or shoreline habitat, and the Chehalis River and Grays Harbor in the Project vicinity will continue to be used primarily as a transient corridor, the same as under current conditions. The Project is in an area that has been highly modified by industrial activity and will occur at the location of the existing dock.

The Project will result in short-term elevated levels of turbidity from pile installation (occurring within the pile installation work window of July 15 through February 15). Although in-water construction activities could stir up sediments, increased turbidity will impact only areas in proximity to the dock and, given the size of pilings to be removed/installed and the quantity of flow in the river, elevated turbidity is not expected to be measurable more than a few meters from each pile. Turbidity caused by the Project will quickly dissipate, as sandy material will quickly drop out of the water column and finer material will be diluted by riverine flow.

The Project will include the removal of up to 50, 18-inch creosote-laden timber piles.

7.3.2. Water Quality

Short-term turbidity is a water quality effect of most in-water work, including pile removal and installation. The Port and AGP will comply with state water quality standards during these operations by limiting the extent of turbidity to the immediate Project area.

Roni and Weitkamp (1996) monitored water quality parameters during a pier replacement project in Manchester, Washington. The study measured water quality before, during, and after pile removal. The study found that construction activity at the site had "little or no effect on dissolved oxygen, water temperature and salinity," and turbidity (measured in nephelometric turbidity units [NTU]) at all depths nearest the construction activity was typically less than one (1) NTU higher than at stations farther from the project area throughout construction.

Similar results were recorded during pile removal operations at two Washington State Ferries (WSF) facilities. At the Friday Harbor terminal, localized turbidity levels within the regulatory compliance radius of 150 feet (from three timber pile removal events) were generally less than 0.5 NTU higher than background levels and never exceeded one (1) NTU above background. In general, turbidity associated with pile installation is localized to about a 25-foot radius around the pile (Everitt et al. 1980). It is expected that river and tidal currents will result in increased turbidity upstream and downstream from Project activities depending on the direction of waterflow and tides. The distance affected by Project-generated turbidity will depend on river flow and tide conditions but is unlikely to exceed 150 feet.

Cetaceans are not expected to be close enough to the Project site to experience elevated turbidity from the Project, and any pinnipeds will be transiting the Project area and could avoid localized areas of turbidity. Therefore, the impact from increased turbidity levels is expected to be discountable to marine mammals.

7.3.3. Conclusions Regarding Impacts on Habitat

The most likely effects on marine mammal habitat from the proposed Project are temporary, short-duration noise and water quality effects. The direct loss of habitat available to marine mammals during construction due to noise, water quality impacts, and construction activity is expected to be minimal. All cetacean species using habitat near the Project area will likely be transiting the area.

Any adverse effects on prey species during Project construction will be short term. Given the large numbers of fish and other prey species in Grays Harbor, the short-term nature of effects on fish species and the mitigation measures to protect fish during construction (use of a vibratory hammer, BMPs, conducting work within the approved in-water work window), the proposed Project is not expected to have measurable effects on the distribution or abundance of potential marine mammal prey species.

Impacts to marine mammal habitat as a result of the Project will be limited to temporary water quality impacts from localized increased turbidity during construction and direct habitat impacts resulting from the benthic footprint of the installed piles. These are not expected to significantly affect marine

mammal habitat and are not expected to result in changes to their use of the Project area or any disturbance that would rise to the level of harassment or take as defined under the MMPA.

The proposed Project will not result in a significant permanent loss or modification of habitat for marine mammals or their food sources. The most likely effects on marine mammal habitat for the proposed Project are temporary, short-duration in-water noise; temporary prey (fish) disturbance; and localized, temporary water quality effects. The Project will not result in a direct loss of habitat available to marine mammals.

8. Monitoring and Reporting

Marine mammal monitoring is proposed and has been designed to avoid Level A harassment of sea lions and to minimize Level A harassment of harbor seals and harbor porpoises during pile removal and driving activities. No ESA-listed marine mammals are expected to occur in the areas impacted by the Project or in this part of the lower Chehalis River. Therefore, Level A harassment and/or Level B harassment of ESA-listed species is not proposed. If a species enters or approaches the Level B harassment zone and that species is not authorized for take, pile driving and removal activities must shut down immediately.

The requested work window for pile removal and installation (July 15 to February 15) leaves adequate buffer for unexpected delays and allows for all pile removal and installation to occur within this timeframe. Within the pile installation window (July 15 to February 15), it is anticipated that pile driving could occur for up to 105 total days (not necessarily consecutive), however this is a conservative estimate and drive time will likely be less.

8.1. Construction Monitoring

Three protected species observers (PSOs), able to accurately identify and distinguish species of marine mammals, will be present before and during all in-water pile driving and removal activities. One observer will be stationed on the existing dock or similar location to monitor the Level A harassment zones, and two other observers will be stationed throughout the Level B harassment zones where line of sight views would cover the zone. Prior to in-water pile driving and removal activities, monitoring zones will be established. Monitoring shall commence at least 30 minutes prior to the beginning of pile driving and removal activities each day and after each break of more than 30 minutes.

Sealion Level A take is not proposed, therefore the Level A harassment zones (Tables 6 and 7) will be monitored as exclusion zones. If a sealion is seen entering the Level A harassment zone, pile installation and removal activities shall cease until the species has left the area of potential sound effects on its own. Limited Level A take is proposed for harbor seals and harbor porpoises. Level A take shall not exceed twenty (20) harbor seals or twenty (20) harbor porpoises. If a harbor seal or harbor porpoise enters the Level A harassment zone (Tables 6 and 7), Level A take will be tallied against authorized take. Authorized take shall not be exceeded. If the authorized take is met, the Level A harassment zones will function as exclusion zones to prevent further take.

The area within the Level B harassment zone (i.e., the 160 dB isopleth during impact driving and the 120 dB isopleth during vibratory installation, Tables 8 and 9) will be monitored. Any marine mammal present within this zone shall constitute Level B take and would be recorded and reported as such. Authorized take shall not be exceeded. If the authorized take is met, the Level B harassment zones will function as exclusion zones to prevent further take.

The PSOs will keep a daily log that outlines marine mammal observations, location of the animal, behavior of the animal, and when the observation event was resolved. A Marine Mammal Monitoring Report will be developed to include the following criteria:

- Dates and times (begin and end) of all marine mammal monitoring.
- Construction activities occurring during each daily observation period, including how many and what type of piles were driven or removed and by what method (i.e., impact).
- Weather parameters and water conditions during each monitoring period (e.g., wind speed, percent cover, visibility, sea state).
- The number of marine mammals observed, by species, relative to the pile location and if pile driving or removal was occurring at time of sighting.
- Age and sex class, if possible, of all marine mammals observed.
- Marine mammal monitor location during marine mammal monitoring.
- Distances and bearings of each marine mammal observed to the pile being driven for each sighting.
- Description of any marine mammal behavior patterns during observation, including direction of travel and estimated time spent within the Level A and Level B harassment zones while the source was active.
- Number of individuals of each species (differentiated by month or as appropriate) detected within the monitoring zone, and estimates of number of marine mammals taken, by species.
- Detailed information about any implementation of any mitigation triggered (e.g., shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any.
- All marine mammal monitor datasheets and/or raw sighting data (in a separate file from the Final Report)

8.2. PSO Requirements

Prior to project commencement, the Port, or a contractor on behalf of the Port, will hire up to three qualified PSO(s) to complete monitoring during construction. The employed PSOs will determine the most appropriate observation location(s) for monitoring during pile installation.

The minimum qualifications for PSOs will include:

1. Visual acuity in both eyes (correction is permissible) sufficient to discern moving targets at the water's surface with ability to estimate target size and distance. Use of binoculars or spotting scope may be necessary to correctly identify the target.
2. Advanced education in biological science, wildlife management, mammalogy or related fields (Bachelor's degree or higher is preferred).

3. Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
4. Experience or training in the field identification of marine mammals (cetaceans and pinnipeds).
5. Sufficient training, orientation or experience with vessel operation and pile driving operations to provide for personal safety during observations.
6. Writing skills sufficient to prepare a report of observations. Reports should include such information as the number, type, and location of marine mammals observed; the behavior of marine mammals in the area of potential sound effects during construction; dates and times when observations and in-water construction activities were conducted; dates and times when in-water construction activities were suspended because of marine mammals, etc.
7. Ability to communicate orally, by radio or in person, with project personnel to provide real time information on marine mammals observed in the area, as needed.

Additionally, the following conditions will be met:

1. The PSO(s) will be positioned such that the entire exclusion and monitoring zones are visible to them If weather or sea conditions restrict the observer's ability to observe for species or become unsafe for the monitoring vessel(s) to operate, cease pile installation until conditions allow for monitoring to resume.
2. The PSO(s) will have the following to aid in determining the location of observed listed species, to act if listed species enter the exclusion or monitoring zone, and to record these events:
    a. Binoculars
    b. Range finder
    c. GPS
    d. Compass
    e. Two-way radio communication with construction foreman/superintendent
    f. A logbook of all activities which will be made available to the U.S. Army Corps of Engineers (USACE) and NMFS upon request.
3. The PSO(s) will have no other primary duty than to watch for and report on events related to marine mammals.
4. The PSO(s) will be in direct communication with on-site project lead and will have shutdown authority.

5. The PSO(s) will scan the exclusion and monitoring zones the waters for 30 minutes before and continuously during all pile driving. If marine mammals enter or are observed near the identified exclusion zones during or 20 minutes before pile driving, the observer(s) will immediately notify the on-site supervisor or inspector and require that pile driving either not be initiated or temporarily cease until the animals have moved outside of the area of potential sound effects on its own.
6. A final technical report will be submitted to NMFS within 90 days after the final pile has been driven for the project. The report will summarize findings, and results of marine mammal monitoring conducted during pile driving activities.
7. If a listed marine mammal is taken (i.e., a listed marine mammal(s) is observed entering the exclusion zone before pile-driving operations can be shut down), re-initiation of consultation is required, and the take must be reported to NMFS within one business day.

9. Suggested Means of Coordination

All marine mammal data gathered during construction will be made available to NMFS, researchers, and other interested parties. The project will coordinate activities as needed with relevant federal agencies.

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