



**FERNDALE REFINERY  
DOCK MAINTENANCE AND PILE  
REPLACEMENT INCIDENTAL HARASSMENT  
AUTHORIZATION APPLICATION**

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## **GLOSSARY**

<u>BE</u>	<u>Biological Evaluation</u>
<u>BMP</u>	<u>Best Management Practices</u>
<u>CV</u>	<u>Coefficient of Variation</u>
<u>dB</u>	<u>Decibels</u>
<u>dBA</u>	<u>A-weighted Decibels</u>
<u>DPS</u>	<u>Distinct Population Segments</u>
<u>EPA</u>	<u>Environmental Protection Agency</u>
<u>ESA</u>	<u>Endangered Species Act</u>
<u>Ft.</u>	<u>Feet</u>
<u>Hz</u>	<u>Hertz</u>
<u>IHA</u>	<u>Incidental Harassment Authorization</u>
<u>kHz</u>	<u>Kilohertz</u>
<u>km</u>	<u>Kilometers</u>
<u>LF</u>	<u>Linear Feet</u>
<u>MHW</u>	<u>Mean High Water</u>
<u>MLLW</u>	<u>Mean Lower Low Water</u>
<u>MMPA</u>	<u>Marine Mammal Protection Act</u>
<u>MMM</u>	<u>Marine Mammal Monitor</u>
<u>M/SI</u>	<u>Mortality and Serious Injury</u>
<u>NMFS</u>	<u>National Marine Fisheries Service</u>
<u>OHW</u>	<u>Ordinary High-Water Mark</u>
<u>PBR</u>	<u>Potential Biological Removal</u>
<u>PSO</u>	<u>Protected Species Observers</u>
<u>PTS</u>	<u>Permanent Threshold Shift</u>
<u>RMS</u>	<u>Root Mean Square</u>
<u>SEL</u>	<u>Sound Exposure Level</u>
<u>SPL</u>	<u>Sound Pressure Level</u>
<u>SELcum</u>	<u>Cumulative Sound Exposure Level</u>
<u>SPPC</u>	<u>Spill Prevention and Control Countermeasures</u>
<u>sq. ft.</u>	<u>Square Feet</u>
<u>TTS</u>	<u>Temporary Threshold Shift</u>
<u>UMEs</u>	<u>Unusual Mortality Events</u>
<u>USACE</u>	<u>U.S. Army Corps of Engineers</u>
<u>WAC</u>	<u>Washington Administrative Code</u>
<u>WDFW</u>	<u>Washington Department of Fish &amp; Wildlife</u>

## **SECTION 1. DESCRIPTION OF SPECIFIED ACTIVITY**

### **FACILITY DESCRIPTION**

The Phillips 66 Refinery Marine Terminal (Dock) provides crude oil and petroleum product vessel loading and unloading for the Ferndale, Washington refinery site. The Dock structure supports a pierhead, causeway, roadway deck, product pipelines, and associated equipment for transferring crude oil and petroleum products. This structure is located on the southeastern shore of the Strait of Georgia in the northern Puget Sound area.

### **WORK DESCRIPTION**

Phillips 66 has an ongoing program for periodic inspection, maintenance, repair, and replacement activities required to ensure safe and reliable operations at the Phillips 66 dock and associated facilities. The facility is completing the replacement of 12-inch timber and steel piles with 20-inch steel piles on the Dock's causeway. This project may generate environmental impacts primarily through noise from vibratory pile driving and using an underwater chainsaw to cut existing timber piles for removal.

This document characterizes the potential impacts along with the best management practices and mitigation measures that will be implemented to minimize potential effects on the environment as this work is conducted. As this project is located in marine waters, protection of marine mammals is critical to conform with the Marine Mammal Protection Act. As pile driving has a significant disturbance radius, and healthy populations of marine mammals may live and forage in the nearby waters, disturbance level harassment is requested through an Incidental Harassment Authorization (IHA) to complete work while minimizing impacts.

### **WORK APPLICABLE TO MARINE MAMMAL PROTECTION HARASSMENT REQUEST:**

To maintain safe, continuous operations, Phillips 66 implemented a structural replacement program to replace the existing timber causeway. The scope of this work includes replacing the timber roadway with a concrete deck and removing 677, 12-inch steel and wood piles and replacing them with 196 epoxy coated 20-inch steel piles to safely support the additional load. The causeway replacement process started in 2019. The facility has completed installation of 80 of the 196, 20-inch steel piles and roughly one quarter of the deck replacement.

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**CONSTRUCTION SEQUENCING AND TIMING:**

Pile replacement will take up to 35 days per year. Underwater pile cutting using a chainsaw may take up to 66 days per year.

**SITE PREPARATION:**

The working barge will be moored to the pier.  
Tools will be placed on lanyards to prevent them from falling into the water.

**EQUIPMENT TO BE USED:**

Derrick barges, cranes, work / material barges, work skiffs, vibratory pile drivers, air-lift pump, tender boat, tug boats, fork lifts, welders, plasma cutters, hand tools, lumber and plywood for forms, steel for access and falsework, steel and aluminum gangways, flexifloats, timber work decks, road plates, temporary ramps to travel over demolished sections of the causeway, tarps and tool lanyards.

**CONSTRUCTION MATERIALS TO BE USED:**

Epoxy coated 20" steel piles, precast or cast in place concrete pile caps, channel beams, ready-mix concrete, fabricated steel.

**CONSTRUCTION METHODS AND NOISE GENERATION:**

The steel piles will be installed through the deck of the causeway. Vibratory driving is estimated to average 15 minutes per pile though some piles may take more or less time to reach the tip elevation. The facility is planning to install the remaining 20-inch replacement piles in a single year. If weather or other project limiting circumstances arise, pile installation will be split into two years and a IHA extension request will be submitted. Pile driving time will not exceed 4 hours in any 24-hour period. Noise levels associated with pile installation activities will be above the marine mammal behavior disruption thresholds established by the National Marine Fisheries Service (NMFS) for non-impulsive continuous underwater noise (120 dB RMS). Reviewing the vibratory proxy sound levels reference table from the NMFS multi-species hydroacoustic calculator (May 2022), the data characterizing vibratory driving of a 24-inch steel pipe (row 24) was identified as best representation of site conditions for vibratory driving of 20-inch steel piles at the Phillips 66 Dock as it matched closest in water depth, pile type, pile size, and substrate. This data estimated the average project sound levels at 153 dB RMS. Reviewing the detailed description of the specific Prichard Lake project from which the data was derived in the Caltrans 2020 Technical Guidance for the Assessment of Hydroacoustic Effects of Pile Driving on Fish, the Prichard Lake site conditions indicated that there were both soft and hard layers within the site geomorphology as indicated by use of both vibratory

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driving and impact pile driving. In contrast, the Phillips 66 Dock substratum is a relatively soft and sandy substrate. The 2019 pile driving records for driving 20-inch steel piles indicate pile driving was relatively quick and easy with pile driving time averaging 12 minutes per pile for installation and varying between 2 minutes and 55 minutes per pile to reach the tip elevation. The soft substrate and deeper water column (5 - 12 meters) at the Phillips 66 site will likely absorb and dissipate more vibratory forces and noise than the proxy site conditions. The proxy sound level (row 24 of vibratory proxy sheet, NMFS Multi-Species Pile Driving Calculator) should conservatively model the site conditions for this project. The proxy sound level of 153 dB RMS was used to calculate the isopleths for each species and the resulting action area. Calculations assumed maximum pile driving time of 240 minutes per day and up to 16 piles driven to their tip elevations.

The noise from vibratory driving 20-inch steel piles will attenuate below the 120 dB behavioral disruption threshold for the most sensitive marine group characterized (marine mammals) at 1,585 meters from the project. The resulting action area is a 1,585 meter radius around the project during this activity. The permanent threshold shift (PTS)  $SEL_{cum}$  maximum isopleths to attenuation below the injury threshold for vibratory driving based upon 240 minutes of daily pile driving is 7.5 meters from the project for high frequency cetaceans, the most sensitive marine mammal group. A marine mammal monitoring program will be implemented to protect all marine mammals in the action area as described later in this document.

**Figure 1.** Project action area when driving 20-inch steel piles, generating underwater noise greater than 120 dB SPL.



**Table 1.** Estimated in-water noise levels for pile driving and pile cutting.

Equipment Used	Noise Level			Distance from Measurement
	dB Peak	dB rms	dB SEL	
Vibratory pile driver (24-inch steel reference pile) driving 20-inch steel piles.*	181	153	-	10 m
Underwater chainsaw**	159	140	-	10 m

Noise Level Sources: \*Caltrans 2020, \*\*WSDOT 2020.



## **PILE REMOVAL**

Timber and steel pile removal will follow applicable practices per the Department of Natural Resources guidance manual: Washington Department of Natural Resources Derelict Creosote Piling Removal Best Management Practices for Pile Removal & Disposal (Updated 1/25/2017). Phillips 66 has determined that there is limited access for pile removal via vibratory or direct pull methods due to the location of the piles under the causeway. It may be necessary to utilize a variety of pile removal methods to safely complete this work. Piles will be cut below the mudline to the guidance manual specifications, with an underwater chainsaw or cutting torch. Cutting a pile with an underwater chainsaw generates underwater SPL(Sound Pressure Level) of 140 dB RMS (159 dB peak). This activity will generate temporary disturbance level sound in a radius of 215 meters from the location of the activity. A cutting torch is not anticipated to generate significant noise. The removed piles will be lifted to a barge for proper disposal.

## **AIRBORNE NOISE**

Pile driving will also generate disturbance level airborne noise. This noise will attenuate near the pile driving activities. These impacts are evaluated further in Section 6.

## **SECTION 2. DATES, DURATION, AND SPECIFIC GEOGRAPHIC REGION**

### **PROJECT DATES AND DURATION OF ACTIVITIES:**

Pile driving work will be planned to start on August 1, 2024, when the Washington Department of Fish and Wildlife in-water work window opens, assuming weather conditions are favorable. Pile driving is anticipated to take up to 35 days to complete. These may not be consecutive days due to weather and other project needs. If work is not ready to begin immediately, the work window will be between August 1 and October 31, 2024 for pile driving. Pile removal may go longer into the in-water work window as it is somewhat less weather dependent. Removal of all piles is expected to take up to 66 days for underwater pile cutting with a chainsaw. As the Strait of Georgia is a very large water body with a long fetch, calm in-water work conditions are typically only available from August to the end of October.

### **GEOGRAPHIC REGION DESCRIPTION:**

Phillips 66 maintains and operates a marine dock on the southeastern shoreline of the Strait of Georgia. The Strait of Georgia is the northern marine waters of the Salish Sea, with a long fetch that extends to the northwest between the Canadian mainland and Vancouver Island. The dock is located west of the Phillips 66 Ferndale Refinery, located at 3901 Unick Rd, Ferndale, WA 98248. The dock is built on aquatic lands leased from the Washington Department of Natural Resources. Within their lease area the dock facilitates vessel loading and unloading of crude oil and petroleum products in support of the adjacent Phillips 66 Ferndale Refinery. The Phillips 66 dock is connected to land by a 300-foot man-made outcropping stabilized and protected by rip rap made of large rock. Due to the rip rap, the riparian zone in the immediate area of the dock has no vegetation. The aquatic substrate around the dock consists of silt, coarse sand, mixed cobble and boulders. The adjacent area is zoned Heavy Impact Industrial (HII) by Whatcom County. To the east, Phillips 66 operates a site that refines and distributes petroleum based products. To the north, Petrogas distributes LPG products and BP Cherry Point refines and distributes petroleum based products.

### **CRITICAL HABITAT IMMEDIATELY ADJACENT TO THE PROJECT:**

The waters of the Strait of Georgia are designated critical habitat under the ESA for the Southern Resident Killer whale for the "Summer Core" area. The Washington State Water Quality Assessment System lists the Strait of Georgia as a waterbody with areas of water quality categories 1-5. The area immediately adjacent to the dock is category 1 and 2. Outside of the DNR aquatic lands lease boundaries, the marine habitat is protected as part of the Cherry Point Aquatic Reserve, an area of exceptional water quality and significant biodiversity. There are no known pinniped haulouts immediately adjacent to the project.

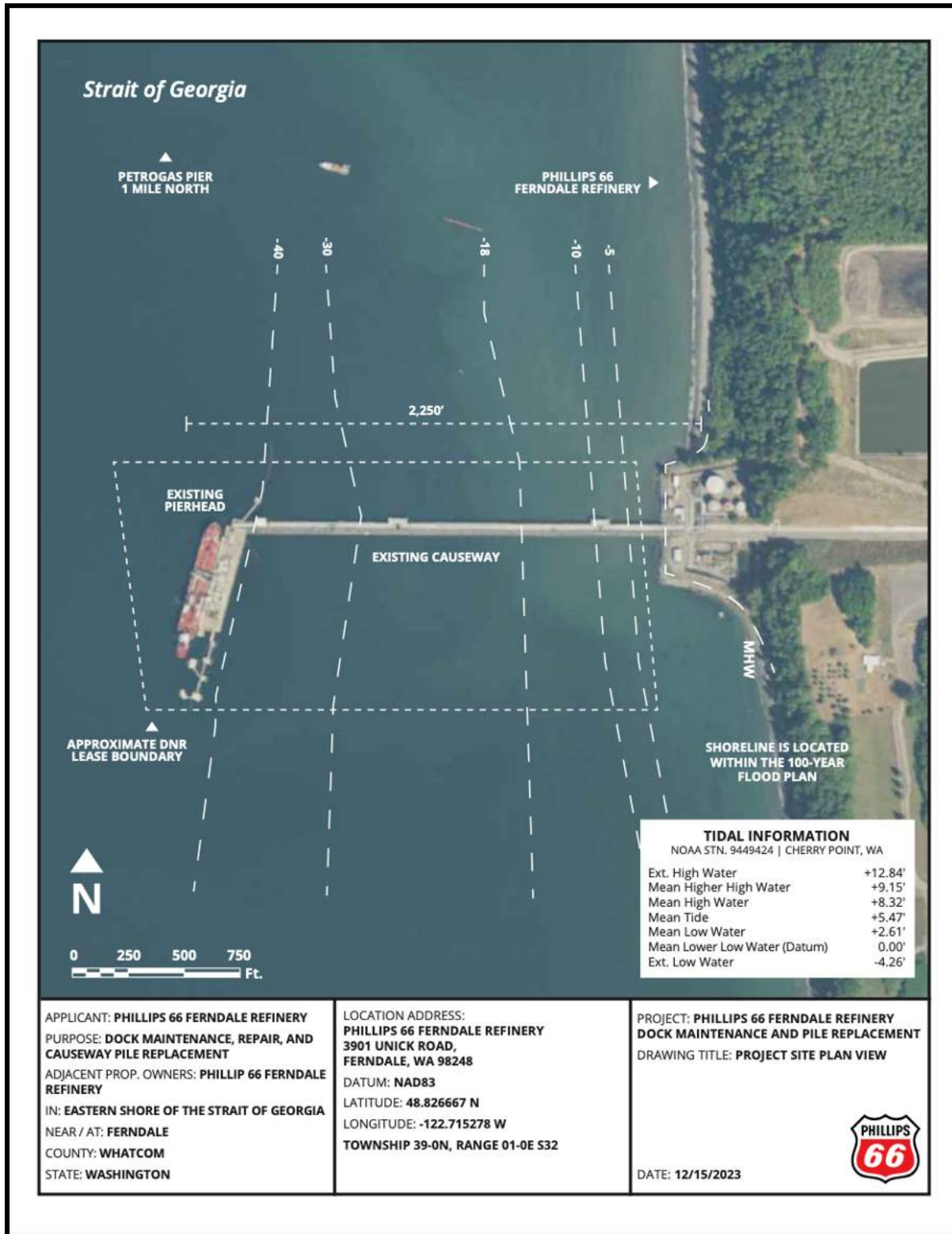
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Figure 2. Vicinity Map:



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**Figure 3.** Project Site Plan: All site waters are part of the “Summer Core” critical habitat for the Southern Resident Killer Whale.



### **SECTION 3. SPECIES AND NUMBER OF MARINE MAMMALS**

Per the US Pacific Marine Mammal Stock Assessments, there are ten marine mammal species (different 14 stocks) that have a potential to be found in the project action area. The project action area is defined based on the extent of the hydroacoustic impacts from the project as this parameter is the farthest extending impact from project activities. The ten species are identified in Table 2 along with their likelihood of presence. Some of these species have very limited sightings and are a rarity in the Puget Sound. Density estimates are provided but these calculations must be qualified as they are based upon uniform distribution over time and space which does not represent each species characteristic behaviors including seasonal movements throughout the Puget Sound and beyond.

**Table 2.** Marine mammals that have the potential to be in the project area.

Common Name	Stock	ESA / MMPA Status	Known Spatially / Temporally Important Areas	Stock Abundance	PBR	Annual M / SI	Stock Status Factors (UMEs, spills, etc.)
Humpback Whale ( <i>Megaptera novaeangliae kuzira</i> )	Mainland Mexico - California / Oregon / Washington	Threatened, depleted and strategic	Rare	3,477 (CV = 0.101)	43	10.15	Strategic
Humpback Whale ( <i>Megaptera novaeangliae kuzira</i> )	Central America / Southern Mexico - California / Oregon / Washington	Endangered, depleted and strategic	Rare	1,496 (CV=0.171)	3.5	6.45	Strategic
Humpback Whale ( <i>Megaptera novaeangliae kuzira</i> )	Hawai'i	Normal	Rare Seasonal: Summer	11,540 (CV=0.042)	127	27.09	None
Killer whale (Orcinus orca)	Eastern North Pacific Southern Resident	Endangered 70 FR 699903 dDepleted and sStrategic	Rare Seasonal: Spring to winter	73 (No CV)	0.13	0	Strategic

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**Table 2 Continued.** Marine mammals that have the potential to be in the project area.

Common Name	Stock	ESA / MMPA Status	Known Spatially / Temporally Important Areas	Stock Abundance	PBR	Annual M / SI	Stock Status Factors (UMEs, spills, etc.)
Killer whale (Orcinus orca)	Eastern North Pacific Northern Resident	Normal	Rare	302 (No CV)	2.2	0.2	None
Killer whale (Orcinus orca)	West Coast Transient	Normal	Possible (Seasonal Sightings)	243 (No CV)	2.4	0	None
Gray Whale (Eschrichtius robustus)	Eastern North Pacific	Normal	Rare	26,960 (CV = 0.05)	801	139	None
Minke Whale (Balaenoptera acutorostrata)	California / Oregon / Washington	Normal	Rare	915 (CV = 0.792)	4.1	0.59	None
Dall's porpoise (Phocoenoides dalli)	California / Oregon / Washington	Normal	Rare	16,498 (CV = 0.608)	99	0.66	None
Harbor porpoise (Phocoena phocoena)	Washington Inland Waters	Normal	Likely	11,233 (CV = 0.37)	66	≥ 7.2	None

**Table 2 Continued.** Marine mammals that have the potential to be in the project area.

Common Name	Stock	ESA / MMPA Status	Known Spatially / Temporally Important Areas	Stock Abundance	PBR	Annual M / SI	Stock Status Factors (UMEs, spills, etc.)
California sea lion ( <i>Zalophus californianus</i> )	United States	Normal	Possible (August - early June)	257,606 (No CV)	14,011	≥ 321	None
Steller sea lion ( <i>Eumetopias jubatus</i> )	Eastern United States	Normal	Rare	43,201 (*MPE, No CV)	2,592	112	None
Northern elephant seal ( <i>Mirounga angustirostris</i> )	California Breeding	Normal	Rare	187,386 (No CV)	5,122	≥ 5.3	None
Harbor seal ( <i>Phoca vitulina richardii</i> )	Washington Northern Inland Waters Stock	Normal	Possible	16,451 (CV = 0.074)	88	40	None

Stock delineations and abundance are from NOAA Stock Assessment Reports by Carretta et al., 2015, 2020, 2021 and Muto et al., 2020. Rare = The distribution of the species is near enough to the area that the species could occur there, or there are a few confirmed sightings. Likely = Confirmed and regular sightings of the species in the area year-round, Seasonal = Confirmed and regular sightings of the species in the area on a seasonal basis. \*This estimate is older than eight years (Jeffries et al., 2003); therefore, NMFS does not consider this a current estimate for the stock. \*MPE = Minimum Population Estimate, not equivalent to standard stock abundance estimate.



### **3.1 HUMPBACK WHALES**

There are three stocks of humpback whales on the West Coast of the contiguous United States, separated into three feeding groups, called distinct population segments (DPS). These groups are the Central American / Southern Mexico Stock (endangered), the Mainland Mexico Stock (threatened), and the Hawai'i Stock (normal). As these stocks cannot be distinguished during sightings, they will be evaluated together. Per the US Pacific Marine Mammal Stock Assessment, 2022, there are a combined estimated 5,000 individuals from the Central American / Southern Mexico and the Mainland Mexico Stocks and another 11,500 from the Hawai'i Stock. There is a seasonality to each stock's presence, with feeding occurring in the summers and typically leaving to feed in southern regions thousands of miles away. A small percentage of each of these DPSs choose the Salish Sea for their summer feeding grounds. Humpback whales, while relatively few in number, are regularly seen in the Puget Sound. For example, the Hawai'i Stock, the most recent survey estimates for summer population indicated 279 (CV=0.26) for the inland water of the Strait of Georgia and the Strait of Juan de Fuca (NOAA, 2023, AFSC-474). They are most frequently found in Southern Puget Sound, the Strait of Juan De Fuca, Haro Strait and among the Canadian Gulf Islands, which are all nearby regions of the Strait of Georgia, the location of this project. They are found in transit in the southern parts of the Strait of Georgia on occasion, but are not a common occurrence per the sightings archive of the Orca Network. Humpback whales could potentially occur within the project area but are unlikely to be present. This population will be discussed further in Section 4. Monitoring and exclusion zones will be implemented to avoid potential Level A and Level B impacts.

### **3.2 KILLER WHALE (ORCINUS ORCA), EASTERN NORTH PACIFIC SOUTHERN RESIDENT**

There are three genetically distinct populations of killer whales that can be found in the Puget Sound. The first is the Southern Resident killer whale (SRKW) population which is composed of three pods (J, K and L pods), with a total population of 75 individuals as of the 2023 census (Lynne Barre, 2023). SRKW are typically found in the Salish Sea in the spring, summer and fall, and are found along the west coast of the United States and British Columbia in the winter (NOAA, 2022). The J pod tends to stay closer to the Puget Sound even during winter. The orca pods travel about the Puget Sound swiftly and though a rare occurrence, the pods may pass through the project area. The project does not have any key habitat characteristics that make it a primary feeding area but it is located in the summer core zone, where they may be traveling to other parts of the Puget Sound or feeding areas in Canada. Monitoring and exclusion zones will be implemented to avoid potential Level A and Level B impacts.

### **3.3 KILLER WHALE (ORCINUS ORCA), EASTERN NORTH PACIFIC NORTHERN RESIDENT**

The Northern Resident killer whale (NRKW) resides from northern Washington State and Southern British Columbia to Southeast Alaska. There are approximately 302 Northern

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Resident killer whales in total. The United States does not list these orcas as endangered or threatened. Per the 2019 Alaska Marine Mammal Stock Assessment, they are regularly documented in Southeast Alaska but they are infrequently seen in Washington State waters. There is a very low likelihood of presence, but these killer whales may be difficult to distinguish from the SRKW and WCTKW. NRKW are rare in the Puget Sound and Strait of Georgia, and density calculations were not available, thus harassment calculations for this stock were not able to be determined but would likely be near zero. Due to unlikely being able to discern them from other killer whale populations, these whales will be monitored for and protected with the same measures of other killer whale stock during this project. Exclusion zones will be implemented to avoid potential Level A and Level B impacts. NRKW will not be discussed further.

### **3.4 KILLER WHALE (ORCINUS ORCA) WEST COAST TRANSIENT**

West Coast Transient Killer Whales (WCTKW) are an ecotype of orca distinct from offshore and resident orcas. They move in and out of the Puget Sound as they hunt. Minimum stock abundance is estimated at 243 (Fisheries and Oceans Canada, 2009; Allen & Angliss, 2013, Muto et al., 2020). There is a low likelihood of presence, but as these killer whales move swiftly and may be difficult to distinguish from the SRKW, this population will be monitored for and protected with the same measures of other killer whale stock during this project and be discussed further in section 4. Exclusion zones will be implemented to avoid potential Level A and Level B impacts.

### **3.5 GRAY WHALE, (ESCHRICHTIUS ROBUSTUS) EASTERN NORTH PACIFIC STOCK:**

Gray whales travel between feeding in Alaska in the summer and wintering in the waters on the west coast of Mexico. They pass through the Puget Sound on the travels but are not frequently observed. Per the population analysis on gray whales from 1996-2015, from June 1 to November 30, only 6 total sighting days were recorded in the Northern Puget Sound. The Northern Puget Sound refers to a study range of the Puget Sound marine waters from Edmonds, WA to the Canadian border (Calambokidis, 2017). As gray whales migrate south from November to mid-February and north from mid-February to May, they will not be migrating when in-water work is most likely occurring for this project August - October (NOAA GW, 2023). Gray whales are not anticipated to be in the area of the project based upon migratory timing and infrequency of presence in the area. Disturbance is not anticipated. This species will not be discussed further.

### **3.6 MINKE WHALE, (BALAENOPTERA ACUTOROSTRATA), CALIFORNIA / OREGON / WASHINGTON**

Abundance estimates for the California / Oregon / Washington stock is 912 (CV = 0.792) based upon a 2018 study (Becker et al. 2020). Some minke whales in the Puget Sound have been identified as having home ranges in the Puget Sound, classifying them as "resident". The San

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Juan Islands and southern Puget Sound are known to have some sightings of minke whales as found in reports from the Orca Network, though reports of minke whales in the Southeastern Strait of Georgia are rare. Exclusion zones will be implemented to avoid potential Level A and Level B impacts. Disturbance is not anticipated, and this species will not be discussed further.

### **3.7 DALL'S PORPOISE (PHOCOENOIDES DALLI), CALIFORNIA / OREGON / WASHINGTON**

The Dall's porpoise stock is at 16,498 (CV = 0.608) and primarily resides on the West Coast of the United States and Canada (Becker et al. 2020). The latest estimate of inland Dall's porpoise was 900, counted in 1996 Calambokidis et al., 1997. This is quite an old estimate and more recent aerial surveys (Evenson 2016) indicate far fewer Dall's porpoises remaining in the inland waters of the Puget Sound. Due to the low likelihood of presence, disturbance is not anticipated, and this species will not be discussed further. Exclusion zones will be implemented to avoid potential Level A and Level B impacts.

### **3.8 HARBOR PORPOISE (PHOCOENA PHOCOENA), WASHINGTON INLAND WATERS STOCK**

Harbor porpoises of the Washington Inland Waters Stock are estimated at 11,233 individuals (Smultea et al. 2015a). Aerial surveys have identified harbor porpoises throughout the Puget Sound, including the Strait of Georgia. They reside in the Puget Sound year-round. With a diet consisting mostly of schooling fish like herring and mackerel, this marine mammal may be found near the project area. This population will be discussed further in Section 4.

### **3.9 CALIFORNIA SEA LION (ZALOPHUS CALIFORNIANUS)**

The California sea lion population is estimated at 257,606 individuals on the West Coast of the United States and the Puget Sound. They are found throughout the Puget Sound with haulouts on various terrain like reefs, ledges and beaches. There are no known haulouts near the project but due to their presence throughout the Puget Sound, this population will be discussed further in Section 4.

### **3.10 STELLER SEA LION (EUMETOPIAS JUBATUS), EASTERN UNITED STATES**

The Steller sea lion minimum estimated population is approximately 43,000 individuals (Muto et al., 2020). The Eastern U.S. Stock ranges from southeast Alaska to California, including the inland waters of the Puget Sound. Steller sea lions eat many different species of fish and cephalopods and demonstrate a variety of foraging strategies. There are no known haulouts near the project but due to their presence throughout the Puget Sound, this population will be discussed further in Section 4.

### **3.11 NORTHERN ELEPHANT SEAL (MIROUNGA ANGUSTIROSTRIS), CALIFORNIA BREEDING STOCK**

The California Breeding Stock of Northern elephant seals has an estimated population of 187,386 individuals. These seals breed and give birth in the Channel Islands off California or Baja California, Mexico. The other 9 months of the year they migrate to waters near Alaska to feed. Northern elephant seals are not common in the Puget Sound. Due to the low likelihood of presence, disturbance is not anticipated, and this species will not be discussed further. Exclusion zones will be implemented to avoid potential Level A and Level B impacts.

### **3.12 HARBOR SEAL (PHOCA VITULINA RICHARDII), WASHINGTON NORTHERN INLAND WATERS STOCK**

The most current stock estimate for the Washington Northern Inland Water Stock of harbor seals was 16,451 individuals. Harbor seals are typically considered resident but may migrate for seasonal prey. There are two known low population haulouts within 5 miles of the project as documented in the Washington Department of Fish and Wildlife Atlas of Seal and Sea Lion Haulout Sites in Washington (Jeffries et al., 2000). This population will be discussed further in Section 4.

## **SECTION 4. AFFECTED SPECIES STATUS AND DISTRIBUTION:**

### **4.1 HUMPBACK WHALES, MAINLAND MEXICO, CENTRAL AMERICA / SOUTH MEXICO AND HAWAII STOCKS (3 STOCKS)**

#### **A. Status and Management**

The Mainland Mexico and Central America / Southern Mexico stocks of humpback whales are listed as depleted and strategic under the MMPA. The Central America / Southern Mexico Stock has been listed as endangered under the Endangered Species Act since 1973 and the Mainland Mexico Stock is listed as threatened. In 2021, NOAA designated 48,521 square nautical miles of critical habitat for the Central America / Southern Mexico DPS of humpback whales off the coasts of Washington, Oregon, and California, and 116,098 square nautical miles of critical habitat for Mexico DPS of humpback whales in the North Pacific Ocean (86 FR 21082, 2021). There is a total estimated population of 5,000 individual humpback whales from these two stocks. The Hawai'i Stock is not listed by ESA as threatened or endangered.

#### **B. Distribution**

The Mainland Mexico, Central America / Southern Mexico, and Hawai'i stocks of humpback whales mate in their namesake regions and proceed to migrate to California, Oregon and Washington in the summer and fall to feed. Studies indicate that a small sub-population of whales consistently return seasonally to feed from central Washington to Southern Vancouver Island (Calambokidis et al., 2004, 2008). Per data from the Orca Network, sightings have increased over the past 20 years, peaking between April and July, though they have been seen all months of the year.

#### **C. Density and Site**

There is a seasonality to these stock's presence, with feeding occurring in the summers and typically leaving to feed in southern regions thousands of miles away. Humpback whales, while relatively few in number, are regularly seen in the Puget Sound. They are most frequently found in the South Puget Sound, the Strait of Juan De Fuca, the Haro Strait and among the Canadian Gulf Islands, which are all nearby regions of the Strait of Georgia, the location of this project. They are found in transit in the southern parts of the Strait of Georgia on occasion, but are not a common occurrence per the sightings archive of the Orca Network. Humpback whales could potentially occur within the project area but are unlikely to be present. Of 42 reports on the Orca Network from November 2021 to October 2023, 13 sightings were in the Strait of Georgia. Of these, 10 were in the waters of British Columbia, Canada, at least 18 miles away. Of the remaining 3 sightings, 2 lacked detailed location data. The other observation was over 7 miles away between Lummi and Matia Islands. There are no sightings of humpback

whales documented by the Orca Network along the southeastern edge of the Strait of Georgia from January 2020 to October of 2023. The lack of sightings may indicate this area may not be part of their migration path or feeding grounds. As two of these stocks are ESA listed species, exclusion zones will be implemented to avoid potential Level A and Level B impacts to all humpback whales

#### **D. Hearing Sensitivity**

Humpback whales are classified as low-frequency cetaceans which have an approximate in-water hearing range of 7 Hz to 35 kHz (NMFS 2018).

### **4.2 KILLER WHALE (ORCINUS ORCA), EASTERN NORTH PACIFIC SOUTHERN RESIDENT STOCK**

#### **A. Status and Management**

The Eastern North Pacific Southern Resident Killer Whale (SRKW) are protected under the MMPA and have been listed as endangered under the Endangered Species Act since 1995. In 1996, the National Oceanic and Atmospheric Administration designated 2,560 square miles of critical habitat for the SRKW which includes the Summer Core Area in the Haro Strait, the waters around the San Juan Islands, the northern Puget Sound into the Strait of Georgia, and the Strait of Juan de Fuca per 71 FR 69054. In 2021, an additional 15,910 square miles along the US West Coast, from the southern border of Canada to Point Sur, California were added to the critical habitat of SRKW (86 FR 41668, 2021). There are a total of 75 SRKW composed of 3 pods, J, K and L.

#### **B. Distribution**

The three pods of SRKW spend late spring, summer and fall in the Salish Sea but they may also travel as far north as Alaska and as far south as Monterey Bay, California, typically within roughly 20 miles of the coastline. The J pod is commonly in the inland waters during winter and uses the entire Salish Sea, while K and L pods spend much more of the winter hunting up and down the coastline. The Summer Core area is where the pods are most often found during the summer (NOAA, 2022).

#### **C. Density and Site**

As mentioned, there are only 75 SRKW in total and they tend to travel in pods that are typically 20 (J pod) to 35 (L pod) (Houghton et al., 2015), or smaller when the groups separate. The project site is in the Summer Core Area of their critical habitat. The orcas are not frequently reported in the southeastern corner of the Strait of Georgia but they may be in the vicinity of the project. Pile driving activities will occur during the in-water work window, during favorable weather conditions, starting August 1st and working into the fall. Pods could possibly be in the

area during the in-water pile driving work. As these are ESA listed species, exclusion zones will be implemented to avoid potential Level A and Level B impacts. Marine mammal monitoring will be conducted to prevent and minimize project impacts on these marine mammals to the greatest extent practicable.

#### **D. Hearing Sensitivity**

Killer whales are classified as mid-frequency cetaceans which have an approximate in-water hearing range of 150 Hz to 160 kHz (NMFS 2018).

### **4.3 KILLER WHALE (ORCINUS ORCA), WEST COAST TRANSIENT STOCK**

#### **A. Status and Management**

Transient killer whales are protected under the MMPA but are not listed under the ESA like the SRKW. They are one of three stocks of orca that visit the inland waters of Washington. The estimated population, which has a very large distribution range is 243.

#### **B. Distribution**

The West Coast Transient Stock of killer whales (WCTKW) can be found from Southeast Alaska down to the southern coast of California (M.M. Muto et al. 2021). Their preferred territory, where they spend the majority of the year, is north of Washington, near British Columbia and southeastern Alaska (Krahn et al. 2002). Some groups enter the Salish Sea, in search of prey along the Southeastern end of Vancouver Island. This is most often during August and September, peak season for harbor seal pupping (Baird et al. 1995). April and May have also been identified as having an increased regular frequency in WCTKW. Other pods of transient orca are less predictable and may be found in the Puget Sound any time of year.

#### **C. Density and Site**

There are only 243 WCTKW in total and they tend to travel in smaller pods of up to 4 individuals (Baird et al. 1995). Because their pods are smaller, they are more evenly and randomly distributed than the SRKW. Pile driving activities will occur during the in-water work window, during favorable weather conditions, starting August 1st and working into the fall. This is their peak Salish Sea visitation period. Pods could possibly be in the area during the in-water pile driving work. Marine mammal monitoring will be conducted to prevent and minimize project impacts on these marine mammals to the greatest extent practicable.

#### **D. Hearing Sensitivity**

Killer whales are classified as mid-frequency cetaceans which have an approximate in-water

hearing range of 150 Hz to 160 kHz (NMFS 2018).

#### **4.4 HARBOR PORPOISE (PHOCOENA PHOCOENA VOMERINA), WASHINGTON INLAND WATERS STOCK**

##### **A. Status and Management**

Harbor porpoises are protected under the MMPA but have no current special designations per the ESA or MMPA. Washington State has no designated critical habitat for Harbor porpoise. There are 6 stocks identified by the NMFS. The Washington Inland Water Stock is the only stock found in the Puget Sound. The 2015 population estimate is 11,233 individuals (Laake et al., 1997). The population has more than tripled between the 1990 / 1991 and 2013 / 2015 surveys (NOAA, 2022).

##### **B. Distribution**

Harbor porpoise reside in the Puget Sound year-round. Data from harbor porpoise sightings indicate that distribution is heterogeneous with some areas consistently suggesting higher densities of harbor porpoise. The British Columbia Cetacean Sightings Network (BCCSN) reports summer concentrations in areas that include the South-Central Strait of Georgia (Canadian side), Haro Strait, Boundary Pass and sites further north in British Columbia (Zier, 2015). Winter concentrations include the Port of San Juan, Haro Strait, Swanson Channel, and the central Strait of Georgia (in British Columbia) (Zier, 2015). Harbor porpoises are a common sighting in the San Juan islands and the Strait of Juan de Fuca (Zier, 2015).

##### **C. Density and Site**

Harbor porpoises are commonly found in the Strait of Georgia as indicated by regular sightings from the BCCSN and the Orca Network (Zier, 2015). The Strait of Georgia is an extremely large body of water and the project will affect only a small area for short durations of time. Marine mammal monitoring will be conducted to prevent and minimize project impacts on these marine mammals.

##### **D. Hearing Sensitivity**

Harbor porpoises are classified as high-frequency cetaceans which have an approximate in-water hearing range of 160 Hz to 275 kHz (NMFS 2018).



#### 4.5 CALIFORNIA SEA LION (*ZALOPHUS CALIFORNIANUS*), UNITED STATES STOCK

##### A. Status and Management

California sea lions (CSL) are protected under the MMPA but have no current special designations per the ESA or MMPA. Washington State has no designated critical habitat for the CSL. There are 5 CSL stocks but the U.S. is the only stock found in the Puget Sound. The 2014 estimated population size is 257,606 individuals spread from Southeast Alaska to California (Lowry, 2017). The population has more than tripled since 1975 and is considered within the range of its optimum sustainable population (OSP) (Laake et al., 2018).

##### B. Distribution

California sea lions are native to the west coast of North America. Their primary rookeries are on the Channel Islands off the coast of California. They visit these islands and breed during the summer. Females fish locally around the islands and feed the pups while males migrate to the north to feed for the rest of the year. They migrate to northern California, Oregon, Washington and British Columbia, Canada to find abundant food sources. California sea lions will explore harbors, river mouths and bay in search for food. They will haul out on natural formations and man-made structures, including jetties, docks, and buoys (NOAA, 2022).

##### C. Density and Site

There are no known haulouts near the project but California sea lions may be in the vicinity of the project, foraging as they move through the wider area. While California sea lions can be found throughout the Puget Sound, estimates place the number of CSLs in the springtime at an average of 450 in the Puget Sound proper (Jefferson, et al., 2023). There are two documented haulouts in the southern Strait of Georgia, both along the western coast of the Strait of Georgia in British Columbia, Canada. The closest haulout is near Tumbo Island on the eastern edge of the Gulf Islands, over 15 miles from the project site (LeValley, E., 2021).

##### D. Hearing Sensitivity

California sea lions are classified as otariid pinnipeds which have an approximate in-water hearing range of 60 Hz to 39 kHz (NMFS 2018).

#### 4.6 STELLER SEA LION (EUMETOPIAS JUBATUS), EASTERN UNITED STATES

##### A. Status and Management

Eastern US Steller sea lions (EUSSSL) are protected under the MMPA but have no current special designations per the ESA or MMPA. Washington State has no designated critical habitat for the EUSSSL. The EUSSSL is the only stock found in the Puget Sound. The minimum estimated population is 43,000 individuals for all EUSSSL from Southeast Alaska to California. Population models with data from 1987 to 2017 indicate the Eastern Stock is growing in all regions (Muto, 2020).

##### B. Distribution

Eastern United States Steller sea lions are distributed along the west coast of the United States and Canada. (NMFS, 2023c). The majority of the Steller sea lion population in Washington is found on the west coast, but there are consistently used haulouts and breeding sites throughout the Puget Sound (WSAS, 2022). These sites are typically rocky, gravel or sand beaches, ledges and reefs. There are two documented haulouts in the southern Strait of Georgia. The first is near Tumbo Island on the eastern edge of the Gulf Islands in British Columbia, Canada, (west coast of the Strait of Georgia). The second is on Sucia Island (LeValley, E. 2021), at the southern end of the Strait of Georgia. The Canadian Science Advisory Secretariat Science Advisory Report 2021 / 035 on Trends in Abundance and Distribution of Steller Sea Lions in Canada, identifies two significant year-round populations in the northern Strait of Georgia, with many more major winter haulout sites, primarily along the western edge of the southern Strait of Georgia and northern San Juan Islands, near the project area (CSA Fisheries and Oceans Canada, 2021).

##### C. Density and Site

EUSSSL may be in the vicinity of the project. The Strait of Georgia is a very large body of water with no haulouts in the immediate vicinity of the project. The closest documented haulout location is over 10 miles from the project site, on Sucia Island (Jeffries et al., 2000). On the west side of the Strait of Georgia, over 15 miles from the project site, survey data provided an estimated population of EUSSSL for the Tumbo Island haulout, between 100 and 500 sea lions.

##### D. Hearing Sensitivity

Steller sea lions are classified as otariid pinnipeds which have an approximate in-water hearing range of 60 Hz to 39 kHz (NMFS 2018).

#### **4.7 HARBOR SEAL (PHOCA VITULINA RICHARDII), WASHINGTON NORTHERN INLAND WATERS STOCK**

##### **A. Status and Management**

Harbor seals are protected under the MMPA but have no current special designations per the ESA or MMPA. There are 3 delineated stocks in the Puget Sound. These stocks include the Hood Canal stock, the Northern Inland Waters stock and the Southern Puget Sound stock. This project is only likely to affect the Northern Inland Waters Stock. This stock has an estimated population of 16,451 individuals (NOAA, 2023, Draft MMSA) and has been characterized as stable.

##### **B. Distribution**

Harbor seals are distributed throughout the Oregon and Washington outer and inner coastlines. They are the most common and most widely distributed marine mammal in the Puget Sound. They are frequently found in saltwater bay, estuaries and inlets. Their preferred haulouts include intertidal and subtidal rocks, beaches, sandbars, rocky reefs, log booms and floats. Haulouts may be just a few individuals but may range beyond 500 individuals. Harbor seals generally live and feed in a limited range but may travel up to 400 miles for seasonal prey. The Northern Inland Waters stock is the most wide-spread stock throughout the Puget Sound, from Cape Flattery, to the Strait of Georgia, to the Tacoma Narrows Bridge (NOAA, 2023, Draft MMSA).

##### **C. Density and Presence in Project Area**

Harbor seals may be in the vicinity of the project. The Strait of Georgia is a very large body of water with no haulouts in the immediate vicinity of the project. The closest documented haulouts are two different low population (<100 individuals) locations approximately 5 miles from the project site, one to the north and one to the south (Jeffries et al., 2000). To the southwest and west of the project location are 14 other haulouts dotted throughout a few of the small northern San Juan Islands (North of Orcas Island) within 10 miles of the project (Jeffries et al., 2000).

##### **D. Hearing Sensitivity**

Harbor seals are classified as phocid pinnipeds which have an approximate in-water hearing range of 50 Hz to 86 kHz (NMFS 2018).

## **5. TYPE OF INCIDENTAL HARASSMENT AUTHORIZATION REQUESTED:**

The MMPA defines “harassment” as: any act of pursuit, torment or annoyance which (Level A) has the potential to injure a marine mammal or marine mammal stock in the wild. Level B harassment has the potential to disturb a marine mammal or a marine mammal stock in the wild by causing disruption to behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (50 CFR, Part 216, Subpart A, Section 216.3, Definitions).

Per section 101(a)(5)(D) of the Marine Mammal Protection Act, Phillips 66 requests an Incidental Harassment Authorization (IHA) for in-water pile driving activities that may result in in-water noise levels above the protective noise thresholds established by the Office of Protected Resources at the National Marine Fisheries Service (Table 3 below). Level B harassment is being requested for the West Coast Transient killer whale, the harbor porpoise, the California sea lion, and the Eastern DPS Steller sea lion, and the harbor seal. This project does not anticipate any Level A harassment. These requests are based upon calculated in-water noise impacts derived from the NMFS Multi-Species Pile Driving Calculator Tool.

The primary source of harassment will be pile driving activities related to maintenance replacement work. Level A Harassment will be managed through a robust marine mammal monitoring program. Steel piles will be driven using vibratory pile driving. Vibratory pile driving attenuates below the Level A harassment level for all marine mammals within 7.5 meters the project site, allowing monitoring to be an effective protective measure. The noise generated from the vibratory driving does not attenuate below level B harassment until 1585 m out from the project site. Harassment level noise will require monitoring specific to each species’ regulatory status and relative abundance.

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**Table 3.** Marine Mammal Noise Thresholds

Hearing Group	Noise Type	Level A Harassment		Level B Harassment
		dB SELcum	dB Peak	dBrms
Low-frequency Cetaceans: Humpback whale	Inwater, Impulsive	183	219	160
	In-water, Continuous	199	-	120
Mid-frequency Cetaceans: Killer Whale	Inwater, Impulsive	185	230	160
	In-water, Continuous	198	-	120
High-frequency Cetaceans: Harbor porpoise	Inwater, Impulsive	155	202	160
	In-water, Continuous	173	-	120
Phocid pinnipeds: Harbor seal	Inwater, Impulsive	185	218	160
	In-water, Continuous	201	-	120
	In-air	-	-	90
Otariid Pinnipeds: California and Steller sea lions	Inwater, Impulsive	203	232	160
	In-water, Continuous	219	-	120
	In-air	-	-	100

## SECTION 6. HARASSMENT ESTIMATES FOR MARINE MAMMALS

### 6.1 ESTIMATED ZONES OF INFLUENCE:

There are two different types of pile driving activities that were evaluated for harassment level in-water noise generation. These activities include vibratory pile installation and underwater chainsaw use for pile removal. A hydroacoustic analysis of the pile driving activities has been conducted to identify the zones which may result in Level A and Level B harassment. Vibratory pile driving impacts were evaluated for 20-inch steel piles. Using this information, Puget Sound marine mammal population densities and the number of expected noise generating work days, estimated harassment is determined for this project.

To calculate the distances to noise attenuation the NMFS Multi-species Pile Driving Calculator was used. This calculator uses the practical spreading loss model, which assumes an attenuation rate of 4.5 dB for each doubling of distance. In-air noise attenuation used a spherical spreading loss model assuming a 6 dB attenuation rate for each doubling of distance.

**Table 4.** Calculated vibratory pile driving disturbance distances to attenuation for marine mammals.

Pile Size and Type	Harassment Level A for Pinnipeds		Harassment Level A for Cetaceans			Behavioral Disturbance Level B
	Harbor Seal	Sea Lions	Low Freq	Mid Freq	High Freq	All Marine Mammals
20-inch steel pile*	3.1 m	<1 m	5.0 m	<1 m	7.5 m	1,585 m

\*The closest representative pile size for reference sound levels was 24-inch piles (WSDOT 2020).

As seen from Table 4, marine mammals will have to be very close to the vibratory driving activity to be within the zone of level A harassment. Marine mammal monitors will be in place, closely monitoring this zone and stopping work before any marine mammal gets near even the largest level A harassment radius of 7.5 m from the noise source. Level B, behavioral disturbance for all marine mammals will extend 1,585 meters from the project source.

Figure 4. Vibratory pile driving behavioral threshold.

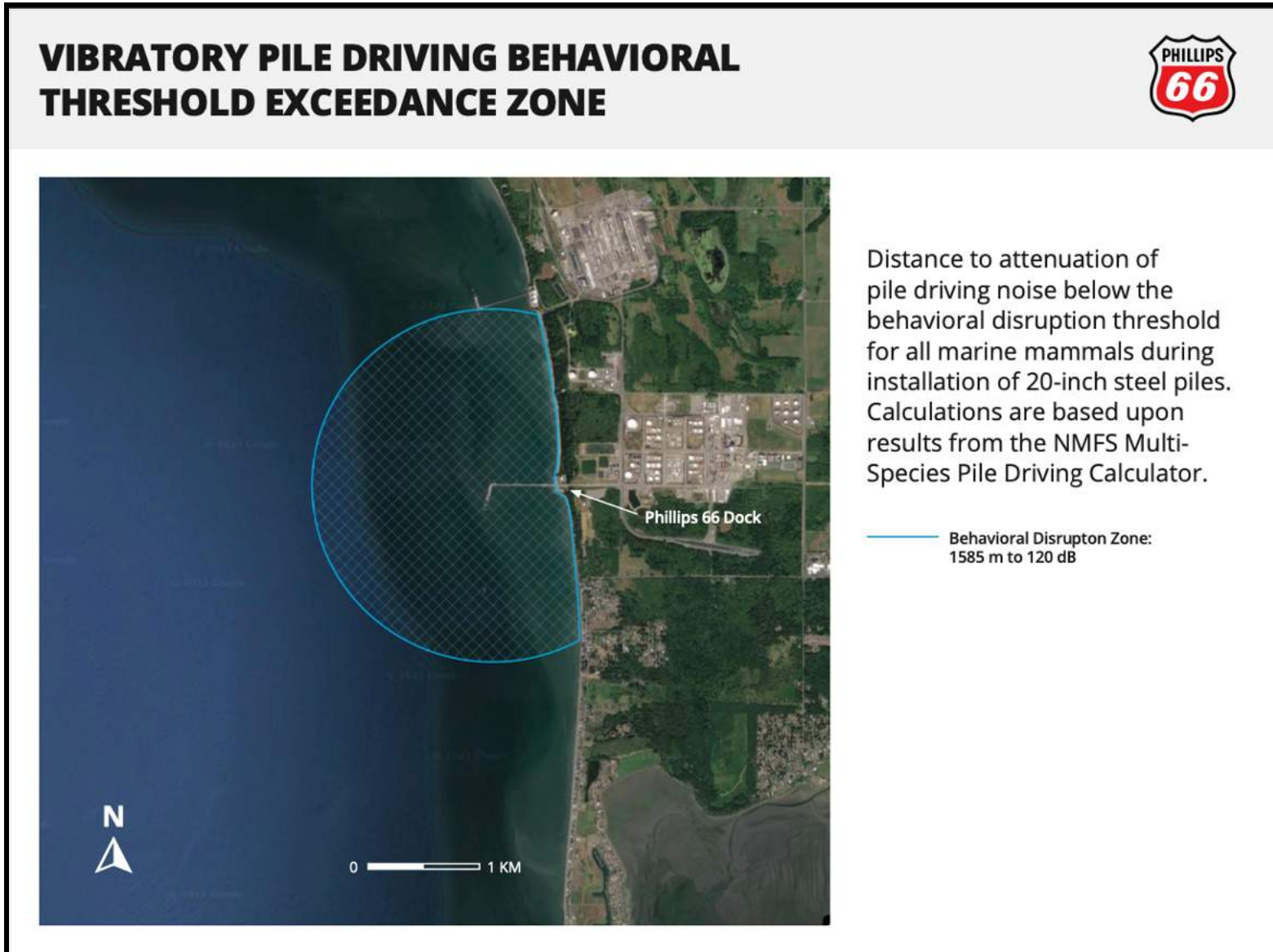


Figure 5. Vibratory pile driving behavioral and injury thresholds.

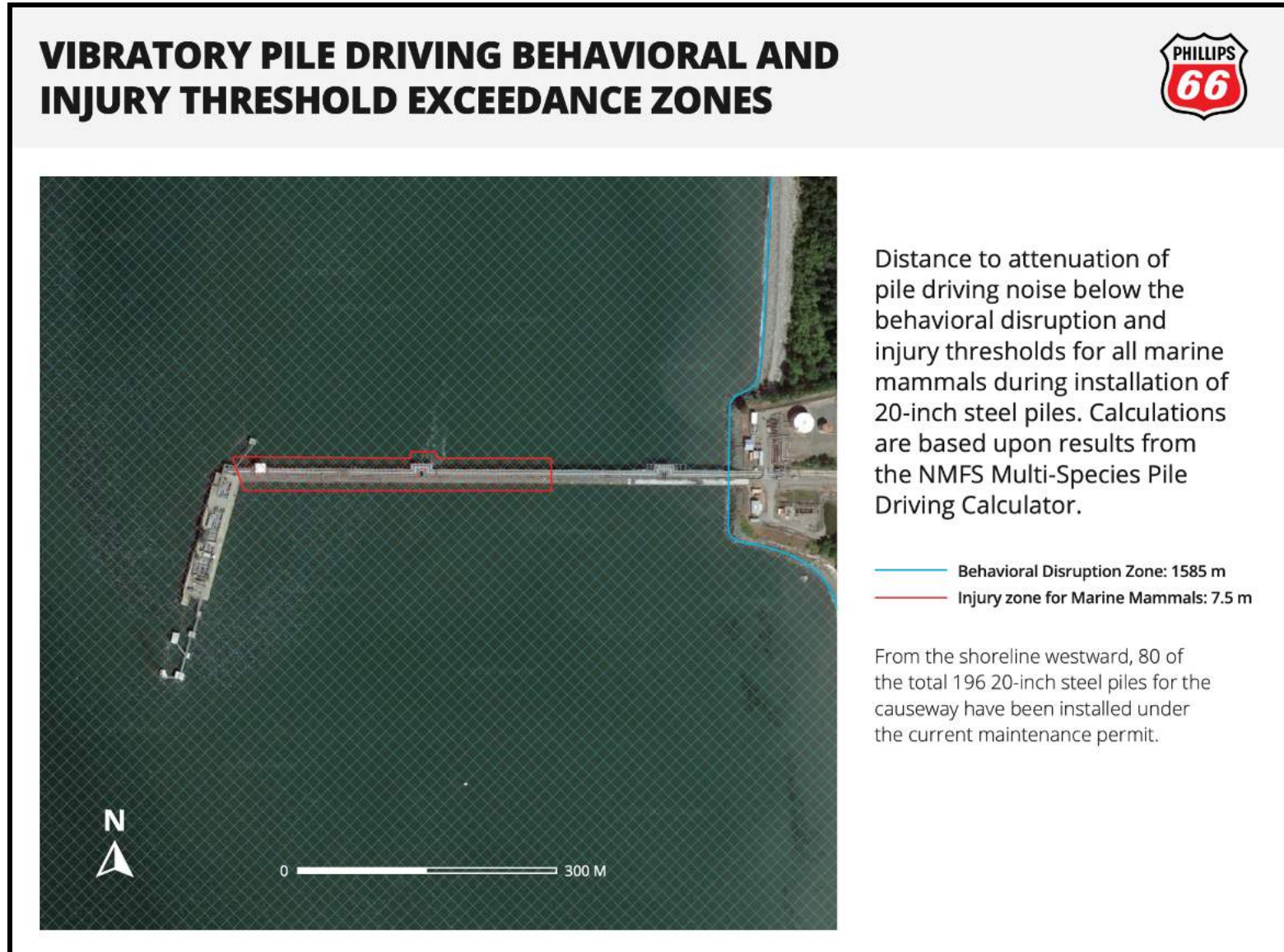
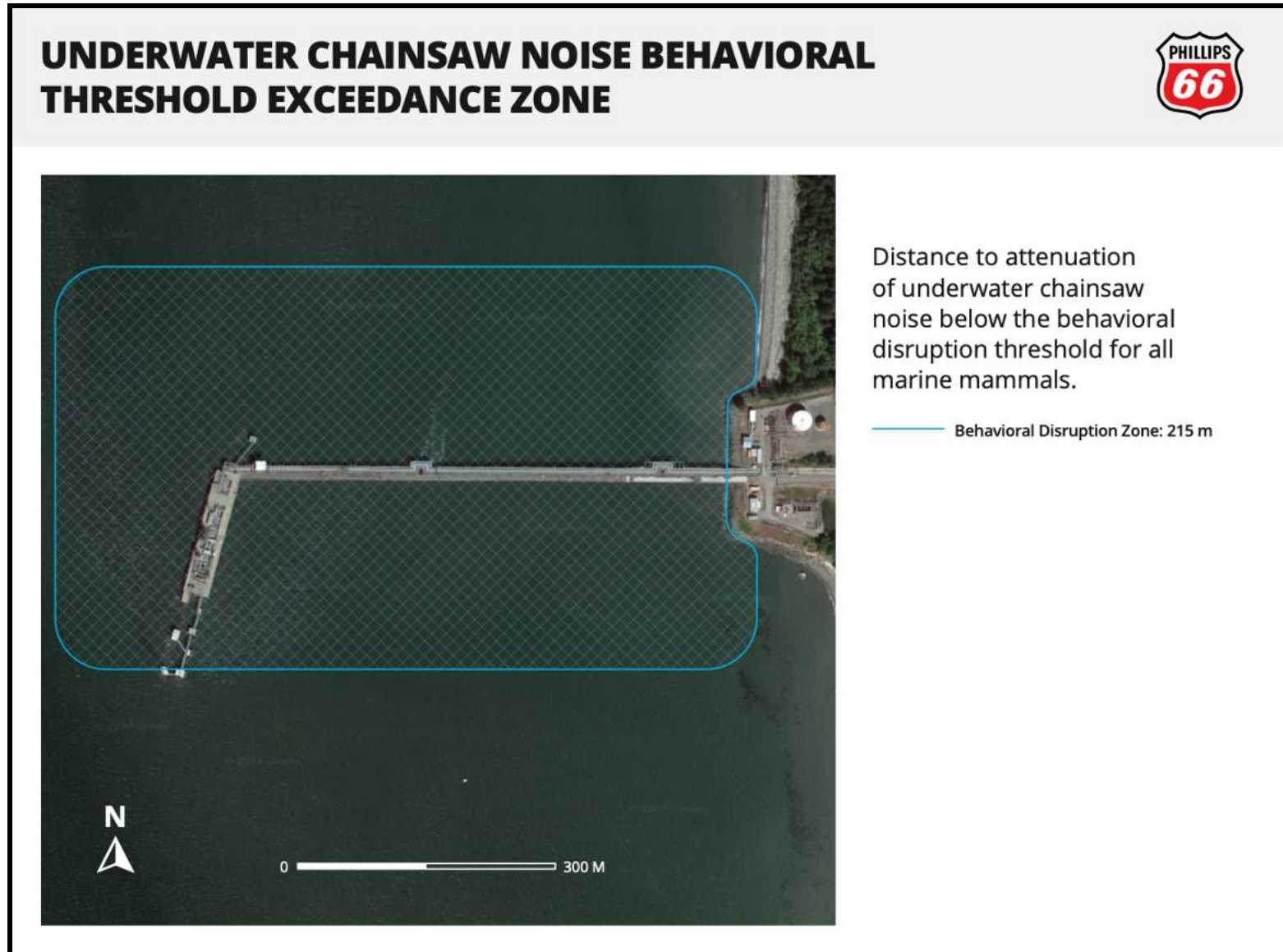




Figure 6. Underwater Chainsaw Noise Behavioral Threshold Exceedance Zone.



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**Table 5.** Calculated disturbance zone for underwater pile cutting.

Method	Behavioral Disturbance level for Marine Mammals	Noise Level Generated	Distance to Attenuation
Underwater Chainsaw	120 dB	140 dB <sub>RMS</sub>	215 m

Underwater pile cutting will be necessary to remove old timber piles. As this activity is low noise impact and results in a small disturbance radius, disturbance does not have a significant impact on harassment calculations. As there is very little risk for impactful harassment, underwater pile cutting is not included as a factor for requested take in this application. Marine mammal monitoring will be initiated when this removal method is used, to protect marine mammals in the area.

**Table 6.** Airborne Sound Levels and distances to attenuation from Vibratory and Impact Pile Driving (dB).

Pile Size and Installation Method	Sound Levels (L <sub>max</sub> @ 50 ft)	Phocid (harbor seals) Disturbance level: 90 dB <sub>RMS</sub>	Otariid (sea lions) Disturbance level: 100 dB <sub>RMS</sub>
		Distances to attenuation for airborne disturbance	
20-inch Steel, Vibratory	105 dB*	84 m	27 m

\*The closest representative pile size for reference sound levels was 24-inch piles (WSDOT 2020).

As pinnipeds may be found on the shorelines and often surveying their surroundings with their heads above water, airborne sounds levels were also considered when assessing the behavioral impacts on marine mammals. This project has completed pile installation from the shoreline to roughly 240 m out from the shoreline at bent 54.5 (~7/16 of the way down the pier). This means there is no risk of the project disturbing pinnipeds hauled out on the shoreline and at the same time monitoring will be in place for in-water disturbance to 1585 m out from the project. The shorelines will be inspected to determine if any pinnipeds are in the area and at risk of disturbance if they do move into the nearby waters.

**6.2 ESTIMATED DENSITIES:**

Marine mammal densities found in published surveys varied significantly based upon methodologies, geographic partitioning, time of year, etc. There was no data that clearly identified the southeastern Strait of Georgia from other geographically distinct areas. The data selected typically integrated the southern Strait of Georgia into the same data as the San Juan Islands. While geographic neighbors, a review of whale sighting sources like the Orca Network, or references like the WDFW seal and sea lion haulouts, one finds clear density and migratory pattern differences between, for example, the Haro Strait and the southeastern Strait of Georgia, both often clumped into the same region. There were a few Strait of Georgia surveys published, though they also included the vast Canadian waters which may also be characterized as distinct from the southern region. These studies were also too old to provide representative data per NOAA's 8 year standard. With this acknowledgement, all density estimates are considered highly conservative as they assume uniform distribution of mammals throughout the region which is not representative of their natural behavior or preferred geographic locations.

**Table 7.** Marine Mammal Species Densities Used for Exposure Calculations.

Species	Region Characterized	Density (Animals / km <sup>2</sup> )
Humpback Whale	North Puget Sound / San Juan Islands (Fall and Winter)	0.0027
SRKW	North Puget Sound / San Juan Islands (Fall and Winter)	0.0078
KW Transient	North Puget Sound / San Juan Islands (Fall and Winter)	0.00306
Harbor Porpoise	North Puget Sound	2.16
Steller Sea Lion	North Puget Sound / San Juan Islands (Fall)	0.0027
California Sea Lion	North Puget Sound / San Juan Islands (Fall)	0.0179
Harbor Seal	North Puget Sound / San Juan Islands (Fall)	0.76

Source for all density values: Navy. (2019). U.S. Navy Marine Species Density Database Phase III for the Northwest Training and 27 Testing Study Area. NAVFAC Pacific Technical Report. Naval Facilities Engineering Command 28 Pacific, Pearl Harbor, HI. Amended August 12, 2020. 262 pp.

### **6.3 ESTIMATED HARASSMENT:**

Estimated harassment was calculated based on the two determined zones of influence. The first is Level A noise, an auditory permanent threshold shift, which may result in injury or death. This threshold has been evaluated and determined based on individual species sensitivity. The second zone of influence is disturbance level noise, Level B, which is any noise that may disrupt normal behavior. For marine mammals this threshold is 120 dB. The total area of each zone of influence was determined based upon the NMFS pile driving calculator attenuation distances. This area was then multiplied by the estimated densities of marine mammals per square kilometer to identify the number of exposures per species. Finally, the number of exposures is multiplied by the number of anticipated work days to totalize the estimated exposures per species for the whole project. Table 8, provides the estimates for each species. This project is not expected to have any Level A exposures as the Level A exposure area is very small, the density of marine mammals also relatively low in the surrounding area, and the project will have a robust marine mammal monitoring program implemented to stop work before any marine mammal comes near the Level A exposure area. Potential Level B exposures will be discussed in detail for each species below.

**Table 8.** Total Level B Exposure Estimates and Requested Harassment by Species for Completing 35 days of vibratory pile driving 20-inch piles and 66 days of underwater pile cutting.

Calculated and Requested Harassment for Level B, Disturbance Level Noise (120 dB)				
Species	Vibratory Pile Driving	Total Calculated Level B Harassment	Requested Level B Harassment	Requested Harassment Percent of Stock / DPS
Humpback Whale	1	1	0	0%
SRKW	2	2	0	0%
KW Transient	1	1	0	0%
Harbor Porpoise	447	447	447	4%
Steller Sea Lion	1	1	35	0%
California Sea Lion	4	4	105	0%
Harbor Seal	157	157	157	1%

#### **6.4 POTENTIAL LEVEL B THRESHOLD EXPOSURES:**

The number of potential Level B threshold exposures for marine mammals are much higher than Level A exposures. This is because the vibratory driving generates significant hydroacoustic noise and does not dissipate below the 120 dB disturbance threshold for marine mammals until 1,585 m from the project. This large area along with the potential of 35 days needed to complete installation of up to 116 piles results in potential exposure for humpback whale, southern resident killer whales, transient killer whales, harbor porpoise, steller sea lions, california sea lions, and harbor seals.

#### **HUMPBACK WHALE (CENTRAL NORTH PACIFIC AND CALIFORNIA / OREGON / WASHINGTON STOCKS)**

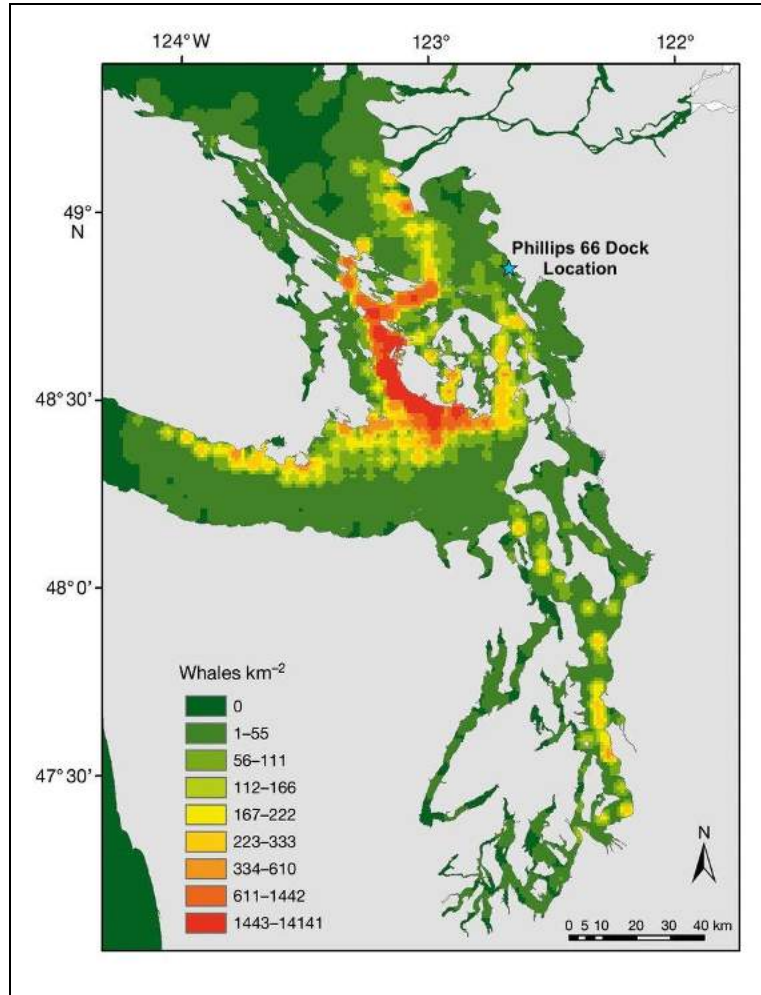
Humpback whales within 1,585 meters of the project may experience a Level B exposure. Humpback whales are a rare occurrence near the project area but have the potential to be in the area as they migrate to feeding grounds to the north and mating grounds far south. Based upon the sighting data from the Orca Network, the closest they are regularly seen is in the Haro Strait and up through the Gulf Islands of British Columbia. There is a low probability of occurrence within the monitoring zones. Calculated Level B harassment was 1 exposure for humpback whales. As these are ESA listed species, level B harassment will not be requested. A robust marine mammal monitoring plan will be developed and implemented to prevent level B harassment.

#### **KILLER WHALE (EASTERN NORTH PACIFIC SOUTHERN RESIDENT STOCK)**

SRKW are commonly seen in the Puget Sound, along the Haro Strait, among the San Juan Island, north into the Strait of Georgia via Boundary Pass and the Gulf Islands. This area constitutes their summer core area. This is best seen in Figure 7, showing the SRKW density from 38 years of data. The southeastern corner of the Strait of Georgia, the location of this project, is not a location in which they are commonly found. Seasonally, in-water work is anticipated to start August 1st and the SRKW will still be in their critical habitat designated Summer Core area of the Puget Sound.

SRKW within 1,585 meters of the project may experience a Level B exposure. Calculated harassment based upon species density yielded 2 Level B exposures. As these are ESA listed species, level B take will not be requested. A robust marine mammal monitoring plan will be developed and implemented to prevent level B harassment.

**Figure 7.** Southern Resident Killer Whale density based on effort-corrected data in the Salish Sea. Figure from Olsen et al 2018. Plotted sightings data from 1976 - 2014 with site location added for reference.



#### KILLER WHALE (WEST COAST TRANSIENT STOCK)

Transient killer whales have seasonal presence in Puget Sound. Some groups enter the Salish Sea, in search of prey, along the Southeastern end of Vancouver Island during August and September, peak season for harbor seal pupping (Baird et al. 1995). Seasonally, in-water work is anticipated to start August 1st and the WCTKW may be in the area.

WCTKW within 1585 meters of the project may experience a Level B exposure. Calculated harassment based upon species density yielded 1 potential Level B exposure. As these marine mammals are not easily discernible from their endangered cousins, the SRKW, no take is requested. A robust marine mammal monitoring plan will be developed and implemented to prevent level B harassment.

## **HARBOR PORPOISE**

Harbor porpoises are commonly found in the Strait of Georgia as indicated by regular sightings from the BCCSN and the Orca Network (Zier, 2015). Any harbor porpoise within 1585 meters of the project may experience a Level B exposure. Calculated harassment based upon species the species density in the Strait of Georgia yielded 447 potential Level B exposures during the proposed work.

## **STELLER SEA LION**

Calculated level B disturbance was 1 Steller sea lion within 1585 m from the project. The facility felt like this number was too low given the close proximity of the Cherry Point Aquatic Reserve and the likelihood that large numbers of prey species can be found there. At Seattle's Pier 63 there were a maximum 1 Steller sea lion taken per day over 17 in-water work days between Oct 12 and Nov 30, 2022. Assuming the same maximum take for this species over the proposed 35 days of in-water work would result in 35 proposed takes of Steller sea lions by Level B harassment. While there are no known immediate nearby haulouts, there are haulouts in the greater Strait of Georgia and because this species may travel significantly in search for prey, possibly into the marine waters of the Cherry Point Aquatic Reserve, the facility is requesting 35 total level B harassment for Steller sea lions.

## **CALIFORNIA SEA LION**

Calculated level B disturbance was 4 California sea lions within 1585 m from the project. The facility felt like this number was too low given the close proximity of the Cherry Point Aquatic Reserve and the likelihood that large numbers of prey species can be found there. At Seattle's Pier 63 there were a maximum 3 California sea lions taken per day over 17 in-water work days between Oct 12 and Nov 30, 2022. Assuming the same maximum take for this species over the proposed 35 days of in-water work would result in 105 proposed takes of California sea lions by Level B harassment. While there are no known immediate nearby haulouts, there are haulouts in the greater Strait of Georgia and because this species may travel significantly in search for prey, possibly into the marine waters of the Cherry Point Aquatic Reserve, the facility is requesting 105 total level B harassment for California sea lions.

## **HARBOR SEAL**

Harbor seals are commonly found in the Strait of Georgia. Level B disturbance will occur for any harbor seal within 1585 m from the project. Calculated harassment based upon species the species density in the Strait of Georgia yielded 157 potential Level B exposures during the proposed work.



## **6.5 HARASSMENT FOR AIRBORNE DISTURBANCE**

Airborne Level B threshold disturbances are not anticipated to occur during pile driving activities. These disturbance zones are small and the in-water pile driving exclusion zones will effectively prevent airborne harassment.

## **SECTION 7. ANTICIPATED IMPACTS OF ACTIVITY**

### **NOISE: IN-WATER NOISE**

Per NMFS studies, sufficient noise may produce both short and long term effects on marine mammals, via temporary hearing threshold shifts and long term permanent damage to their auditory senses. A temporary threshold shift (TTS) results when noise disrupts their hearing but their senses return to baseline. This may occur in the zone of Level B disturbance noise. A permanent threshold shift (PTS) occurs when the noise results in permanent hearing damage. This is expected to occur when noise is above the Level A threshold (NMFS 2022). The proposed project will produce noise that has the potential to result in Level A or Level B threshold exceedances if marine mammals come within these characterized zones. Calculation of these zones of influence, evaluation and selection of most representative available marine mammal density data and careful evaluation of the possible uses of the area by marine mammals indicate that there is very low potential for Level A harassment. No level A harassment is requested and it is not anticipated that any marine mammals will be injured by this work. Level B harassment, as a function of the larger behavioral disturbance zone and species specific population densities, is expected to occur during this project for some species.

Due to the significant noise generated from pile driving, and the large resultant radius of disturbance, this project is anticipated to temporarily disturb marine mammals, particularly the higher population density marine mammals; sea lions, harbor porpoise and harbor seals in the area. These stocks are at healthy population levels and do not put the overall stocks at any risk. Short term impacts may include temporary threshold shifts in hearing, temporary displacement from the waters near the project due to aversion to the noise generated and lack of prey availability during work as they may also be temporarily displaced by noise.

Humpback, SRKW and WCTKW are not anticipated to be impacted as monitoring will attempt to identify these species and stop work before they enter the disturbance zone. Monitoring will include areas outside the Level B harassment zone to stop noise producing activities before these marine mammals reach the disturbance zone.

Pile driving activities will only last a few weeks and a marine mammal monitoring plan will be used to carefully monitor the injury and disturbance zones to minimize impacts to marine mammals. With this protective plan in place this project is not anticipated to result in any long term impacts.

NOISE: AIRBORNE NOISE

The Level B Airborne noise threshold disturbance area for pinnipeds is small and will not reach the beach or overlap with haulouts. Given that the in-water exclusion zones will be in place during the airborne noise, it is unlikely that this aspect will have any impact on pinnipeds.

## **SECTION 8. ANTICIPATED IMPACTS ON SUBSISTENCE USES**

Marine mammals in the project area are not harvested for subsistence use. Therefore, no impact will occur to subsistence uses.

## **SECTION 9. ANTICIPATED IMPACTS ON HABITAT**

There are no anticipated permanent negative impacts to habitat for any of the seven marine mammal species evaluated for harassment. Marine mammal prey species may temporarily be displaced by noise generated during pile driving. The pile driving activities are temporary and result in a robust causeway structure that is expected to last decades without need for additional pile driving work. Pile driving may temporarily increase turbidity but this will be localized. The 80 piles already installed at this location did not generate notable turbidity and met the Washington State water quality turbidity standards for extraordinary water. The removal of an estimated 237 tons of creosote treated timber piles is anticipated to yield a net environmental benefit per the NMFS Puget Sound Nearshore Conservation Calculator. The reduction of causeway piles from 677, 12-inch timber and steel piles to 196, 20-inch steel piles will also reduce surface area impeding the natural litoral drift of the northern beaches and active feeder bluffs.

## **SECTION 10. ANTICIPATED EFFECTS OF HABITAT IMPACTS ON MARINE MAMMALS**

Impacts to harbor seals, harbor porpoises, sea lions, orca, humpback whales may include temporary loss of available habitat if these species avoid the project area during pile driving and pile removal activities. Pile driving noise may also disturb fish and other marine prey present within the project area, resulting in avoidance due to lack of prey availability and reduced foraging habitat in the southeastern corner of the Strait of Georgia. The reduction in forage area will be temporary and any disturbed prey species is anticipated to return to the project area when pile driving work is not occurring. The total forage habitat that will be temporarily impacted is a small percentage of the available forage habitat in the area. No documented haulouts are in the disturbance zones of the project which means no marine mammals are anticipated to be displaced from their haulout and residential habitat. Temporary increases in turbidity may occur during pile driving and pile removal. Any increase in turbidity is expected to be short term, localized and within the Washington State water quality standards for extraordinary water. Temporary turbidity increases are not anticipated to impact marine mammals or their habitat.

The project coincides with when the SRKW is in their summer core territory. While the project is within the summer core area, the SRKW are rarely observed in the project area and disturbance is a low risk. They are often seen in adjacent areas on the opposite side of the Strait of Georgia, in Boundary Pass and the Haro Strait. The project will still use marine mammal monitoring to closely watch for the SRKW coming near the project disturbance zone and stop work as the project site is in designated critical habitat to prevent disturbance in their designated critical habitat. Due to their population and thus low population density, temporary impacts to this habitat are not anticipated to affect this stock.

Transient killer whales and humpback whales may be found in the area but again, they are not regular visitors and this is not designated critical habitat for these stocks. The project will still use marine mammal monitoring to closely watch for transient killer whales and humpback whales and stop work if they enter the disturbance zone. Due to their low populations and thus low population densities, temporary impacts to this habitat are not anticipated to affect these stocks.

There are known haulouts for seal and sea lion on the islands adjacent to the project location and to the north and south on the eastern Georgian shorelines. There are healthy populations of harbor seals throughout the Salish Sea and population density calculations predict likely disturbances. They may be temporarily displaced as their habitat will be temporarily disturbed.

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There are healthy populations of harbor porpoises throughout the Salish Sea and population density calculations predict likely disturbances. They may be temporarily displaced as their habitat will be temporarily disturbed.

This project is not anticipated to have any negative long term impacts to marine mammals or their habitat. Habitat impacts may result in temporary displacement for some species. Removal of old creosote treated timbers and a reduction in the total number of piles in the marine environment are expected to be net long term benefits to the marine mammal habitat.

## **SECTION 11. MITIGATION MEASURES TO PROTECT MARINE MAMMALS AND THEIR HABITAT**

Maintenance and repair of the Phillips 66 Dock has been designed to avoid and minimize potential impacts to the environment and marine mammals. This project will also conform to the NMFS and US Army Corps approved project design criteria (PDC), general construction measures (GCM) and best management practices of the Salish Sea Nearshore Programmatic (SSNP), which was designed to identify and standardize protective measures while allowing marine work to be safely and effectively completed. Listed below is a summary of the protective practices that will be implemented during maintenance work at the Phillips 66 Dock.

### **OPERATIONS COORDINATION:**

Phillips 66 shall conduct briefings between construction supervisors and crews, the marine mammal monitoring team, and staff prior to the start of all pile driving activity and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

### **MEASURE PROPOSED TO MINIMIZE IMPACTS TO MARINE MAMMALS:**

Mitigation Measures and Best Management Practices to Minimize Project Hydroacoustic and associated Project Impacts during Vibratory Pile Driving:

- A vibratory driver will be used to minimize peak noise levels.
- Vibratory driving time will not exceed 4 hours in any 24-hour period.
- Pile removal and installation will be completed during the allowable in-water work period (between August 1 and February 1 of each year the permit is valid) when juvenile salmonids and forage fish are not likely to be in the project area.
- Replacement piles will be steel to prevent leaching as approved by the Washington State Department of Natural Resources.
- A marine mammal monitoring program will be implemented to protect marine mammals in the action area. The buffer area will be monitored before and during pile driving. The in-water work will not be initiated, or will be temporarily suspended if a marine mammal is identified within the exclusion radius (shutdown zone) of the work site. See the Monitoring and Shutdown Procedures in Section 13.
- A soft start procedure will be implemented. The objective of a soft-start is to provide a warning and/or give animals in close proximity to pile driving a chance to leave the area prior to a vibratory or impact driver operating at full capacity thereby, exposing fewer animals to loud underwater and airborne sounds.



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- Creosote pile removal will follow applicable practices per the DNR guidance manual: Washington Department of Natural Resources Derelict Creosote Piling Removal Best Management Practices for Pile Removal & Disposal (Updated 1/25/2017).
- All general maintenance Best Management Practices (BMPs) will be followed during in-water work.

**GENERAL MAINTENANCE BMPS FOR ABOVE-WATER WORK (FOR ALL MAINTENANCE PROJECT ASPECTS):**

- All waste and construction materials will be collected and disposed of at an approved upland location.
- No waste material will enter the waterbody.
- All work windows will be observed including authorized in-water work windows defined per the requirements of the conditional use permits from Washington Department of Natural Resources, U.S. Army Corps of Engineers, and Washington Department of Fish and Wildlife.
- Barges will not enter the intertidal region or areas of marine vegetation.
- A written spill prevention, control, and countermeasures plan will be prepared for activities that include the use of heavy equipment or chemicals. The plan will describe measures to prevent or reduce impacts from accidental leaks or spills. It will contain a description of all hazardous materials that will be used, proper storage and handling for those materials, monitoring methods and emergency response / reporting procedures. A spill kit will be available on-site during construction and stored in a location that facilitates immediate deployment if needed.
- The contractor will place secondary containment around all equipment containing oils as necessary (fuel, hydraulic, motor oil, etc.). This containment will be kept free of water (to the best extent possible) in order to provide maximum effectiveness should a spill occur.
- Whenever blasting and/or grinding activities are conducted, secondary containment screening will be erected to capture debris from the work area.
- When replacing sections of pipelines, the lines will be drained of petroleum products and flushed with water. The resultant fluids will be transferred to slop recovery or directed to the wastewater treatment plant within the refinery.
- Secondary containment will be constructed beneath any areas where pipe penetrations (including hot taps) will be made to ensure that no materials or residual fluids are discharged into the water.
- Residual fluids may be drained into the secondary containment for processing or directly removed with a vacuum truck.

## **SECTION 12. MITIGATION MEASURES TO PROTECT SUBSISTENCE USES**

The Project will have no impact on subsistence. Therefore, mitigation measures to protect subsistence uses are not proposed.

## **SECTION 13 - MONITORING AND REPORTING**

### **MONITORING PLAN:**

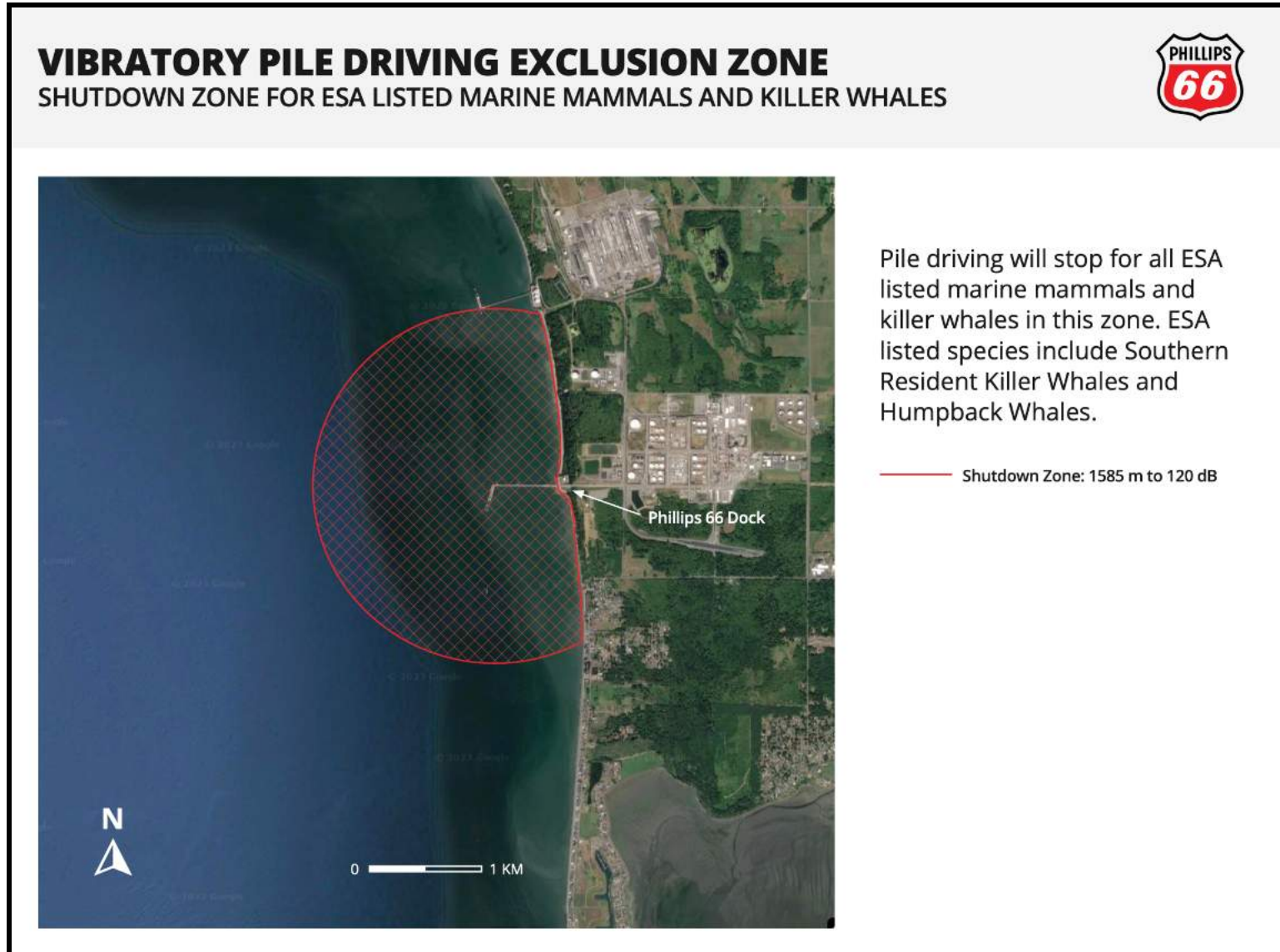
To minimize impacts to marine mammals to the lowest extent practicable, a marine mammal monitoring plan will be approved by NMFS prior to the start of construction. The final monitoring plan will be prepared and submitted to NMFS within 30 days following receipt of comments on the draft plan from NMFS.

One or more protected species observers (PSOs) or marine mammal monitors (MMMs), able to accurately identify and distinguish species of marine mammals, will be present before and during all in-water pile driving and removal activities. Prior to in-water pile driving and removal activities, the proposed exclusion zone for ESA-listed marine mammals will be established (Figure 8). In addition, monitoring zones and exclusion zones for harbor seals, sea lions, and harbor porpoises will also be established (Figures 9 and 10).

### **VISUAL MONITORING AND SHUTDOWN PROCEDURES FOR ESA-LISTED MARINE MAMMALS**

- To avoid impacts to ESA-listed marine mammals and transient killer whales, a shutdown zone will be implemented during all pile removal and pile driving activities. One or more boats will be used to monitor the perimeter of the disturbance zone to ensure construction is stopped before an ESA-Listed marine mammal enters the disturbance zone. The two ESA-Listed species of specific concern are the SRKW and the humpback whale. As other killer whale stock may not be easily distinguishable from the SRKW, the same monitoring procedure will apply to all killer whales. The following in-water shutdown zones are proposed to avoid all potential Level A and Level B harassment of ESA-listed marine mammals and killer whales:
  - A 1,585 meter (0.98 mile) shutdown zone will be implemented during pile driving on days in which vibratory pile driving or removal is anticipated (Figure 8).

Figure 8. ESA-listed marine mammal and killer whale shutdown zone.



**VISUAL MONITORING AND SHUTDOWN PROCEDURES FOR OTHER MARINE MAMMALS**

- The proposed Level A and Level B monitoring zones for harbor seals, harbor porpoises, california sea lions, and steller sea lions are based on the calculated zones of influence summarized in Section 6. The proposed exclusion zones have been developed to avoid all possible Level A impacts for harbor seals, sea lions and harbor porpoises. Although different functional hearing groups of cetaceans (i.e., mid-frequency) and pinnipeds (i.e., otariid) were evaluated, the threshold levels used to develop the monitoring zones were selected to be conservative for cetaceans (and therefore at the lowest levels); as such, the monitoring zones for cetaceans were based on the high frequency threshold (harbor porpoise). The proposed monitoring and exclusion zones are identified in Table 9 and shown in Figures 9 and 10.

**Table 9.** Monitoring and exclusion zones for non-ESA listed marine mammals.

Project Activity	Species	Level B Monitoring Zone	Level A Monitoring and Exclusion Zone
Vibratory Pile Driving	Harbor Seal	1585 m	7.5 m
	Sea lions	1585 m	7.5 m
	Harbor Porpoise	1585 m	7.5 m

Figure 9. Exclusion Zones for Non-Listed Marine Mammals 1 of 2

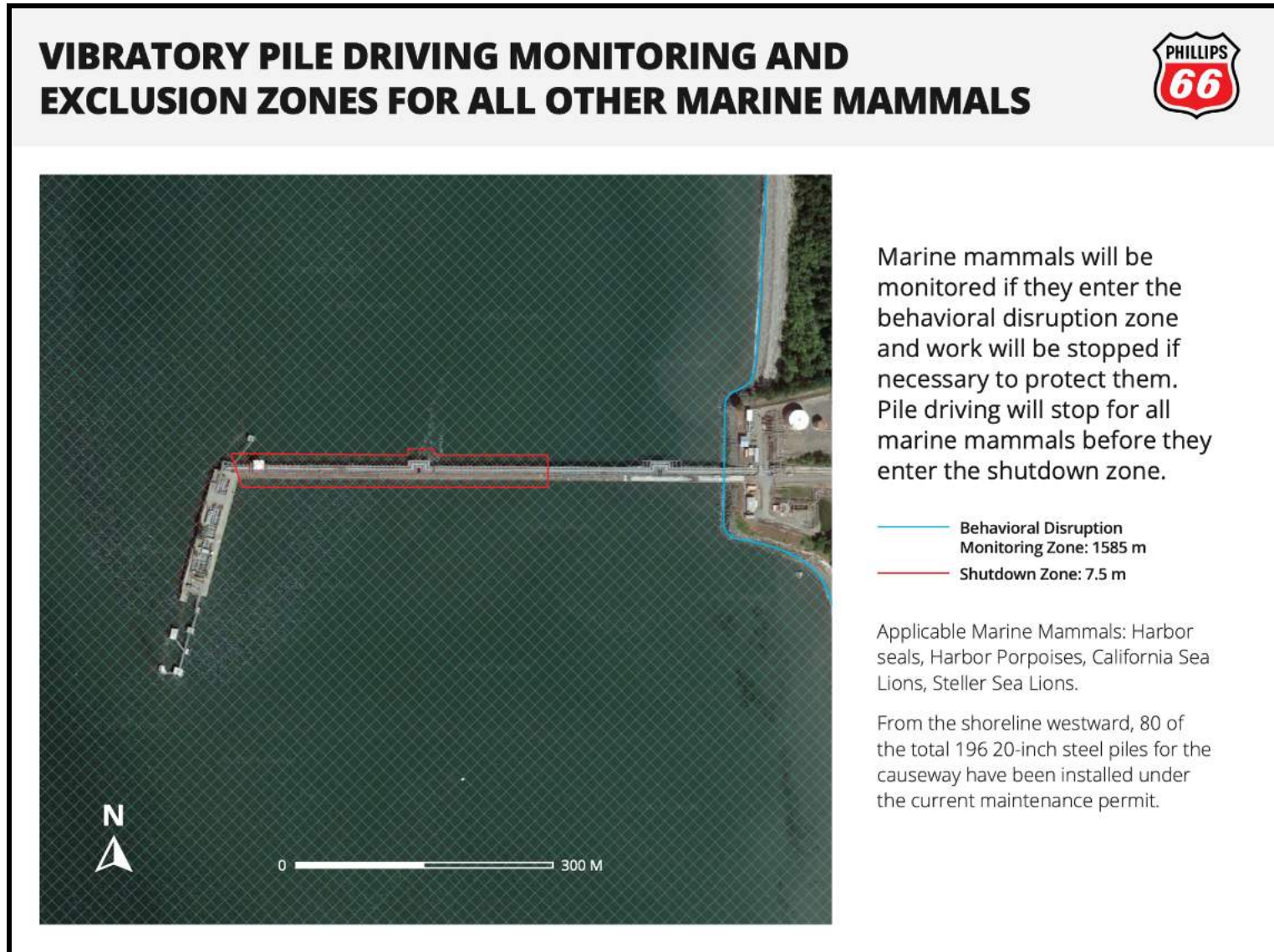
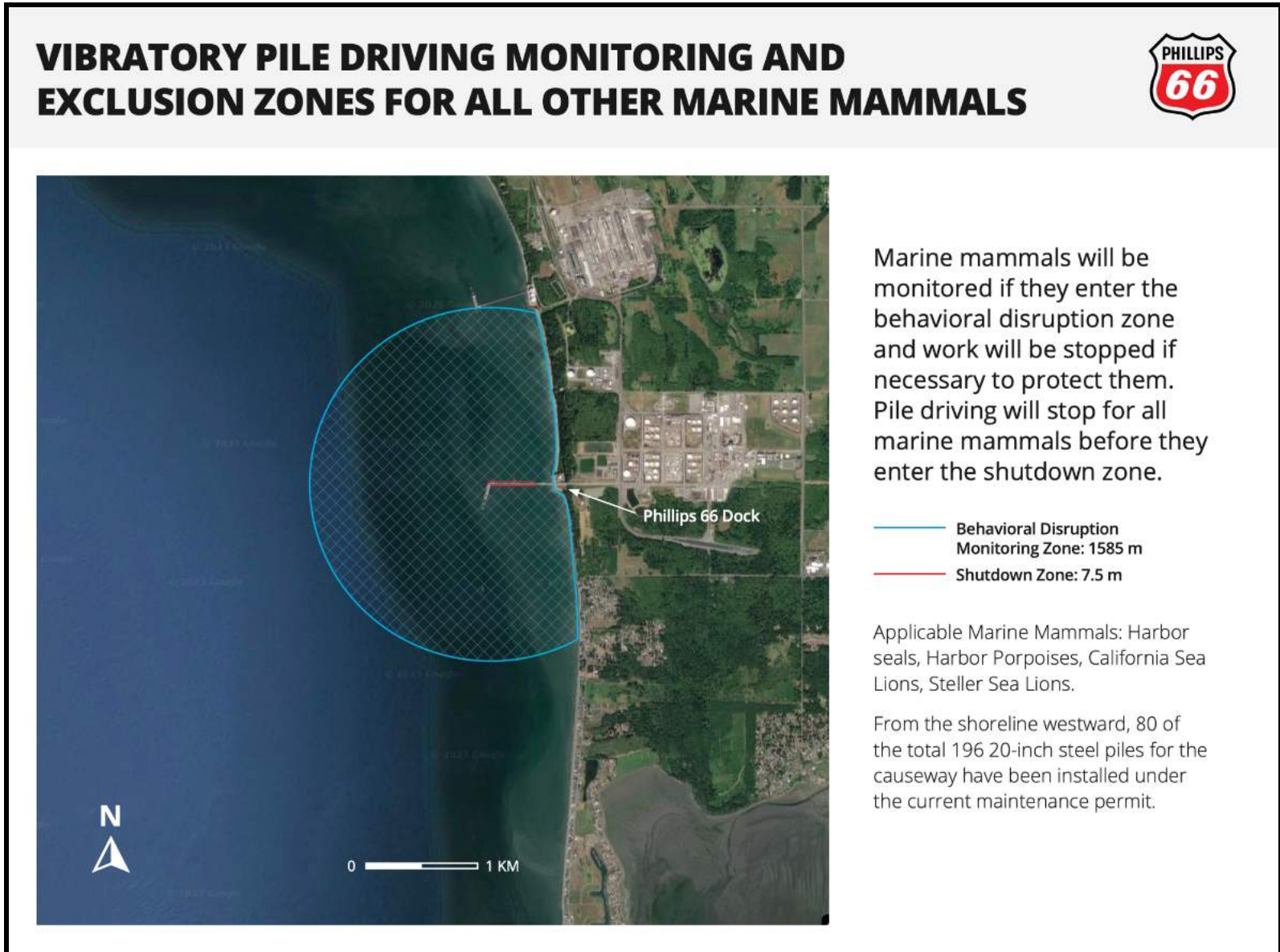


Figure 10. Exclusion Zones for Non-Listed Marine Mammals 2 of 2



**ADDITIONAL PROCEDURAL DETAILS:**

- For all vibratory pile driving, a shutdown and Level B harassment zone will be monitored;
- Visual monitoring will be conducted by qualified, trained protected species observers (PSO), or qualified marine mammal monitors (MMM). An observer for the project will have prior training and / or experience conducting marine mammal monitoring or surveys, and who has the ability to identify marine mammal species and describe relevant behaviors that may occur in proximity to in-water construction activities;
- A trained observer / monitor will be placed at the best vantage point(s) practicable (e.g., from a small boat, construction barges, on shore, or any other suitable location) to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the pile driver operator;
- If the shutdown zone is obscured by fog or poor lighting conditions, pile driving will not be initiated until the entire shutdown zone is visible;
- Monitoring will take place from 30 minutes prior to initiation through 30 minutes post-completion of pile driving. Prior to the start of pile driving, the shutdown zone will be monitored for 30 minutes to ensure that the shutdown zone is clear of marine mammals. Pile driving will only commence once observers have declared the shutdown zone clear of marine mammals;
- If a marine mammal approaches or enters the shutdown zone during vibratory driving, work will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or 15 minutes have passed without re-detection of the animal; and
- If a harbor seal, harbor porpoise, california sea lion, or steller sea lion is observed in the Level B harassment zone, but not approaching or entering the shutdown zone, a “take” will be recorded and the work will be allowed to proceed without cessation of pile driving. Marine mammal behavior will be monitored and documented.
- Marine mammal monitoring for underwater chainsaw use will follow the same protective procedures as the other behavioral disruption zones. Work will stop before ESA listed marine mammals enter the disturbance zone if identified in time. Other marine mammals will be monitored and work will stop if necessary to protect them. See Figure 11.

**DATA TO BE COLLECTED:**

NMFS requires that at a minimum, the following information be collected on the sighting forms:

- Name of the PSOs / MMM;
- Date and time that pile removal or installation begins and ends;
- Construction activities occurring during each observation period;
- Weather parameters identified in the acoustic monitoring (e.g., percent cover, visibility);



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- Water conditions (e.g., sea state, tidal state [incoming, outgoing, slack, low, and high]);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Time of sighting;
- Marine mammal behavior patterns observed, including bearing and direction of travel, and, if possible, the correlation to sound pressure levels;
- Distance from pile removal or installation activities to marine mammals and distance from the marine mammal to the observation point;
- Locations of all PSOs / MMMs;
- Other human activity in the area

The marine mammal observers / monitors will note in their behavioral observations, to the extent practicable, if an animal has remained in the area during construction activities. Therefore, it may be possible to identify if the same animal or a different individual are being taken. Harbor seals may be identified by spot patterns or scars and sea lions identified by scars, brands, or fore flipper tags.

### PSO / MMM REQUIREMENTS:

Prior to project commencement, Phillips 66 or the construction contractor will hire one to two qualified PSO(s) / MMM(s) to complete monitoring during construction. The employed PSOs / MMMs will determine the most appropriate observation location(s) for monitoring during pile installation. Locations could include the Dock or a small boat. If necessary, observations may occur from two locations simultaneously.

The minimum qualifications for PSOs / MMMs 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.

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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.

In addition, the following conditions will be met:

1. The monitoring expert(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 monitoring expert(s) will have the following to aid in determining the location of observed listed species, to take action 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 Engineers (USACE) and NMFS upon request.
3. The monitoring expert(s) will have no other primary duty than to watch for and report on events related to marine mammals.
4. The monitoring expert(s) will be in direct communication with on-site project lead and will have shutdown authority.
5. The monitoring expert(s) will scan the exclusion and monitoring zones of 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.

**PRELIMINARY MONITORING DETAILS:**

The facility has not yet selected a contractor to conduct the marine mammal monitoring. The facility tentatively proposes the following monitoring locations but may revise these locations if the contractor has equal or better monitoring plans and/or methods: There are limited elevated locations for protected species observers to be stationed to monitor the exclusion zone and so two monitors are expected to be needed. Monitors will need to be able to monitor the disturbance zone while a ship is at port. The first observer will be shore based at foot of the dock or on the dock and able to scan waters to the north and south of the dock. As second PSO may be skiff based to the west of the dock to track and identify marine mammals

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near the boundary of the exclusion zone and to track east and west of the zones when a ship is at port.

**REPORTING:**

The monitoring report will be submitted to NMFS within 90 work days of the completion of the in-water work period monitoring. The report will detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been taken. The final report will be prepared and submitted to the NMFS within 30 days following receipt of comments on the draft report from the NMFS. The Marine Mammal Monitoring Plan will contain detailed reporting measures.

If an ESA listed marine mammal is taken (i.e. An ESA listed marine mammal(s) is observed entering the exclusion zone before pile-driving operations can be shut down), reinitiation of consultation is required, and the take must be reported to NMFS within one business day.

**MITIGATION EFFECTIVENESS:**

All observers utilized for mitigation activities will be experienced mariners and / or biologists with training in marine mammal detection and behavior. Due to their specialized training, it is expected that visual mitigation will be highly effective. The observers will be positioned in locations, which provide the best vantage point(s) for monitoring. For ESA-Listed species, one or more boats will be used to monitor the perimeter of the disturbance zone to ensure construction is stopped before an ESA-Listed marine mammal enters the disturbance zone. In addition, the small radius of the shutdown zone makes the likelihood of detecting a marine mammal in and around this zone high.

## **SECTION 14. 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.

The neighboring facility may also be conducting in-water pile work during this work window. Phillips 66 will attempt to coordinate monitoring efforts on the days in-water pile work is occurring at both facilities for more robust coverage of the monitoring zones and protection of marine mammals.

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