Request for an Incidental Harassment Authorization Under the Marine Mammal Protection Act

Washington State Department of Transportation Ferries Division

Mukilteo Multimodal Project Tank Farm Pier Removal

October 3, 2013

Washington State Ferries

Washington State Department of Transportation

Submitted To:

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Cover: A humpback whale breaches in late May (2013) into view of a Washington State Ferry and a tour boat in the San Juan Channel near Friday Harbor, Washington. *(The Associated Press/Pacific Whale Watch Association, Justine Buckmaster).*

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Abbreviations and Acronyms

BMP	best management practices
CA-OR-WA	California-Oregon-Washington
CDF	Cumulative Distribution Function
dB	decibels
DPS	Distinct Population Segment
Ecology	Washington State Department of Ecology
ESA	Endangered Species Act
HPA	Hydraulic Project Approval
IHA	Incidental Harassment Authorization
IWC	International Whaling Commission
km	kilometer(s)
m	meters
Makah	Makah Indian Tribe
MM	mitigation measure
MMPA	Marine Mammal Protection Act of 1972
NBKB	Naval Base Kitsap Bangor
NMFS	National Marine Fisheries Service
NMML	National Marine Mammal Laboratory
NOAA	National Oceanographic Atmospheric Administration
NOAA Fisheries	National Oceanic Atmospheric Administration/National Marine Fisheries Service
NTU	nephelometric turbidity units
PBR	potential biological removal
PSAMP	Puget Sound Ambient Monitoring Program
RCW	Revised Code of Washington
RMS	root mean square
SAR	Stock Assessment Report
SPCC	Spill Prevention, Control, and Countermeasures Plan
SR	Southern Resident
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
WSF	Washington State Department of Transportation Ferries Division
ZOI	Zone of Influence

1.0 Description of the Activity

A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals.

1.1 Introduction

The Washington State Department of Transportation (WSDOT) Ferries Division (WSF) operates and maintains 19 ferry terminals and one maintenance facility, all of which are located in either Puget Sound or the San Juan Islands (Figure 1-1). Since its creation in 1951, WSF has become the largest ferry system in the United States (U.S.), operating 28 vessels on 10 routes (Figure 1-1) with over 500 sailings each day.

Figure 1-1 Washington State Ferry System Route Map

To improve, maintain, and preserve the terminals, WSF conducts construction, repair and maintenance activities as part of its regular operations. In preparation for construction of the new Mukilteo Multimodal Ferry Terminal, the Mukilteo Tank Farm Pier, located north of the existing terminal, must be removed (Figure 1-2). The proposed project will occur in marine waters that support marine mammal species. 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 216 102(a) allows for the issuance of an Incidental Harassment Authorization (IHA), provided an activity results in negligible impacts on small numbers of marine mammals and will not adversely affect subsistence use of these animals.

The project's timing and duration and specific types of activities (pile removal) may result in the incidental taking by acoustical harassment (Level B take) of marine mammals protected under the MMPA. WSDOT/WSF is requesting an IHA for eight species of marine mammal (harbor seal, California sea lion, Steller sea lion, Harbor porpoise, Dall's porpoise, killer whale (Southern Resident and transient), gray whale, and humpback whale) that may occur in the vicinity of the project.

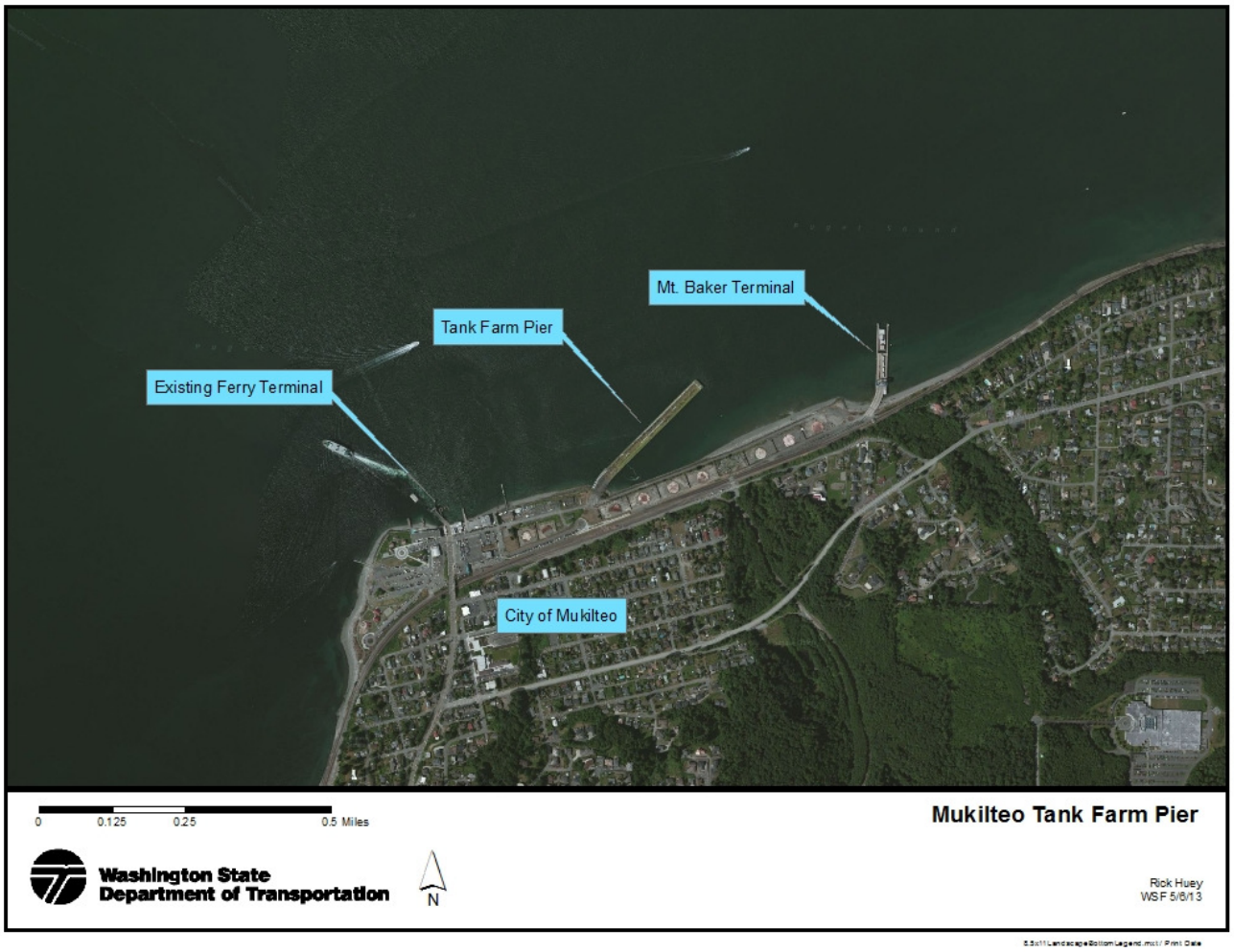

Figure 1-2 Vicinity Map

1.2 Proposed Project

WSF plans to replace the existing Mukilteo Ferry Terminal with a new terminal, which will be located to the east of the existing location at the site of the former U.S. Department of Defense Fuel Supply Point facility, known as the Tank Farm property, which includes a large pier extending into Possession Sound (Figure 1-3). Completion of the entire project will occur over 4 consecutive years (see Section 1.4). WSF plans to submit an IHA request for each consecutive year of construction. This IHA request is for the first year of construction, which is limited to removing the Tank Farm Pier.

Figure 1-3 Mukilteo Tank Farm Pier

1.3 Project Setting and Land Use

The Mukilteo Tank Farm Pier is located in Mukilteo, Snohomish County, Washington. The pier is located in Section 4, Township 21 North, Range 4 West, and is located in Possession Sound, a tributary to Puget Sound (Figure 1-2). Land use in the area is a mix of residential, business and local parks. The Port of Everett Mt. Baker Terminal is to the east of the Tank Farm Pier.

1.4 Project Description

The Mukilteo Tank Farm Pier, which has not been used for fuel transfers since the late 1970s, covers approximately 138,080 ft^2 (3.17 acres) over-water and contains approximately 3,900 12-inch diameter creosote-treated piles (see Appendix A – Project Sheets 1 and 2). Demolition of the pier will remove approximately 7,300 tons of creosote-treated timber from the aquatic environment. Demolition will take approximately ten months over two in-water work windows. Removal of the pier will occur from land and from a barge containing a derrick, crane and other necessary equipment.

Piles will be removed with a vibratory hammer or by direct pull using a chain wrapped around the pile. The crane operator will take measures to reduce turbidity, such as vibrating the pile slightly to break the bond between the pile and surrounding soil, and removing the pile slowly; or if using direct pull, keep the rate at which piles are removed low enough to meet regulatory turbidity limit requirements. If piles are so deteriorated they cannot be removed using either the vibratory or direct pull method, the operator will use a clamshell to pull the piles from below the mudline, or cut at or just below the mudline (up to one foot) using a hydraulic saw. Project-specific requirements for cutoff will be set by the project engineer, considering the mudline elevation and the presence of any contaminants in the sediment.

As part of the future terminal construction, a navigation channel will be dredged through the Tank Farm Pier location in Year Two (see Appendix A). Any piles within the planned dredge channel will be removed completely. Best management practices (BMPs) will be employed during pier removal to minimize turbidity and prevent the spread of any creosote-treated pier fragments. BMPs specific to pile removal include filling holes left by removed piles with clean material to restore the substrate surface, using containment booms to prevent the spread of any oil or wood scraps, and water quality monitoring (see Section 11 – Mitigation Measures).

Pile removal for the Tank Farm Pier will be sequenced to minimize impacts to the nearshore during the early part of the in-water work window when listed salmonids could still be present. Pile removal and demolition of creosote-treated timber elements of the Tank Farm Pier will take place between July 15 and February 15. All work will occur in water depths between 0 and -30 feet mean lower-low water.

1.5 Project Elements

The first year of construction activities for the Mukilteo Multimodal Project is limited to removing the Tank Farm Pier. The noise produced by the proposed vibratory pile extraction may impact marine mammals. Direct pull and clamshell removal are not expected to exceed noise levels that would harm or harass marine mammals. These extraction methods are described below.

1.5.1 Vibratory Hammer Removal

Vibratory hammer extraction is a common method for removing timber piling. A vibratory hammer is suspended by cable from a crane and derrick, and positioned on the top of a pile. The pile is then unseated from the sediments by engaging the hammer, creating a vibration that loosens the sediments binding the pile, and then slowly lifting up on the hammer with the aid of the crane.

Once unseated, the crane continues to raise the hammer and pulls the pile from the sediment. When the pile is released from the sediment, the vibratory hammer is disengaged and the pile is pulled from the water and placed on a barge for transfer upland. Figure 1-4 shows a timber pile being removed with a vibratory hammer. Vibratory removal will take approximately 10 to 15 minutes per pile, depending on sediment conditions.

The piling will be loaded onto the barge or into a container and disposed of offsite in accordance with State of Washington Administrative Code (WAC) 173-304 Minimum Functional Standards for Solid Waste Handling and mitigation measures in Section 11.0, Mitigation Measures, of this document.

Figure 1-4 Vibratory Hammer Removing a Timber Wingwall Pile

1.5.2 Direct Pull and Clamshell Removal

Older timber pilings are particularly prone to breaking at the mudline because of damage from marine borers and vessel impacts. In some cases, removal with a vibratory hammer is not possible if the pile is too fragile to withstand the hammer force. Broken or damaged piles may be removed by wrapping the piles with a cable and pulling them directly from the sediment with a crane. If the piles break below the waterline, the pile stubs will be removed with a clamshell bucket, a hinged steel apparatus that operates like a set of steel jaws. The bucket will be lowered from a crane and the jaws will grasp the pile stub as the crane pulled up. The broken piling and stubs will be loaded onto the barge for off-site disposal. Clamshell removal will be used only if necessary, as it will produce temporary, localized turbidity impacts. Turbidity will be kept within required regulatory limits. Direct pull and clamshell removal do not produce noise that could impact marine mammals.

1.6 Sound Levels

1.6.1 Reference Underwater Vibratory Sound Source Levels

The project includes vibratory removal of 12-inch timber piles. Based on in-water measurements at the WSF Port Townsend Ferry Terminal (Laughlin 2011a), removal of 12-inch timber piles generated 149 to 152 decibels (dB) root mean square (RMS) with an overall average RMS value of 150 dB_{RMS} measured at 16 meters. A worst-case noise level for vibratory removal of 12-inch timber piles will be 152 dB_{RMS} at 16 meters.

1.6.2 Underwater Background Noise

Underwater background noise is the sound level absent of the proposed activity (pile removal) while ambient sound levels are absent of human activity (NMFS 2009). Various factors contribute to background noise levels in marine waters: ship traffic, fishing boat depth sounders, waves, wind, rainfall, current fluctuations, chemical composition and biological sound sources (e.g., marine mammals, fish, shrimp) (Carr et al. 2006). Background noise levels are compared to the National Marine Fisheries Service (NMFS) threshold levels designed to protect marine mammals, in order to determine the zone of influence (ZOI) for noise sources.

For example, 120 dB_{RMS} is the threshold value for Level B acoustical harassment of marine mammals exposed to continuous noise sources (vibratory pile removal noise). However, if background noise levels exceed 120 dB_{RMS}, for example 130 dB_{RMS}, then animals would not be exposed to "harassment level" sounds at less than 130 dB_{RMS} as those sounds no longer dominate; they are essentially part of the background. In this example, the 130 dB_{RMS} isopleth becomes the new project threshold for Level B take of marine mammals.

In-water background noise data taken with the functional hearing group of relevant species is available for the Mukilteo Tank Farm Pier area (Table 1-2). This data was collected and plotted as a Cumulative Distribution Function (CDF) per NMFS guidelines (NMFS 2012a).

1.6.3 Airborne Reference Sound Source Levels

No unweighted in-air source level data is available for 12-inch timber pile removal. Unweighted in-air measurements of vibratory driving of a 30-inch steel pile collected during the 2010 WSF Coupeville Ferry Terminal Wingwalls Replacement Project ranged from 95-97.8 at 50 feet (Laughlin 2010). Removal of 12-inch timber pile will be conservatively assumed to be the same as 30-inch pile driving.

Table 1-1 Mukilteo Area Underwater Background Noise

Frequency Range	Functional Hearing Group	Species	Mukilteo 50% CDF (dB)
7 Hz to 20 kHz	Low-frequency Cetaceans	Gray, Humpback whale	124
75 Hz to 20 kHz	Pinnipeds	Seals, sea lions	122
150 Hz to 20 kHz	Mid-frequency Cetaceans	Killer whale	122
200 Hz to 20 kHz	High-frequency Cetaceans	Harbor, Dall's porpoise	122

Laughlin 2011b

1.6.4 Attenuation to NMFS Thresholds

NMFS has established disturbance and injury noise thresholds for marine mammals (Table 1-3). Determining the area(s) exceeding each threshold level (the ZOI) is necessary to estimate the number of animals for the Level B acoustical harassment take request, and to establish a monitoring area. The vibratory pile removal source level does not exceed the injury thresholds.

Table 1-2 Marine Mammal Injury and Disturbance Thresholds for Underwater and Airborne Noise

Marine Mammals	Airborne Noise from Marine Construction Activity Level at which Pinniped Haul-out Disturbance has been Documented	Vibratory Pile Removal/Driving Disturbance Threshold	Impact Pile Driving Disturbance Threshold	Injury Threshold
Cetaceans	N/A	120 dB_{RMS}	160 dB_{RMS}	180 dB_{RMS}
Pinnipeds	90 dB_{RMS} (unweighted) for harbor seals 100 dB_{RMS} (unweighted) for all other pinnipeds re: 20 µPa	120 dB_{RMS}	160 dB_{RMS}	190 dB_{RMS}

1.6.4.1 Vibratory Pile Removal (Underwater Noise)

To simplify this analysis, the 122 dB_{RMS} underwater background will be the new project threshold for Level B take of marine mammals (the 124 dB_{RMS} underwater background will not be applied in order to maintain a single, conservative ZOI for all species). The National Oceanographic Atmospheric Administration (NOAA) practical spreading model (sound transmission loss of 4.5dB per doubling distance) was used to determine the distance where underwater sound will attenuate to background levels. Using the NOAA practical spreading loss model, the ZOI is defined below, and shown in Figure 1-5:

152 dB_{RMS} at 16meters (12-inch vibratory pile removal) = ~1 mile (1.6 kilometers (km))

Figure 1-5 Mukilteo Tank Farm Vibratory Pile Removal ZOI (122 dB threshold)

1.6.4.2 Vibratory Pile Removal (Airborne Noise)

NMFS has established an in-air noise disturbance threshold of 90 dB_{RMS} (unweighted) for harbor seals, and 100 dB_{RMS} (unweighted) for all other pinnipeds (sea lions).

No unweighted in-air source level data is available for 12-inch timber pile removal. Unweighted in-air measurements of vibratory driving of a 30-inch steel pile collected during the 2010 WSF Coupeville Ferry Terminal Wingwalls Replacement Project ranged from 95-97.8 dB_{RMS} at 50 feet (Laughlin 2010). Removal of 12-inch timber pile will be conservatively assumed to be the same as 30-inch pile driving.

Using a conservative measurement of 97.8 dB_{RMS} at 50 feet, and attenuating at 6 dBA per doubling distance overwater, in-air noise from vibratory pile removal will attenuate to the 90 dB_{RMS} harbor seal threshold within approximately 123 feet/37 meters, and to the 100 dB_{RMS} sea lion threshold within approximately 39 feet/12 meters (Figure 1-5).

The closest documented harbor seal haul-outs are the Naval Station Everett floating security fence and the Port Gardner log booms (4.5 miles NE). The closest documented sea lion haul-outs are the Everett Harbor navigation buoys (3.0/3.5 miles NE) (Figure 3-1). In-air disturbance will be limited to those pinnipeds moving on the surface through the immediate pier area, within approximately 123 feet/37 meters and 39 feet/12 meters of vibratory pile removal (Figure 1-6).

Figure 1-6 Pinniped In-air Disturbance Areas

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2.0 Dates, Duration, and Region of Activity

The date(s) and duration of such activity and the specific geographical region where it will occur.

2.1 Dates

The construction of the new Mukilteo Ferry Terminal will take place over four in-water work seasons. Table 2-1 shows project activities for each year of construction. The duration of pile removal and driving will be less than the duration noted in the table, as other construction activities will also be taking place. The duration of pile removal for Year One is presented in Section 2.0. The subject of this IHA application is the pier removal work to be completed in Year One. New MMPA applications will be submitted for in-water construction to be conducted in subsequent years for this project.

Table 2-1 In-water Project Construction Schedule

Construction Year	Duration (months)	Work Tasks
One (2014/15)	7	Tank Farm Pier removal.
Two (2015/16)	7	Complete Tank Farm Pier removal, dredge channel. Install building/trestle piles and stone columns.
Three (2016/17)	7	Install transfer span drilled shafts, wingwalls, fixed dolphins, passenger overhead loading drilled shafts and fishing pier piles. Construct passenger building.
Four (2017/18)	1	Relocate existing floating dolphin from current terminal, remove current terminal and existing fishing pier when new terminal is operational.

Due to NMFS and U.S. Fish and Wildlife Service (USFWS) in-water work timing restrictions to protect salmonids listed under the Endangered Species Act (ESA), planned WSF in-water construction is limited each year to July 15 through February 15. For removal of the Tank Farm Pier, in-water construction is planned to take place between July 15, 2014 and February 15, 2015; and July 15, 2015 and February 15, 2016. A new MMPA application will be submitted for subsequent construction years for this project.

2.2 Duration

The daily construction window for pile removal will begin no sooner than 30 minutes after sunrise to allow for initial marine mammal monitoring, and will end at sunset (or soon after), when visibility decreases to the point that effective marine mammal monitoring is not possible.

Vibratory pile removal will take approximately 10 to 15 minutes per pile. Assuming the worst case of 15 minutes per pile (with no direct pull or clamshell removal), removal of 3,900 piles will take and estimated 675-975 hours over 180 days of pile removal over two seasons (Table 2-1). The estimate of 180 days provides for some shorter pile pulling days during winter, transition time to dig out broken piles, and removal of decking. This application addresses Year One only, with removal of 1,835 piles taking approximately 90 days. It is likely that the actual hours of vibratory pile removal will be less, as the duration conservatively assumes that every pile will be removed with a vibratory hammer. It is likely that many will be require direct pull or clamshell removal if necessary, both of which are quicker than vibratory extraction.

Table 2-2 Worst Case Pile Removal Duration

Vibratory Pile Removal	Maximum Number of Piles	Hours	Days
Total	3,900	675-975	180
Year One	1,835	318-516	90
Year Two	2,065	357-459	90

2.3 Region of Activity

The proposed activities will occur at the Mukilteo Tank Farm located in Mukilteo, Washington (see Figures 1-1 and 1-2).

3.0 Species and Numbers of Marine Mammals in Area

This section is a combination of items 3 and 4 from NOAA's list of information required for an incidental take authorization. It provides:

> *The species and numbers of marine mammals likely to be found within the activity area.*
>
> *A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities.*

It also describes the ESA and MMPA status for each species. Possible ESA status designations include:

- Threatened: "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."
- Endangered: "any species which is in danger of extinction throughout all or a significant portion of its range."
- Proposed: *candidate species* that were found to warrant listing as either threatened or endangered and are officially proposed as such in a *Federal Register* notice.
- Delisted: No longer listed under the ESA.
- Unlisted: Not currently listed under the ESA.

Possible MMPA status designations include:

- Strategic: a marine mammal stock for which the level of direct human-caused mortality exceeds the potential biological removal level; which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; or which is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA.
- Depleted: the Secretary, after consultation with the Marine Mammal Commission and the Committee of Scientific Advisors on Marine Mammals established under MMPA title II, determines that a species or population stock is below its optimum sustainable population; a State, to which authority for the conservation and management of a species or population stock is transferred under section 109, determines that such species or stock is below its optimum sustainable population; or a species or population stock is listed as a threatened or endangered species under the ESA.
- Non-depleted: a species or population stock is at or above its optimum sustainable population (NMFS 2013a).

3.1 Species Present

Eight marine mammal species may be found in the Mukilteo Tank Farm Pier area (Table 3-1).

Table 3-1 Marine Mammal Species Potentially Present in Region of Activity

Species	ESA Status	MMPA Status	Timing of Occurrence	Frequency of Occurrence
Harbor Seal	Unlisted	Non-depleted	Year-round	Common
California Sea Lion	Unlisted	Non-depleted	August-April	Common
Steller Sea Lion	Threatened	Strategic/Depleted	October-May	Rare
Harbor Porpoise	Unlisted	Non-depleted	Year-round	Occasional
Dall's Porpoise	Unlisted	Non-depleted	Year-round (more common in winter)	Occasional
Killer Whale Southern Resident	Endangered	Strategic/Depleted	October-March	Occasional
Killer Whale Transient	Unlisted	Strategic/Depleted	March- May (intermittently year-round)	Occasional
Gray Whale	Delisted	Non-depleted	January-May	Occasional
Humpback Whale	Endangered	Strategic/Depleted	April-June	Occasional

3.2 Pinnipeds

There are three species of pinnipeds that may be found in the Tank Farm Pier area: harbor seal (*Phoca vitulina richardsi*), California sea lion (*Zalophus californianus*) and Steller sea lion (*Eumetopias jubatus*). Harbor seals are the most common and only pinniped that breeds and remains in Puget Sound year-round.

3.2.1 Harbor Seal

The Washington Inland Waters stock (which includes Hood Canal, Puget Sound, Georgia Basin and the Strait of Juan de Fuca out to Cape Flattery) may be present near the project site. Pupping seasons vary by geographic region. For the northern Puget Sound region, pups are born from late June through August (WDFW 2012). After October 1 all pups in the inland waters of Washington are weaned. Of the two pinniped species that commonly occur within the region of activity, harbor seals are the most numerous and the only one that breeds in the inland marine waters of Washington (Calambokidis and Baird 1994).

3.2.1.1 Numbers

In 1999, Jeffries et al. (2003) recorded a mean count of 9,550 harbor seals in Washington's inland marine waters, and estimated the total population to be approximately 14,612 animals (including the Strait of Juan de Fuca). There are an estimated 32,000 harbor seals in Washington today, and their population appears to have stabilized (NMFS 2011a/Jeffries 2013).

3.2.1.2 Status

The Washington Inland Waters stock of harbor seals is "non-depleted" under the MMPA and "unlisted" under the ESA.

3.2.1.3 Distribution

Harbor seals are the most numerous marine mammal species in Puget Sound. Harbor seals are non-migratory; their local movements are associated with such factors as tides, weather, season, food availability and reproduction (Scheffer and Slipp 1944; Fisher 1952; Bigg 1969, 1981). They are not known to make extensive pelagic migrations, although some long-distance movements of tagged animals in Alaska (174 km) and along the U.S. west coast (up to 550 km) 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). The closest documented harbor seal haul-out sites to the Tank Farm Pier are the Naval Station Everett floating security fence, and the Port Gardner log booms, both approximately 4.5 miles northeast of the project site (Figure 3-1). Harbor seals may also haul-out on undocumented sites in the area, such as beaches (Figure 3-2).

Since June 2012, Naval Station Everett personnel have been conducting counts of the number of harbor seals that use the in-water security fence floats as haul-outs. Table 3-2 shows the highest one-day count for the months where data is available. As of April 18, 2013, the highest count was 343 seals observed during one day in October 2012. The average number of seals hauled out for the 8 days of monitoring falling within the Tank Farm Pier removal work window (July 15-February 15) was 117 (U.S. Navy 2013). However, given the distance from the haul-out to the Tank Farm Pier, it is not expected that the same numbers would be present in the ZOI.

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. Marine mammal sightings data were collected during these cruises. During 24 cruises within the ZOI falling within the Tank Farm Pier removal window (July 15-February 15), the highest count was 13 seals observed during one day in November of 2012. The average number of seals observed during these cruises was 2.4 (ORCA 2013).

According to the NMFS National Stranding Database (2007-2013), there were 7 confirmed harbor seal strandings within 0.5 miles of Tank Farm Pier (NMFS 2013b).

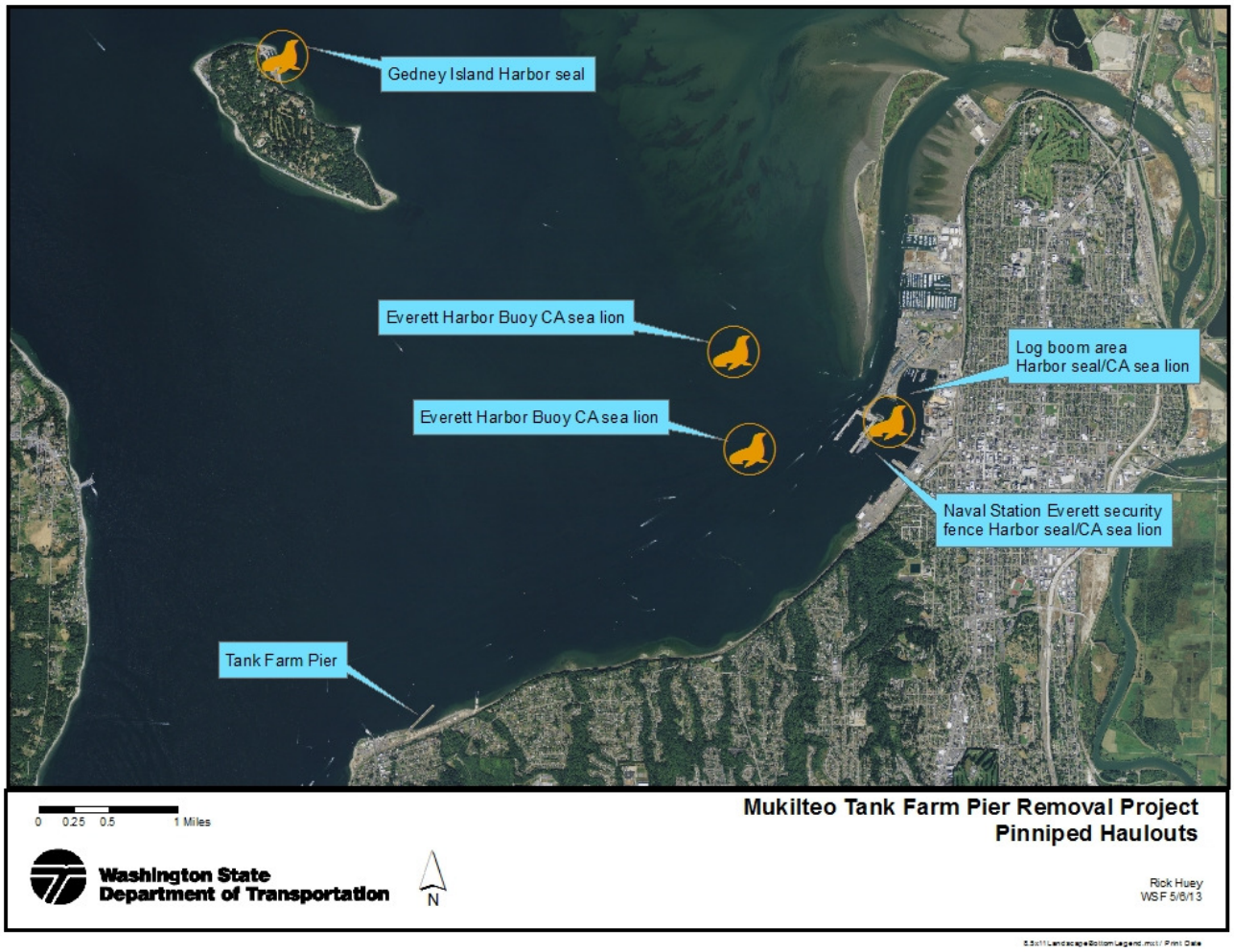

Figure 3-1 Mukilteo Area Pinniped Haul-out Sites

Figure 3-2 Mukilteo Area Potential Beach Haul-out Sites

Table 3-2 Naval Station Everett Harbor Seal Highest Daily Counts 2012-2013
(*Proposed in-water work window months highlighted*)

	2012	2013
June	191	*
July	215	*
August	198	*
September	254	*
October	343	*
November	338	*
December	158	*
January	*	140
February	*	131
March	*	104
April	*	153
May	*	*

*no sampling/or no count reported

3.2.2 California Sea Lion

Washington California sea lions are part of the U.S. stock, which begins at the U.S./Mexico border and extends northward into Canada.

3.2.2.1 Numbers

The U.S. stock was estimated at 296,750 in the 2011 Stock Assessment Report (SAR) and may be at carrying capacity, although more data are needed to verify that determination (NMFS 2011b). Some 3,000 to 5,000 animals are estimated to move into northwest waters (both Washington and British Columbia) during the fall (September) and remain until the late spring (May) when most return to breeding rookeries in California and Mexico (Jeffries et al. 2000; J. Calambokidis pers. comm. 2008). Peak counts of over 1,000 animals have been made in Puget Sound (Jeffries et al. 2000).

3.2.2.2 Status

The U.S. stock of California sea lions is “non-depleted” under the MMPA, and “unlisted” under the ESA.

3.2.2.3 Distribution

California sea lions breed on islands off Baja Mexico and southern California with primarily males migrating 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 (WDFW 2000).

California sea lions do not avoid areas with heavy or frequent human activity, but rather may approach certain areas to investigate. This species typically does not flush from a buoy or haul-out if approached.

California sea lions were unknown in Puget Sound until approximately 1979 (Steiger and Calambokidis 1986). Everitt et al. (1980) reported the initial occurrence of large numbers at Port Gardner, Everett (northern Puget Sound) in the spring of 1979. The number of California sea lions using the Everett haul-out at that time numbered around 1,000. Similar sightings and increases in numbers were documented throughout the region after the initial sighting in 1979 (Steiger and Calambokidis 1986), including urbanized areas such as Elliot Bay near Seattle and heavily used areas of central Puget Sound (P. Gearin et al. 1986). In Washington, California sea lions use haul-out sites within all inland water regions (WDFW 2000). The movement of California sea lions into Puget Sound could be an expansion in range of a growing population (Steiger and Calambokidis 1986).

The closest documented California sea lion haul-out sites to the Tank Farm Pier are the Everett Harbor navigation buoys (3.0/3.5 miles NE), and the Naval Station Everett floating security fence and Port Gardner log booms (both 4.5 miles NE) (Figure 3-1).

Since June 2012, Naval Station Everett personnel have been conducting counts of the number of sea lions that use the in-water security fence floats as haul-outs. Table 3-3 shows the highest one-day count for the months where data is available. As of April 18, 2013, the highest count has been 123 California sea lions observed during one day in November 2012. The average number of California sea lions hauled out for the 8 days of monitoring falling within the Tank Farm Pier removal work window (July 15-February 15) is 43 (U.S. Navy 2013). However, given the distance from the haul-out to the Tank Farm Pier, it is not expected that the same numbers would be present in the ZOI.

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. Marine mammal sightings data were collected during these cruises. During 10 cruises within the ZOI falling within the Tank Farm Pier removal window (July 15-February 15), the highest count was 6 California sea lions observed during one day in October of 2008. The average number of sea lions observed during these cruises was 2.8 (ORCA 2013).

According to the NMFS National Stranding Database (2007-2013), there was one confirmed California sea lion stranding within 0.5 miles of the Tank Farm Pier (NMFS 2013b).

Table 3-3 Naval Station Everett California Sea Lion Highest Daily Counts 2012-2013
(*Proposed in-water work window months highlighted*)

	2012	2013
June	3	*
July	3	*
August	39	*
September	41	*
October	95	*
November	123	*
December	75	*
January	*	39
February	*	71
March	75	102
April	*	97
May	*	*

*no sampling/or no count reported

3.2.3 Steller Sea Lion

The Eastern stock of Steller sea lion may be present near the project site.

3.2.3.1 Numbers

The eastern stock of Steller sea lions is estimated to be between 52,847 and 72,223 individuals based on 2001 through 2009 pup counts (NMFS 2011c). For Washington inland waters, Steller sea lion abundances vary seasonally with a minimum estimate of 1,000 to 2000 individuals present or passing through the Strait of Juan de Fuca in fall and winter months (S. Jeffries pers. comm. 2008b).

Steller sea lion numbers in Washington State decline during the summer months, which correspond to the breeding season at Oregon and British Columbia rookeries (approximately late May to early June) and peak during the fall and winter months (WDFW 2000). A few Steller sea lions can be observed year-round in Puget Sound although most of the breeding age animals return to rookeries in the spring and summer (P. Gearin pers. comm. 2008).

3.2.3.2 Status

The eastern stock of Steller sea lions are "depleted/strategic" under the MMPA and "threatened" under the ESA on November 26, 1990 (55 FR 49204). On August 27, 1993, NMFS published a final rule designating critical habitat for the Steller sea lion. No critical habitat has been designated in Washington. Critical habitat is associated with breeding and haul-out areas in Alaska, California, and Oregon (55 FR 49204).

In 2006 the NMFS Steller sea lion recovery team proposed removal of the eastern stock from listing under the ESA based on its annual rate of increase of approximately 3% since the mid-1970s. Delisting is still under consideration (62 FR 24345).

3.2.3.3 Distribution

Breeding rookeries for the eastern stock are located along the California, Oregon, British Columbia, and southeast Alaska coasts, but not along the Washington coast or in inland Washington waters (Angliss and Outlaw 2007). Adult Steller sea lions congregate at rookeries in Oregon, California, and British Columbia for pupping and breeding from late May to early June (Gisiner 1985).

Steller sea lions primarily use haul-out sites on the outer coast of Washington and in the Strait of Juan de Fuca along Vancouver Island in British Columbia. Only sub-adults or non-breeding adults may be found in the inland waters of Washington (Pitcher et al. 2007; P. Gearin pers. comm. 2008). However, the number of inland waters haul-out sites has increased in recent years.

Since June 2012, Naval Station Everett personnel have been conducting counts of the number of sea lions that use the in-water security fence floats as haul-outs. No Steller sea lions have been observed using the security barrier floats haul-out to date (U.S. Navy 2013).

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. No Steller sea lions have been observed in the ZOI during these cruises (ORCA 2013).

The closest documented Steller Sea lion haul-outs to the Tank Farm Pier are the Orchard Rocks and Rich Passage buoys near S. Bainbridge Island (19 miles SW), and Craven Rock near Marrowstone Island (23 miles NW). Haul-outs are generally occupied from October through May, which overlaps with the in-water work window. Any Steller sea lions near the Tank Farm Pier would be transiting through the area.

There is no data available on the number of Steller sea lions that use the Orchard Rocks. Up to 12 Steller sea lions have been observed using the Craven Rock haul-out off of Marrowstone Island in northern Puget Sound (WSF 2010). However, given the distance from this haul-out to the Tank Farm Pier, it is not expected that the same numbers would be present in the ZOI.

According to the NMFS National Stranding Database (2007-2013), there were no Steller sea lion strandings in the area of the Tank Farm Pier (NMFS 2013b).

3.3 Cetaceans

Five cetacean species may be present in the Mukilteo Tank Farm area; harbor porpoise, Dall's porpoise, killer whale, gray whale and humpback whale.

3.3.1 Harbor Porpoise

The Washington Inland Waters Stock of harbor porpoise may be found near the project site. The Washington Inland Waters Stock occurs in waters east of Cape Flattery (Strait of Juan de Fuca, San Juan Island Region, and Puget Sound). Harbor porpoise are high-frequency hearing range cetaceans (Southall et. al. 2007).

3.3.1.1 Numbers

The Washington Inland Waters Stock mean abundance estimate based on 2002 and 2003 aerial surveys conducted in the Strait of Juan de Fuca, San Juan Islands, Gulf Islands, and Strait of Georgia is 10,682 harbor porpoises (NMFS 2011d).

No harbor porpoises were observed within Puget Sound proper during comprehensive harbor porpoise surveys (Osmek et al. 1994) or Puget Sound Ambient Monitoring Program (PSAMP) surveys conducted in the 1990s (WDFW 2008). Declines were attributed to gill-net fishing, increased vessel activity, contaminants, and competition with Dall's porpoise.

However, populations appear to be rebounding with increased sightings in central Puget Sound (Carretta et al. 2007b) and southern Puget Sound (D. Nysewander pers. comm. 2008; WDFW 2008). Recent systematic boat surveys of the main basin indicate that at least several hundred and possibly as many as low thousands of harbor porpoise are now present. While the reasons for this recolonization are unclear, it is possible that changing conditions outside of Puget Sound, as evidenced by a tripling of the population in the adjacent waters of the Strait of Juan de Fuca and San Juan Islands since the early 1990s, and the recent higher number of harbor porpoise mortalities in coastal waters of Oregon and Washington, may have played a role in encouraging harbor porpoise to explore and shift into areas like Puget Sound (Hanson, et. al. 2011).

3.3.1.2 Status

The Washington Inland Waters Stock of harbor porpoise is "non-depleted" under MMPA, and "unlisted" under the ESA.

3.3.1.3 Distribution

Harbor porpoises are common in the Strait of Juan de Fuca and south into Admiralty Inlet, especially during the winter, and are becoming more common south of Admiralty Inlet.

Little information exists on harbor porpoise movements and stock structure near the Mukilteo area, although it is suspected that in some areas harbor porpoises migrate (based on seasonal shifts in distribution). For instance Hall (2004; pers. comm. 2008) found harbor porpoises off Canada's southern Vancouver Island to peak during late summer, while the Washington State Department of Fish and Wildlife's (WDFW) Puget Sound Ambient Monitoring Program (PSAMP) data show peaks in Washington waters to occur during the winter.

Hall (2004) found that the frequency of sighting of harbor porpoises decreased with increasing depth beyond 150 m with the highest numbers observed at water depths ranging from 61 to 100 m. Although harbor porpoises have been spotted in deep water, they tend to remain in shallower shelf waters (<150 m) where they are most often observed in small groups of one to eight animals (Baird 2003). Water depths within the Tank Farm Pier ZOI range from 0 to 192 m.

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. No harbor porpoise have been observed within the ZOI during these cruises (ORCA 2013).

According to the NMFS National Stranding Database, there was one confirmed harbor porpoise stranding within 0.5 miles of the Tank Farm Pier from 2007 to 2013 (NMFS 2013b).

3.3.2 Dall's Porpoise

The California, Oregon, and Washington Stock of Dall's porpoise may be found near the project site. Dall's porpoise are high-frequency hearing range cetaceans (Southall et. al. 2007).

3.3.2.1 Numbers

The most recent estimate of Dall's porpoise stock abundance is 42,000, based on 2005 and 2008 summer/autumn vessel-based line transect surveys of California, Oregon, and Washington waters (NMFS 2011c). Within the inland waters of Washington and British Columbia, this species is most abundant in the Strait of Juan de Fuca east to the San Juan Islands. The most recent Washington's inland waters estimate is 900 animals (Calambokidis et al. 1997). Prior to the 1940s, Dall's porpoises were not reported in Puget Sound.

3.3.2.2 Status

The California, Oregon, and Washington Stock of Dall's porpoise is "non-depleted" under the MMPA, and "unlisted" under the ESA.

3.3.2.3 Distribution

Dall's porpoises are migratory and appear to have predictable seasonal movements driven by changes in oceanographic conditions (Green et al. 1992, 1993), and are most abundant in Puget Sound during the winter (Nysewander et al. 2005; WDFW 2008). Despite their migrations, Dall's porpoises occur in all areas of inland Washington at all times of year (Calambokidis pers. comm. 2006), but with different distributions throughout Puget Sound from winter to summer. The average winter group size is three animals (WDFW 2008).

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. No Dall's porpoise have been observed within the ZOI during these cruises (ORCA 2013).

According to the NMFS National Stranding Database (2007-2013), there were no Dall's porpoise strandings in the area of the Tank Farm Pier (NMFS 2013b).

3.3.3 Killer Whale

The Eastern North Pacific Southern Resident (SR) and West Coast Transient stocks of killer whale may be found near the project site. Killer whales are mid-frequency hearing range cetaceans (Southall et al. 2007).

3.3.3.1 Numbers

Southern Resident Stock

The Southern Residents live in three family groups known as the J, K and L pods. As of July 1, 2013, the stock collectively numbers 82 individuals: J pod has 26 members, K pod has 19 members, and L pod has 37 members (CWR 2013).

West Coast Transient Stock

Transient killer whales generally occur in smaller (less than 10 individuals), less structured pods (NMFS 2013). According to the Center for Whale Research (CWR 2013), they tend to travel in small groups of one to five individuals, staying close to shorelines, often near seal rookeries when pups are being weaned.

The West Coast Transient stock, which includes individuals from California to southeastern Alaska, is estimated to have a minimum number of 354 (NMFS 2012b).

3.3.3.2 Status

Southern Resident Stock

The SR killer whale stock was declared "depleted/strategic" under the MMPA in May 2003 (68 FR 31980). On November 18, 2005, the SR stock was listed as "endangered" under the ESA (70 FR 69903). On November 29, 2006, NMFS published a final rule designating critical habitat for the SR killer whale DPS. Both Puget Sound and the San Juan Islands are designated as core areas of critical habitat under the ESA, excluding areas less than 20 feet deep relative to extreme high water are not designated as critical habitat (71 FR 69054). A final recovery plan for Southern Residents was published in January of 2008 (NMFS 2008).

West Coast Transient Stock

The West Coast Transient stock is "non-depleted" under the MMPA, and "unlisted" under the ESA (NMFS 2010a).

Washington State Status

In Washington State, all killer whales (*Orcinus orca*) that may be present in Washington waters (Southern Resident, West Coast Transient, and Offshore) were listed as a state candidate species in 2000. In April 2004, the State upgraded their status to a "state endangered species" (WDFW 2004).

3.3.3.3 Distribution

The SR and West Coast Transient stocks are both found within Washington inland waters. Individuals of both stocks have long-ranging movements and regularly leave the inland waters (Calambokidis and Baird 1994).

Southern Resident Stock

Southern Residents are documented in coastal waters ranging from central California to the Queen Charlotte Islands, British Columbia (NMFS 2008). They occur in all inland marine waters (Figure 3-3). SR killer whales generally spend more time in deeper water and only occasionally enter water less than 15 feet deep (Baird 2000). Distribution is strongly associated with areas of greatest salmon abundance, with heaviest foraging activity occurring over deep open water and in areas characterized by high-relief underwater topography, such as subsurface canyons, seamounts, ridges, and steep slopes (Wiles 2004).

Sightings compiled by the Orca Network from 1990-2013 show that SR killer whale occurs most frequently in the general area of the Tank Farm Pier in the fall and winter, and are far less common from April through September (Osborne 2008; Orca Network 2013). Table 3-4 presents total SR killer whale sightings (group or individual) per month in the area between 1990 and 2013.

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. No killer whales have been observed within the ZOI during these cruises (ORCA 2013).

According to the NMFS National Stranding Database (2007-2013), there were no killer whale strandings in the area of the Tank Farm Pier (NMFS 2013b).

Seasonal Distribution

Records from 1976 through 2013 document Southern Residents in the inland waters of Washington during the months of March through June and October through December, with the primary area of occurrence in inland waters north of Admiralty Inlet, located in north Puget Sound (Osborne 2008/Orca Network 2013).

Spring/Summer Distribution

Beginning in May or June and through the summer months, all three pods (J, K, and L) of Southern Residents are most often located in the protected inshore waters of Haro Strait (west of San Juan Island), in the Strait of Juan de Fuca, and Georgia Strait near the Fraser River. Historically, the J pod also occurred intermittently during this time in Puget Sound; however, records from 1997-2007 show that J pod did not enter Puget Sound south of the Strait of Juan de Fuca from approximately June through August (Osborne 2008).

Fall/Winter Distribution

In fall, all three pods occur in areas where migrating salmon are concentrated such as the mouth of the Fraser River. They may also enter areas in Puget Sound where migrating chum and Chinook salmon are concentrated (Osborne 1999). In the winter months, the K and L pods spend progressively less time in inland marine waters and depart for coastal waters in January or February. The J pod is most likely to appear year-round near the San Juan Islands, and in the fall/winter, in the lower Puget Sound and in Georgia Strait at the mouth of the Fraser River.

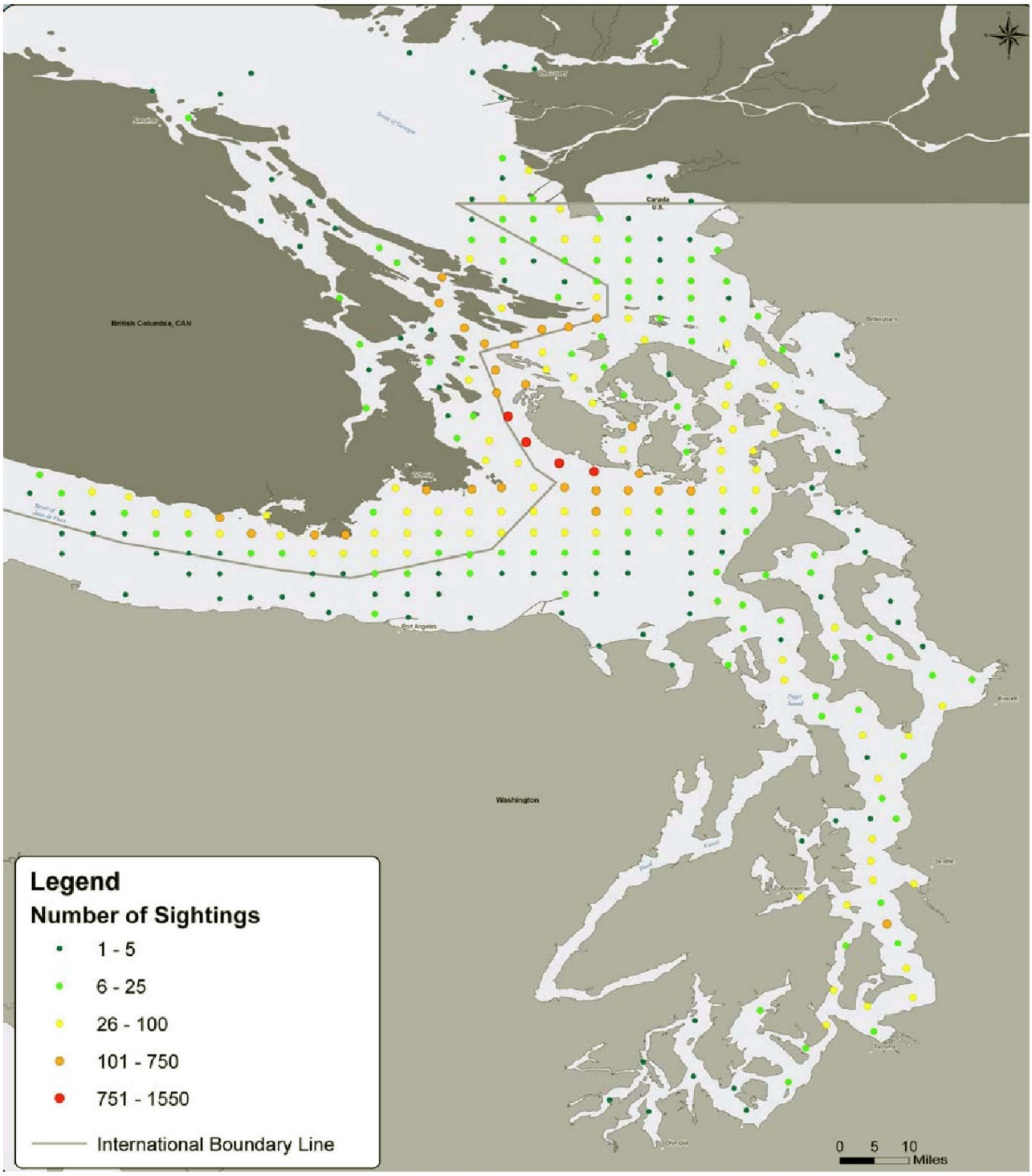

Figure from the Recovery Plan for Southern Resident Killer Whales (NMFS 2008).

Figure 3-3 Distribution of Southern Resident killer whale sightings (groups) 1990-2005

Table 3-4 SR Killer Whale Sightings 1990-2013
(*Proposed in-water work window months highlighted*)

Month	Sightings
July	0
August	3
September	5
October	20
November	20
December	22
January	18
February	7
March	15
April	7
May	14
June	0

West Coast Transient Stock

The West Coast Transient stock occurs in California, Oregon, Washington, British Columbia, and southeastern Alaskan waters. Within the inland waters, they may frequent areas near seal rookeries when pups are weaned (Baird and Dill 1995).

Sightings compiled by the Orca Network from 1990-2013 show that transient killer whale occurs most frequently in the general area of the Mukilteo Tank Farm Pier in the spring and summer, and are far less common from September through February (Orca Network 2013). However, transient killer whale occurrence is less predictable than SR killer whale occurrence, and they may be present at any time of the year. Table 3-5 presents total transient killer whale sightings (group or individual) per month in the area between 1990 and 2013.

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. No killer whales have been observed within the ZOI during these cruises (ORCA 2013).

Seasonal Distribution

West Coast Transients are documented intermittently year-round in Washington inland waters.

Table 3-5 Transient Killer Whale Sightings 1990-2013
(*Proposed in-water work window months highlighted*)

Month	Sightings
July	0
August	3
September	0
October	0
November	0
December	0
January	3
February	0
March	6
April	8
May	9
June	1

3.3.4 Gray Whale

The Eastern North Pacific stock of gray whale may be found near the project site. Gray whales are low-frequency hearing range cetaceans (Southall et al. 2007).

3.3.4.1 Numbers

The minimum population estimate of the Eastern North Pacific stock is 18,017 (NMFS 2011f). Within Washington waters, gray whale sightings reported to Cascadia Research and the Whale Museum between 1990 and 1993 totaled over 1,100 (Calambokidis et al. 1994). Abundance estimates calculated for the small regional area between Oregon and southern Vancouver Island, including the San Juan Area and Puget Sound, suggest there were 137 to 153 individual gray whales from 2001 through 2003 (Calambokidis et al. 2004a). Forty-eight individual gray whales were observed in Puget Sound and Hood Canal in 2004 and 2005 (Calambokidis 2007).

3.3.4.2 Status

The Eastern North Pacific stock of gray whales is "non-depleted" under the MMPA, and was "delisted" under the ESA in 1994 after a 5-year review by NOAA Fisheries. In 2001 NOAA Fisheries received a petition to relist the stock under the ESA, but it was determined that there was not sufficient information to warrant the petition (Angliss and Outlaw 2007/NMFS 2011f).

Distribution

Although typically seen during their annual migrations on the outer coast, a regular group of gray whales annually comes into the inland waters at Saratoga Passage and Port Susan (7.5 miles north) from March through May to feed on ghost shrimp (Weitkamp et al. 1992; Calambokidis pers. comm. 2006). During this time frame they are also seen in the Strait of Juan de Fuca, the

San Juan Islands, and areas of Puget Sound, although the observations in Puget Sound are highly variable between years (Calambokidis et al. 1994). The average tenure within Washington inland waters is 47 days and the longest stay was 112 days (J. Calambokidis pers. comm. 2007).

Sightings compiled by the Orca Network from 1990-2013 show that gray whales are most frequently in the general area of the Mukilteo Tank Farm Pier from January through May, and are far less common from June through September (Orca Network 2013). Table 3-6 presents total gray whale sightings (individual) per month in the area between 1990 and 2013. Sightings in Puget Sound are usually of a single individual, so Table 3-6 sightings are likely of the same individual or low number of individuals over a number of days that month.

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. No gray whales have been observed within the ZOI during these cruises (ORCA 2013).

According to the NMFS National Stranding Database (2007-2013), there were no gray whale strandings in the area of the Tank Farm Pier (NMFS 2013b).

Table 3-6 Gray Whale Sightings 1990-2013
(*Proposed in-water work window months highlighted*)

Month	Sightings
July	0
August	10
September	0
October	0
November	4
December	0
January	26
February	36
March	67
April	61
May	31
June	0

3.3.5 Humpback Whale

The California-Oregon-Washington (CA-OR-WA) stock of humpback whale may be found near the project site. Humpback whales are low-frequency hearing range cetaceans (Southall et. al. 2007).

3.3.5.1 Numbers

The 2007/2008 estimate of 2,043 humpback whales is the best estimate for abundance for this stock (NMFS 2011g).

3.3.5.2 Status

The California-Oregon-Washington stock of humpback whales is "depleted/strategic" under the MMPA, and "endangered" under the under the Endangered Species Conservation Act of 1969. This protection was transferred to the ESA in 1973. A recovery plan was adopted in 1991(NMFS 2011g).

3.3.5.3 Distribution

Historically, humpback whales were common in inland waters of Puget Sound and the San Juan Islands (Calambokidis et al. 2004b). In the early part of this century, there was a productive commercial hunt for humpbacks in Georgia Strait that was probably responsible for their long disappearance from local waters (Osborne et al. 1988). Commercial hunts ended in the 1960's. Since the mid-1990s, sightings in Puget Sound have increased.

This stock calves and mates in coastal Central America and Mexico and migrates up the coast from California to southern British Columbia in the summer and fall to feed (NMFS 1991; Marine Mammal Commission 2003; Carretta et al. 2007b). Few humpback whales are seen in Puget Sound, but more frequent sightings occur in the Strait of Juan de Fuca and near the San Juan Islands. Most sightings are in spring and summer.

Sightings compiled by the Orca Network from 1990-2013 show that humpback whales are most frequently in the general area of the Tank Farm Pier from April through June, and are far less common from July to March (Orca Network 2013). Table 3-7 presents total humpback whale sightings (individual) per month in the area between 1990 and 2013. Sightings in Puget Sound are usually of a single individual.

Since 2007, the Everett Community College Ocean Research College Academy (ORCA) has conducted quarterly cruises that include monitoring stations within the ZOI. No humpback whales have been observed within the ZOI during these cruises (ORCA 2013).

According to the NMFS National Stranding Database (2007-2013), there were no humpback whale strandings in the area of the Tank Farm Pier (NMFS 2013b).

Table 3-7 Humpback Whale Sightings 1990-2013
(*Proposed in-water work window months highlighted*)

Month	Sightings
July	0
August	0
September	1
October	0
November	0
December	0
January	0
February	0
March	0
April	3
May	1
June	4

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4.0 Status and Distribution of Affected Species or Stocks

A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities.

This section has been combined with Section 3.0.

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5.0 Type of Incidental Take Authorization Requested

The type of incidental taking authorization that is being requested (i.e., takes by harassment only, takes by harassment, injury and/or death), and the method of incidental taking.

The MMPA defines "harassment" as:

> any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment] (50 C.F.R, Part 216, Subpart A, Section 216.3-Definitions).

Level A is the more severe form of harassment because it may result in injury or death, whereas Level B only results in disturbance *without* the potential for injury (B. Norberg pers. comm. 2007a).

5.1 Incidental Take Authorization Request

Under Section 101 (a)(5)(D) of the MMPA, WSF requests an IHA from July 15, 2014 through July 14, 2015 for Level B incidental take (behavioral harassment) of the marine mammals described within this application during the Mukilteo Tank Farm Pier Removal project.

The requested authorization is for incidental harassment of any eight species of marine mammals that might enter the 122 dB site-specific background ZOI during active vibratory pile removal activity.

The scheduled pile-removal activities discussed in this application will occur between July 15, 2014 and February 15, 2015.

5.2 Method of Incidental Taking

The method of incidental take is Level B acoustical harassment of any marine mammal occurring within the 122 dB ZOI during vibratory pile removal.

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6.0 Number of Marine Mammals that May Be Affected

By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in [Section 5], and the number of times such takings by each type of taking are likely to occur.

This section summarizes potential incidental take of marine mammals during Year One of the project, which begins with removal of a portion of the Mukilteo Tank Farm Pier, as described in Section 1.0 of this IHA request. Section 6.2 describes the methods used to calculate the estimated ZOI and Section 6.3 describes the potential incidental take for each marine mammal species. Section 6.4 provides the number of marine mammals by species for which take authorization is requested.

Due to the vibratory pile removal source levels, this IHA application will incidentally take by Level B acoustical harassment small numbers of harbor seals, California sea lions, Steller sea lions, harbor porpoise, Dall's porpoise, killer whales, gray whales and humpback whales.

With the exception of harbor seals, it is anticipated that all of the marine mammals that enter the Level B acoustical harassment ZOI will be exposed to pile removal noise only briefly as they are transiting the area. Only harbor seals are expected to forage and haul-out in the Mukilteo Tank Farm Pier ZOI with any frequency and could be exposed multiple times during a project.

6.1 Estimated Duration of Year One Pile Removal

As mentioned previously in Section 2.0, Dates, Duration, and Region of Activity, a worst-case scenario for Year One piling removal assumes that it may take 516 hours over 90 days in Year One to remove 1,835 piles (Table 2-1). The actual number of hours is expected to be less.

6.2 Estimated Zone of Influence

Distances to the NMFS threshold for Level B (harassment) take for vibratory pile removal were estimated and presented in Section 1.6.4, Attenuation to NMFS Thresholds.

The distance to the 122 dB contour Level B acoustical harassment threshold due to vibratory pile removal extends a maximum of 1.6 km (1 mile), and determines the ZOI (Figure 1-5).

Airborne noises can affect pinnipeds, especially resting seals hauled out on rocks or sand spits. The airborne 90 dB Level B threshold for hauled out harbor seals was estimated at 37 meters (123 feet), and the airborne 100 dB Level B threshold for all other pinnipeds is estimated at 12 meters (39 feet) (Figure 1-6).

The closest documented harbor seal haul-out is the Naval Station Everett floating security fence , and the Port Gardner log booms, both approximately 4.5 miles to the northeast of the project site). The closest documented California sea lion haul out site are the Everett Harbor navigation buoys, located approximately 3 miles to the northeast of the project site (Figure 3-1). In-air disturbance will be limited to those animals moving on the surface through the immediate pier area, within approximately 37 meters (123 feet) 12 meters (39 feet) of vibratory pile removal (Figure 1-6).

6.3 Estimated Incidental Takes

Incidental take for each species is estimated by determining the likelihood of a marine mammal being present within a ZOI during active pile removal. Expected marine mammal presence is determined by past observations and general abundance near the Tank Farm Pier during the construction window. Typically, potential take is estimated by multiplying the area of the ZOI by the local animal density. This provides an estimate of the number of animals that might occupy the ZOI at any given moment. However, there are no density estimates for any Puget Sound population of marine mammal. As a result, the take requests were estimated using local marine mammal data sets (e.g., Orca Network, state and federal agencies), opinions from state and federal agencies, observations from Navy biologists, and best professional judgment. All estimates are conservative.

6.3.1 Harbor Seal

Based on the ORCA monitoring, as described in Section 3.0, this analysis uses a conservative estimate of 13 harbor seals potentially within the ZOI.

For Year One pile removal, the duration estimate is 516 hours over 90 days (Table 2-1). For the exposure estimate, it will be conservatively assumed that 13 harbor seals may be present within the ZOI and be exposed multiple times during the project.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N * 90 days of vibratory pile removal activity, where:

N = # of animals (13)

Exposure estimate = 13 * 90 days = 1,170

WSF is requesting authorization for Level B acoustical harassment of 1,170 harbor seals. It is assumed that this number will include multiple harassments of the same individual(s).

6.3.2 California Sea Lion

Based on the ORCA monitoring, as described in Section 3.0, this analysis uses a conservative estimate of 6 California sea lions potentially within the ZOI.

For Year One pile removal, the duration estimate is 516 hours over 90 days (Table 2-1). For the exposure estimate, it will be conservatively assumed that 6 California sea lions may be present within the ZOI and be exposed multiple times during the project.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N * 90 days of vibratory pile removal activity, where:

N = # of animals (6)

Exposure estimate = 6 * 90 days = 540

WSF is requesting authorization for Level B acoustical harassment take of 540 California sea lions. It is assumed that this number will include multiple harassments of the same individual(s).

6.3.3 Steller Sea Lion

Based on the observation data from Craven Rock, as described in Section 3.0, this analysis uses a conservative estimate of 12 Steller sea lions potentially near the ZOI. However, given the distance from this haul-out to the Tank Farm Pier, it is not expected that the same numbers would be present in the ZOI.

For Year One pile removal, the duration estimate is 516 hours over 90 days (Table 2-1). For the exposure estimate, it will be conservatively assumed that 1/6th of the Steller sea lions observed at Craven Rock (2) may be present within the ZOI and be exposed multiple times during the project.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N * 90 days of vibratory pile removal activity, where:

N = # of animals (2)

Exposure estimate = 2 * 90 days = 180

WSF is requesting authorization for Level B acoustical harassment take of 180 Steller sea lions. It is assumed that this number will include multiple harassments of the same individual(s).

6.3.4 Harbor Porpoise

Based on the water depth within the ZOI and group size, as described in Section 3.0, this analysis uses a conservative estimate of 8 harbor porpoises potentially near the ZOI.

For Year One pile removal, the duration estimate is 516 hours over 90 days (Table 2-1). For the exposure estimate, it will be conservatively assumed that 8 Harbor porpoise may be present within the ZOI and be exposed multiple times during the project.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N * 90 days of vibratory pile removal activity, where:

N = # of animals (4)

Exposure estimate = 8 * 90 days = 720

WSF is requesting authorization for Level B acoustical harassment take of 720 Harbor porpoise. It is assumed that this number will include multiple harassments of the same individual(s).

6.3.5 Dall's Porpoise

Based on the average winter group size, as described in Section 3.0, this analysis uses a conservative estimate of 3 Dall's porpoises potentially near the ZOI.

For Year One pile removal, the duration estimate is 516 hours over 90 days (Table 2-1). For the exposure estimate, it will be conservatively assumed that an average winter group size of 3 animals may be present within the ZOI and be exposed multiple times during the project.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N * 90 days of vibratory pile removal activity, where:

N = # of animals (3)

Exposure estimate = 3 * 90 days = 270

WSF is requesting authorization for Level B acoustical harassment take of 270 Dall's porpoise. It is assumed that this number will include multiple harassments of the same individual(s).

6.3.6 Killer Whale

6.3.6.1 Southern Resident Killer Whale

Due to the status of SRKW, NMFS is limiting Level B harassment to 'unintentional take' of 5 percent of the stock per year (Guan 2013). As of July 1, 2013, the SRKW population is estimated to be 82, and 5 percent of the stock is 4 individuals.

WSF is requesting authorization for Level B acoustical harassment 'unintentional' take of 4 SRKW.

To ensure that project take does not exceed 5 percent, the following monitoring steps will be implemented (see Appendix B – Monitoring Plan):

- If SRKW approach the ZOI during vibratory pile removal, work will be paused until the SRKW exit the ZOI.
- If killer whale approach the ZOI during vibratory pile removal, and it is unknown whether they are SRKW or transient, it shall be assumed they are SRKW and work will be paused until the whales exit the ZOI.
- If SRKW enter the ZOI undetected, up to 4 'unintentional' Level B harassment takes are requested. Work will be paused until the SRKW exit the ZOI to avoid further Level B harassment take.
- The intent of monitoring is to prevent any take of SRKW.
- The four unintentional Level B harassment takes will be used only if necessary.

6.3.6.2 Transient Killer Whale

Based on the frequency of sightings during the in-water work window, as described in Section 3.0, this analysis uses a conservative estimate of 5 transient killer whales potentially near the ZOI.

For Year One pile removal, the duration estimate is 516 hours over 90 days (Table 2-1). It is assumed that transient killer whales will not enter the ZOI each day of the project, but may be present in the ZOI for 1 day per month as they transit in and out of the area, for a total of 7 days. For the exposure estimate, it will be conservatively assumed that a pod of five individuals may be present within the ZOI and be exposed up to 7 days during the project.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N * 7 days of exposure to vibratory pile removal activity, where:

N = # of animals (5)

Exposure estimate = 5 * 7 days = 35

WSF is requesting authorization for Level B acoustical harassment 35 transient killer whales. It is assumed that this number will include multiple harassments of the same individual(s).

The following monitoring steps will be implemented during this project (see Appendix B – Monitoring Plan):

- If positively identified transients (as identified by Orca Network, NMFS or another qualified source) approach the ZOI during vibratory pile removal, and it is know that SR killer whales are not in the vicinity (from the same qualified sources) work will continue.
- If the 35 transient killer whale takes have been used, and killer whales approach the ZOI during vibratory pile removal, work shall be paused to avoid take.

6.3.7 Gray Whale

Based on the frequency of sightings during the in-water work window, as described in Section 3.0, this analysis uses a conservative estimate of 2 gray whales potentially near the ZOI.

For Year One pile removal, the duration estimate is 516 hours over 90 days (Table 2-1). It is assumed that Gray whales will not enter the ZOI each day of the project, but may be present in the ZOI for 5 days per month as they forage in the area, for a total of 35 days.

For the exposure estimate, it will be conservatively assumed that up to 2 animals may be present within the ZOI and be exposed multiple times during the project.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N * 35 days of vibratory pile removal activity, where:

N = # of animals (2)

Exposure estimate = 2 * 35 days = 70

WSF is requesting authorization for Level B acoustical harassment take of 70 Gray whales. It is assumed that this number will include multiple harassments of the same individual(s).

6.3.8 Humpback Whale

Based on the frequency of sightings during the in-water work window, as described in Section 3.0, this analysis uses a conservative estimate of 2 humpback whales potentially near the ZOI.

For Year One pile removal, the duration estimate is 516 hours over 90 days (Table 2-1). It is assumed that humpback whales will not enter the ZOI each day of the project, but may be present in the ZOI for 2 days per month as they forage in the area, for a total of 14 days. For the exposure estimate, it will be conservatively assumed that up to 2 animals may be present within the ZOI and be exposed multiple times during the project.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N * 14 days of vibratory pile removal activity, where:

N = # of animals (2)

Exposure estimate = 2 * 14 days = 28

WSF is requesting authorization for Level B acoustical harassment take of 28 humpback whales. It is assumed that this number will include multiple harassments of the same individual(s).

6.4 Number of Takes Requested

The total number of Level B acoustical harassment take requests by species is presented below:

Table 6-1 Level B Acoustical Harassment Take Request

Species	Take Request
Harbor Seal	1,170
California Sea Lion	540
Steller Sea Lion	180
Harbor Porpoise	720
Dall's Porpoise	270
SR Killer Whale	4
Transient Killer Whale	35
Gray Whale	70
Humpback Whale	28

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7.0 Anticipated Impact on Species or Stocks

The anticipated impact of the activity upon the species or stock of marine mammals.

7.1 Introduction

For the Year One, the total number of pile removal hours is estimated to not exceed 516 hours over 90 days (Table 2-1). Pile removal generates sounds that exceed thresholds considered disturbing (Level B) to local marine mammals.

WSF is requesting authorization for Level B acoustical harassment take of 1,350 harbor seals, 540 California sea lions, 180 Steller sea lions, 360 Harbor porpoise, 270 Dall's porpoise, 4 SR killer whales, 24 transient killer whales, 60 gray whales and 30 humpback whales (Table 6-1). Any incidental takes will very likely be multiple takes of individuals, rather than single takes of unique individuals.

These numbers in relation to the overall stock size of each species are discussed below, and summarized in Table 7-1.

7.2 Harbor Seal

The inland Washington waters stock is estimated at 32,000 (NMFS 2011a). This application requests incidental taking by Level B acoustical harassment of up to 1,170 harbor seals, or 4 percent of the stock.

7.3 California Sea Lion

The U.S. stock was estimated at 296,750 (NMFS 2011b). This application requests incidental taking by Level B acoustical harassment of up to 540 California sea lions, or 0.2 percent of the stock.

7.4 Steller Sea Lion

The eastern stock of Steller sea lions is estimated to be 52,847 (NMFS 2011c). This application requests incidental taking by Level B acoustical harassment of up to 180 Steller sea lions, or 0.3 percent of the stock.

7.1 Harbor Porpoise

The Washington Inland Waters Stock of harbor porpoise is estimated to be 10,682 (NMFS 2011d). This application requests incidental taking by Level B acoustical harassment of up to 720 harbor porpoise, or 7 percent of the stock.

7.2 Dall's Porpoise

The California, Oregon, and Washington stock is estimated to be 42,000 (NMFS 2011e). This application requests of incidental taking by Level B acoustical harassment of up to 270 individuals, or 0.6 percent of the stock.

7.3 Killer Whale

The SR stock is at 82 (CWR 2013). This application requests incidental taking by Level B acoustical harassment of up to 4 SRKW, or 5 percent of the stock.

The West Coast Transient stock is estimated at 354 (NMFS 2010a). This application requests incidental taking by Level B acoustical harassment of up to 35 transient killer whale, or 9.8 percent of the stock.

7.4 Gray Whale

The North Pacific Gray whale stock is estimated at 18,017 (NMFS 2011f). This application requests incidental taking by Level B acoustical harassment of up to 60 gray whales, or 0.4 percent of the stock.

7.5 Humpback Whale

The California-Oregon-Washington (CA-OR-WA) stock of humpback whale is estimated at 2,043 (NMFS 2011g). This application requests incidental taking by Level B acoustical harassment of up to 30 humpback whales, or 1 percent of the stock.

Table 7-1 Level B Acoustical Harassment Take Request Percent of Total Stock

Species	Stock Size	Take Request	Take Request % of Stock
Harbor Seal	32,000	1,170	4.0
California Sea Lion	296,750	540	0.2
Steller Sea Lion	52,847	180	0.3
Harbor Porpoise	10,682	720	7.0
Dall's Porpoise	42,000	270	0.6
SR Killer Whale	82	4	5.0
Transient Killer Whale	354	35	9.8
Gray Whale	18,017	70	0.4
Humpback Whale	2,043	20	1.0

7.6 Anticipated Impact on Stocks

If incidental takes occur, it is only expected to result in short-term changes in behavior and potential temporary hearing threshold shift. These takes would be unlikely to have any impact on stock recruitment or survival and therefore, would have a negligible impact on the stocks of these species.

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8.0 Anticipated Impact on Subsistence

The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses.

8.1 Subsistence Harvests by Northwest Treaty Indian Tribes

Historically, Pacific Northwest Native American tribes were known to hunt several species of marine mammals including, but not limited to harbor seals, Steller sea lions, northern fur seals, gray whales and humpback whales. More recently, several Pacific Northwest Native American tribes have promulgated tribal regulations allowing tribal members to exercise treaty rights for subsistence harvest of harbor seals and California sea lions (Carretta et al. 2007a). The Makah Indian Tribe (Makah) has specifically passed hunting regulations for gray whales. However, the directed take of marine mammals (not just gray whales) for ceremonial and/or subsistence purposes was enjoined by the Ninth Circuit Court of Appeals in rulings against the Makah in 2002, 2003 and 2004 (Norberg pers. comm. 2007b; NMFS 2007). Currently, there are no authorized ceremonial and/or subsistence hunts for marine mammals in Puget Sound or the San Juan Islands (Norberg pers. comm. 2007b) with the possible exception of some coastal tribes who may allow a small number of directed take for subsistence purposes.

8.1.1 Harbor Seals

Tribal subsistence takes of this stock may occur, but no data on recent takes are available (NMFS 2011a).

No impacts on the availability of the species or stocks to the Pacific Northwest treaty tribes are expected as a result of the proposed project.

8.1.2 California Sea Lions

Current estimates of annual subsistence take are zero to 2 animals per year (NMFS 2007a).

No impacts on the availability of the species or stock to the Pacific Northwest treaty tribes are expected as a result of the proposed project.

8.1.3 Gray Whales

The Makah ceased whaling in the 1920s after commercial whaling decimated the Eastern North Pacific gray whale population (NMFS 2007b). On June 16, 1994, gray whales were removed from the endangered species list after a determination that the population had "recovered to near its estimated original population size and is neither in danger of extinction throughout all or a significant portion of its range, nor likely to again become endangered within the foreseeable future throughout all or a significant portion of its range" (59 FR 31094). On May 5, 1995, the Makah formally notified the U.S. Government of its interest in resuming treaty ceremonial and subsistence harvest of Eastern North Pacific gray whales, asking the Department of Commerce to represent them in seeking approval from the International Whaling Commission (IWC) for an annual quota (NMFS 2007b). On October 18, 1997, the IWC approved an aboriginal subsistence

quota of 620 Eastern North Pacific gray whales (with an annual cap of 140) for the Russian Checotah people and the Makah (Angliss and Outlaw 2007; NMFS 2007). The Makah successfully hunted one Eastern North Pacific gray whale on May 17, 1999 (NMFS 2005).

Whaling by the Makah was halted on December 20, 2002, when the Ninth Circuit Court of Appeals ruled that an environmental impact statement rather than an environmental assessment should have been prepared under the National Environmental Protection Act and that the Makah must comply with the process prescribed in the MMPA for authorizing take of marine mammals otherwise prohibited by a moratorium. This was further upheld by rulings in 2003 and 2004 (NMFS 2007b). At a 2007 meeting of the IWC (59th Annual Meeting in Anchorage, Alaska), an aboriginal subsistence quota for gray whales was again approved for natives in Russia and 20 whales (four per year for 5 years) for the Makah, but under the Ninth Circuit Court ruling the Makah must first obtain a waiver of the MMPA take moratorium before harvesting under their IWC quota (Norberg pers. comm. 2007b). In February 2005, NMFS received a request from the Makah for a waiver of the MMPA take moratorium to resume limited hunting of Eastern North Pacific gray whales. A draft environmental impact statement to examine the alternatives for a decision to approve or deny the waiver was released for public comment on May 9, 2008, but to date, no final ruling has been made and the future of the Makah whale hunt remains in limbo.

However, any future hunts by the Makah would occur along the outer coast of Washington, not in the Puget Sound area. Therefore, the proposed activities would not interfere with any future hunt.

9.0 Anticipated Impact on Habitat

The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat.

9.1 Introduction

Construction activities will have temporary impacts on marine mammal habitat through increases in-air noise and in-water sound pressure levels from pile removal. Other potential temporary changes are water quality (primarily through increases in turbidity levels) and prey species distribution. Best management practices (BMPs) and minimization practices used by WSF to minimize potential environmental effects from project activities are outlined in Section 11-Mitigation Measures.

9.2 In-air Noise Disturbance to Haul-outs

In-air noise from vibratory pile removal is estimated to reach the behavioral threshold at 37 m for harbor seals and 12 m for all other pinnipeds. No documented haul-out sites are within the in-air disturbance threshold distances. It is possible that a seal could be hauled out on the beach adjacent to the in-shore footprint of the pier (Figure 1-6), but it is likely that construction activity would temporarily make this beach unattractive for hauling out. Therefore, no disturbance to hauled-out pinnipeds is expected, but in-air noise may disturb pinnipeds while surfacing when swimming within the threshold distances. In-air noise from non-pile driving construction activities is not expected to cause in-air disturbance to pinnipeds, because the Mukilteo Tank Farm is currently subject to similar existing levels of in-air noise from ferry, boat, rail, road and other noise sources.

9.3 Underwater Noise Disturbance

NMFS is currently using an in-water noise disturbance threshold of 120 dB_{RMS} for pinnipeds and cetaceans for continuous noise sources, unless the site-specific background noise is higher than 120 dB_{RMS}. In that case, the higher background becomes the threshold. The distance to the Level B acoustical harassment thresholds is described in Section 1.6.4, Attenuation to NMFS Thresholds.

There are several short-term and long-term effects from noise exposure that may occur to marine mammals, including impaired foraging efficiency and its potential effects on movements of prey, harmful physiological conditions, energetic expenditures and temporary or permanent hearing threshold shifts due to chronic stress from noise (Southall et al. 2007). The majority of the research on underwater noise impacts on whales is associated with vessel and navy sonar disturbances and does not often address impacts from pile driving. The threshold levels at which anthropogenic noise becomes harmful to killer whales are poorly understood (NMFS 2008). Because whale occurrence is occasional near the Mukilteo Tank Farm Pier, in-water noise impacts are localized and of short duration, and vibratory pile removal produces only potential Level B harassment, any impact on individual cetaceans and pinnipeds will be limited. Because there are no documented haul-outs within the immediate Tank Farm Pier area, pinniped disturbance will be limited to individuals transiting the ZOI.

9.4 Water and Sediment Quality

Short-term turbidity is a water quality effect of most in-water work, including pile removal. WSF must 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 and driving. 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 1 NTU higher than stations farther from the project area throughout construction.

Similar results were recorded during pile removal operations at two WSF ferry 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 1 NTU. At the Eagle Harbor maintenance facility, within 150 feet, local turbidity levels (from removal of timber and steel piles) did not exceed 0.2 NTU above background levels (WSF 2012). In general, turbidity associated with pile installation is localized to about a 25-foot radius around the pile (Everitt et al. 1980).

Cetaceans are not expected to be close enough to the Tank Farm Pier to experience turbidity, and any pinnipeds will be transiting the area and could avoid localized turbidity. Therefore, the impact from increased turbidity levels is expected to be discountable to marine mammals.

Removal of the Tank Farm Pier will result in 3,900 creosote-treated piles (~7,300 tons) removed from the marine environment. This will result in temporary and localized sediment re-suspension of some of the contaminants associated with creosote, such as polycyclic aromatic hydrocarbons. However, the removal of the creosote-treated wood piles from the marine environment will result in a long-term improvement in water and sediment quality, meeting the goals of WSF's Creosote Removal Initiative started in 2000. The net impact is a benefit to marine organisms, especially toothed whales and pinnipeds that are high on the food chain and bioaccumulate these toxins. This is especially a concern for long-lived species that spend much of their life in Puget Sound, such as Southern Resident killer whales (NMFS 2008).

9.5 Passage Obstructions

Pile removal operations at the Tank Farm Pier will not obstruct movements of marine mammals. Construction at Mukilteo will occur within 195 m of the shoreline, leaving 4 km of Possession Sound for marine mammals to pass unaffected by construction noise. A construction barge will be used to remove pilings. In a previous ESA concurrence letter for the Vashon Island Dolphin Replacement Project that used similar types of construction equipment (August 4, 2008), NMFS stated the following:

> Vessels associated with any project are primarily tug/barges, which are slow moving, follow a predictable course, do not target whales, and should be easily detected by whales when in transit. Vessel strikes are extremely unlikely and any potential encounters with Southern Residents [killer whales] are expected to be sporadic and transitory in nature.

Similarly, vessel strikes of other cetaceans and pinnipeds are unlikely for this project.

9.6 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 marine mammal species utilizing habitat near the Tank Farm Pier 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 Possession Sound, the short-term nature of effects on fish species and the mitigation measures to protect salmonids 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.

Long-term water quality improvements in Possession Sound will result from the removal creosote-treated timber pilings, removing toxins that can bioaccumulate, which will have a beneficial effect on marine mammals.

Passage is not expected to be obstructed as a result of the proposed project. Any temporary obstruction due to barge placement will be localized and limited in duration, and a traveling barge is too slow to strike marine mammals.

10.0 Anticipated Impact of Loss or Modification of Habitat

The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved.

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 direct loss of habitat available to marine mammals during removal of the Tank Farm Pier is expected to be minimal. These temporary impacts have been discussed in detail in Section 9.0, Anticipated Impact on Habitat.

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11.0 Mitigation Measures

The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance.

WSF activities are subject to federal, state and local permit regulations. WSF has developed and routinely uses the best guidance available (e.g., BMPs and mitigation measures) to avoid and minimize (to the greatest extent possible) impacts on the environment, ESA species, designated critical habitats and species protected under the MMPA.

The mitigation measures will be employed during all pile removal activities at the Mukilteo Tank Farm Pier. The language in each mitigation measures is included in the Contract Plans and Specifications and must be agreed upon by the contractor prior to any construction activities. Upon signing the contract, it becomes a legal agreement between the Contractor and WSF. Failure to follow the prescribed mitigation measures is a contract violation.

General mitigation measures used for all construction practices are listed first (Section 11.1, All Construction Activities), followed by specific mitigation measures for pile related activities (Section 11.2, Pile Removal). The mitigation measures listed under Section 11.1 apply to different activities and are, therefore, listed additional times where appropriate.

11.1 All Construction Activities

All WSF construction is performed in accordance with the current WSDOT Standard Specifications for Road, Bridge, and Municipal Construction. Special Provisions contained in preservation and repair contracts are used in conjunction with, and supersede, any conflicting provisions of the Standard Specifications.

All construction equipment will comply with applicable equipment noise standards of the U.S. Environmental Protection Agency, and all construction equipment will have noise control devices no less effective than those provided on the original equipment.

WSF will have a WSF inspector on site during construction. The role of the inspector is to ensure contract compliance. The inspector and the contractor will have a copy of the Contract Plans and Specifications on site and will be aware of all requirements. The inspector will also be trained in environmental provisions and compliance.

WSF will obtain Hydraulic Project Approval (HPA) from WDFW as appropriate and the contractor will follow the conditions of the HPA. HPA requirements will be listed in the contract specifications, and will be a legal requirement of the contract.

The contractor shall be responsible for the preparation of a Spill Prevention, Control and Countermeasures (SPCC) plan to be used for the duration of the project:

- The plan shall be submitted to the Project Engineer prior to the commencement of any construction activities. A copy of the plan with any updates will be maintained at the work site by the contractor.

- The SPCC plan shall identify construction planning elements and recognize potential spill sources at the site. The SPCC plan shall outline BMPs, responsive actions in the event of a spill or release and identify notification and reporting procedures. The SPCC plan shall also outline contractor management elements such as personnel responsibilities, project site security, site inspections and training.
- The SPCC will outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. These items include, but are not limited to gasoline, oils and chemicals. Hazardous materials are defined in Revised Code of Washington (RCW) 70.105.010 under "hazardous substance."
- The contractor shall maintain, at the job site, the applicable spill response equipment and material designated in the SPCC plan.
- The contractor shall regularly check fuel hoses, oil drums, oil or fuel transfers valves, fittings, etc. for leaks, and shall maintain and store materials properly to prevent spills.
- No petroleum products, chemicals or other toxic or deleterious materials shall be allowed to enter surface waters.
- WSF will comply with water quality restrictions imposed by the Washington State Department of Ecology (Ecology) (Chapter 173-201A WAC), which specify a mixing zone beyond which water quality standards cannot be exceeded. Compliance with Ecology's standards is intended to ensure that fish and aquatic life are being protected to the extent feasible and practicable.
- Wash water resulting from washdown of equipment or work areas shall be contained for proper disposal, and shall not be discharged into state waters unless authorized through a state discharge permit.
- Equipment that enters the surface water shall be maintained to prevent any visible sheen from petroleum products appearing on the water.
- There shall be no discharge of oil, fuels, or chemicals to surface waters, or onto land where there is a potential for reentry into surface waters.
- No cleaning solvents or chemicals used for tools or equipment cleaning shall be discharged to ground or surface waters.
- The contractor shall regularly check fuel hoses, oil drums, oil or fuel transfer valves, fittings, etc. for leaks, and shall maintain and store materials properly to prevent spills.

11.2 Timing Windows

Timing restrictions are imposed by NOAA to avoid in-water work when ESA-listed salmonids are most likely to be present. The combined work window for in-water work for the Mukilteo Tank Farm Pier is July 15 through February 15.

11.3 Pile Removal BMPs

The following pile removal mitigation measures are proposed by WSF to reduce impacts on marine mammals to the lowest extent practicable. For WSF's Construction Minimization Measures, see WSF Biological Assessment Reference Section 2.3 (pp. 73-80). Additional BMPs that will be incorporated into the project include:

- The vibratory hammer method will be used to remove timber piles to minimize noise levels.
- Hydraulic water jets will not be used to remove piles.
- Marine mammal monitoring during vibratory pile removal will be employed for the Level B ZOI (see Section 11.5, Marine Mammal Monitoring).
- The crane operator will be instructed to remove piles slowly to minimize turbidity in the water as well as sediment disturbance.
- The operator will "wake up "the pile to break the bond with surrounding sediment by vibrating the pile slightly prior to removal. Waking up the pile avoids pulling out large blocks of sediment, which could cause the pile to break apart during the removal process, and usually results in little to no sediment attached to the pile during withdrawal.
- Extraction equipment will be kept out of the water, above the water line, to prevent creosote release into the water that could occur if the pile is pinched by extraction equipment below the water line.
- Piling will not be broken off intentionally by twisting, bending, or other deformation, to minimize any potential release of creosote into the water column.
- Treated wood will be contained during and after removal to preclude sediments and contaminated materials from entering the aquatic environment.
- The work surface on the barge deck or pier will include a containment basin for pile and any sediment removed during pulling. The basin will be constructed of durable plastic sheeting with sidewalls supported by hay bales or a support structure to contain all sediment. The containment basin shall be removed and disposed of in accordance with applicable federal and state regulations.
- The work surface shall be cleaned by properly disposing of sediment or other residues along with cut-off piling.
- Upon removal from the substrate the pile shall be moved immediately from the water into the containment basin. The pile shall not be shaken, hosed-off, stripped or scraped off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.

- Holes left when removing piling will be filled with clean sand or gravel. Sand or gravel used as fill material will be obtained from a commercial source that is free of contaminants.
- During removal of creosote-treated piles, containment booms and absorbent booms (or other oil-absorbent fabric) will be placed around the perimeter of the work area to capture wood debris, oil, and other materials that could inadvertently be released into marine waters. All accumulated debris will be collected daily and disposed of at an approved upland site.
- Removed creosote-treated piles will be disposed of in a manner that precludes their further use. Piles will be cut into manageable lengths (four feet or less) for transport and disposal in an approved upland location that meets the liner and leachate standards contained in the Washington Administrative Code (WAC), Chapter 173-304, Minimum Functional Standards. No reuse of treated wood will occur.
- Water quality will be monitored during pile removal. Work barges and dredged material disposal barges will not be allowed to ground out or rest on the substrate, or be over or within 25 feet of vegetated shallows (except where such vegetation is limited to state-designated noxious weeds).
- Barges will not be anchored over vegetated shallows for more than 24 hours.
- Demolition and construction materials shall not be stored where high tides, wave action, or upland runoff can cause materials to enter surface waters.

11.4 Soft Start

Soft start requires contractors to initiate noise from vibratory hammers for 15 seconds at reduced energy followed by a 1-minute waiting period. The procedure will be repeated two additional times.

Each day, WSF will use the soft-start technique at the beginning of pile removal or driving, or if pile removal or driving has ceased for more than one hour.

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12.0 Arctic Subsistence Uses, Plan of Cooperation

Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit either a plan of cooperation or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses. A plan must include the following:

(i) A statement that the applicant has notified and provided the affected subsistence community with a draft plan of cooperation;

(ii) A schedule for meeting with the affected subsistence communities to discuss proposed activities and to resolve potential conflicts regarding any aspects of either the operation or the plan of cooperation;

(iii) A description of what measures the applicant has taken an/or will take to ensure that proposed activities will not interfere with subsistence whaling or sealing; and

(iv) What plans the applicant has to continue to meet with the affected communities, both prior to and while conducting activity, to resolve conflicts and to notify the communities of any changes in the operation.

This section is not applicable. The proposed activities will take place in Washington State, specifically in Puget Sound/Possession Sound. No activities will take place in or near a traditional Arctic subsistence hunting area.

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13.0 Monitoring and Reporting Plan

The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding.

13.1 Coordination

WSF will conduct briefings with the construction supervisors and the crew, and marine mammal observer(s) prior to the start of pier removal to discuss marine mammal monitoring protocol and requirement to halt work.

Prior to the start of pile driving, the Orca Network and/or Center for Whale Research will be contacted to find out the location of the nearest marine mammal sightings. The Orca Sightings Network consists of a list of over 600 (and growing) residents, scientists, and government agency personnel in the U.S. and Canada. Sightings are called or emailed into the Orca Network and immediately distributed to other sighting networks including: the Northwest Fisheries Science Center of NOAA Fisheries, the Center for Whale Research, Cascadia Research, the Whale Museum Hotline and the British Columbia Sightings Network.

'Sightings' information collected by the Orca Network includes detection by hydrophone. The SeaSound Remote Sensing Network is a system of interconnected hydrophones installed in the marine environment of Haro Strait (west side of San Juan Island) to study orca communication, in-water noise, bottomfish ecology and local climatic conditions. A hydrophone at the Port Townsend Marine Science Center measures average in-water sound levels and automatically detects unusual sounds. These passive acoustic devices allow researchers to hear when different marine mammals come into the region. This acoustic network, combined with the volunteer (incidental) visual sighting network allows researchers to document presence and location of various marine mammal species.

With this level of coordination in the region of activity, WSF will be able to get real-time information on the presence or absence of whales before starting any pile removal or driving.

13.2 Visual Monitoring

WSF has developed a monitoring plan that will collect sighting data for each marine mammal species observed during pile removal activities. Monitoring for marine mammal presence will take place 30 minutes before, during and 30 minutes after pile removal.

Marine mammal behavior, overall numbers of individuals observed, frequency of observation and the time corresponding to the daily tidal cycle will also be included. Qualified marine mammal observers will be present on site during pile removal. A monitoring plan is provided in Appendix B.

13.3 Reporting Plan

WSF will provide NMFS with a draft monitoring report within 90 days of the conclusion of monitoring. This report will detail the monitoring protocol, summarize the data recorded during monitoring and report the number of marine mammals that may have been harassed.

If comments are received from the NMFS Regional Administrator on the draft report, a final report will be submitted to NMFS within 30 days thereafter. If no comments are received from NMFS, the draft report will be considered to be the final report.

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14.0 Coordinating Research to Reduce and Evaluate Incidental Take

Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.

In-water noise generated by vibratory pile removal at the Mukilteo Tank Farm Pier is the primary issue of concern relative to local marine mammals. WSF has conducted research on sound propagation from vibratory hammers, and plans on continuing that research in 2013-2015to provide data for future ferry terminal projects. Vibratory noise may be monitored during this project, or another more appropriate project, in order to collect further data.

As described in Section 13, WSF will coordinate with local marine mammal sighting networks (Orca Network and/or the Center for Whale Research) to gather information on the location of whales prior to initiating pile removal. Marine mammal monitoring will be conducted to collect information on presence of marine mammals within the ZOI for this project.

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Appendix A
Project Sheets

Appendix B

Marine Mammal Monitoring Plan

Mukilteo Multimodal
Tank Farm Pier Removal Project
Marine Mammal Monitoring Plan

August 30, 2013

In accordance with the July 2013, Washington State Ferries Mukilteo Multimodal Tank Farm Pier Removal Project Incidental Harassment Authorization Request, marine mammal monitoring will be implemented during this project.

Qualified marine mammal observers will be present on site at all times during pile removal. Marine mammal behavior, overall numbers of individuals observed, frequency of observation, and the time corresponding to the daily tidal cycle will be recorded.

The project includes vibratory removal of 12-inch timber piles. Based on in-water measurements at the WSF Port Townsend Ferry Terminal (Laughlin 2011), removal of 12-inch timber piles generated 149 to 152 dB RMS with an overall average RMS value of 150 dB RMS measured at 16 meters. A worst-case noise level for vibratory removal of 12-inch timber piles will be 152 dB RMS at 16 m.

For vibratory pile removal and driving, no injury will occur (source level sounds are less than 180 dB), and so will result in a Level B acoustical harassment zone of influence only. This zone is calculated to extend to the 122 dB RMS in-water background isopleth for vibratory pile removal. Using the NOAA practical spreading model, 152 dB_{RMS} measured at 16m will attenuate to the 122 dB RMS background within ~1 mile (1.6 km) (attached Figure 1).

Monitoring to Estimate Take Levels

WSF proposes the following Marine Mammal Monitoring Plan in order to estimate project Level B acoustical harassment take levels in the ZOI:

- During vibratory pile removal, two land-based biologists will monitor the area from the best observation points available (attached Figure 2). If weather conditions prevent adequate land-based observations, boat-based monitoring may be implemented.
- To verify the required monitoring distance, the vibratory Level B acoustical harassment ZOI will be determined by using a range finder or hand-held global positioning system device.
- The vibratory Level B acoustical harassment ZOI will be monitored for the presence of marine mammals 30 minutes before, during, and 30 minutes after any pile removal activity.
- Monitoring will be continuous unless the contractor takes a significant break, in which case, monitoring will be required 30 minutes prior to restarting pile removal.
- If marine mammals are observed, their location within the ZOI, and their reaction (if any) to pile-driving activities will be documented.

Monitoring to Prevent Killer Whale Take

WSF proposes the following measures to prevent SRKW Level B acoustical harassment take:

- If SRKW (as identified by Orca Network, NMFS or another qualified source) approach the ZOI during vibratory pile removal, work will be paused until the SRKW exit the ZOI to avoid Level B harassment take.
- If killer whales approach the ZOI during vibratory pile removal, and it is unknown whether they are SRKW or transient, it shall be assumed they are SRKW in order to prevent SRKW Level B harassment take.
- If SRKW enter the ZOI undetected, up to 4 'unexpected' Level B harassment takes may be used. Work will be paused until the SRKW exit the ZOI to avoid further Level B harassment take. The intent of monitoring is to prevent any take of SRKW. The 4 unexpected Level B harassment takes will be used only if necessary.

WSF proposes the following Marine Mammal Monitoring Plan for transient killer whale:

- If positively identified transients (as identified by Orca Network, NMFS or another qualified source) approach the ZOI during vibratory pile removal, and it is know that SR killer whales are not in the vicinity (from the same qualified sources) work will continue.
- If the 35 transient killer whale takes have been used, and killer whale approach the ZOI during vibratory pile removal, work shall be paused to avoid take.

Minimum Qualifications for Marine Mammal Observers

Qualifications for marine mammal observers include:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance. Use of binoculars may be necessary to correctly identify the target.
- Experience or training in the field identification of marine mammals (cetaceans and pinnipeds).
- Sufficient training, orientation or experience with the construction operation to provide for personal safety during observations.
- Ability to communicate orally, by radio or in person, with project personnel to provide real time information on marine mammals observed in the area as necessary.
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
- Writing skills sufficient to prepare a report of observations that would include such information as the number and type of marine mammals observed; the behavior of marine mammals in the project area during construction, dates and times when observations were conducted; dates and times when in water construction activities were conducted; dates and times when marine mammals were present at or within the Level B acoustical harassment ZOI; dates and times when pile removal was paused due to the presence of marine mammals.

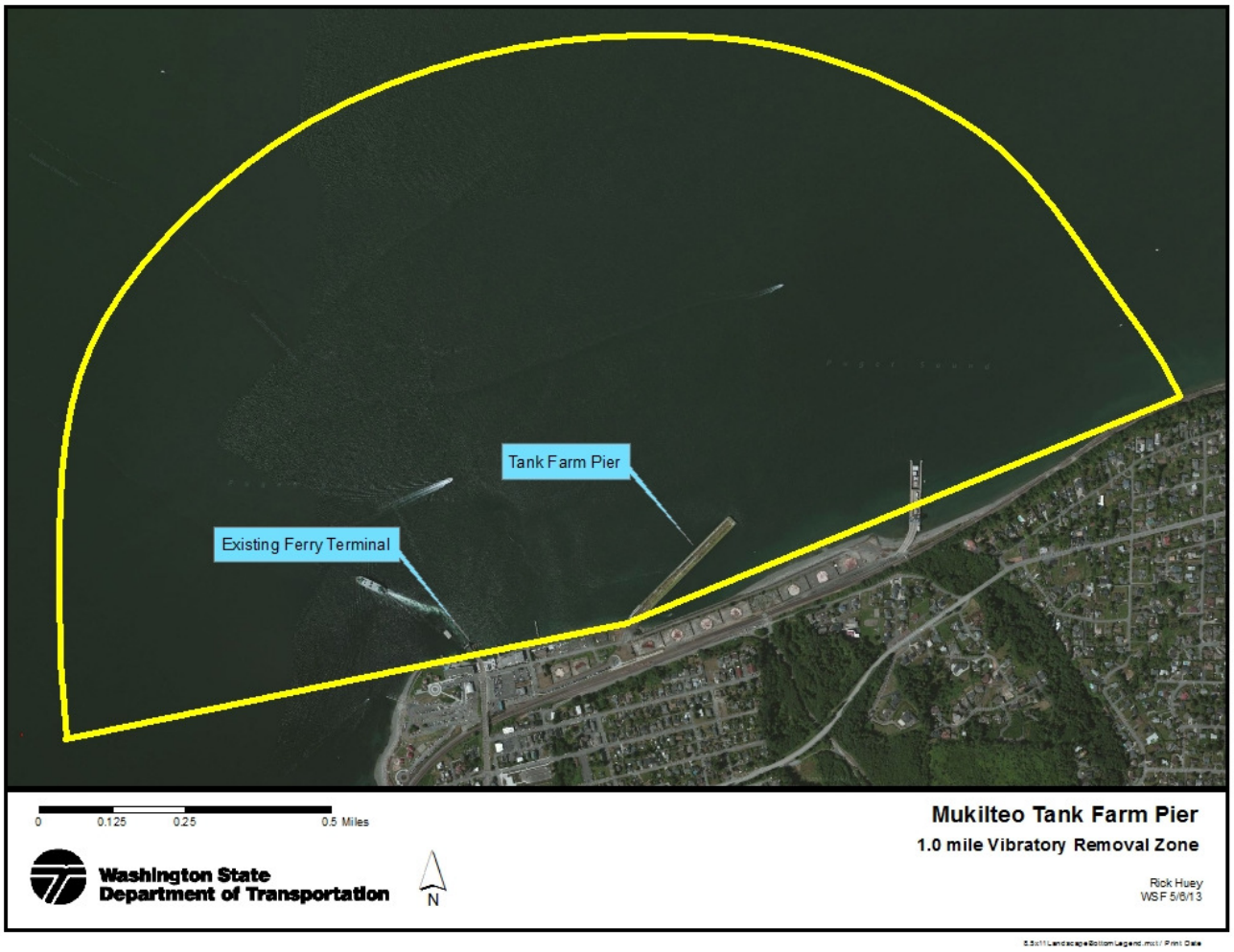

Figure 1 – Mukilteo Tank Farm Pier Removal Vibratory ZOI

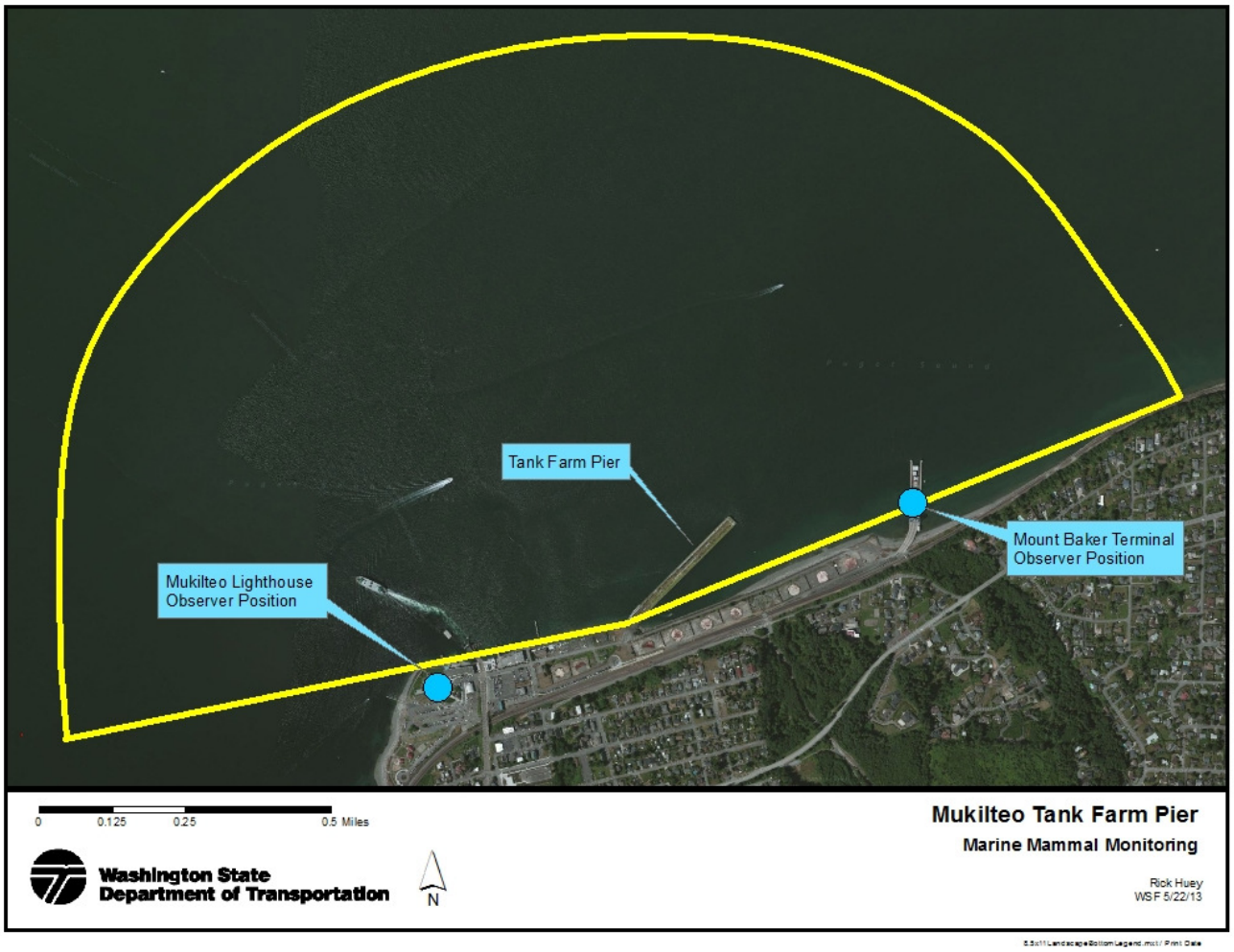

Figure 2 – Mukilteo Tank Farm Pier Removal Monitoring