

**Mukilteo Multimodal Project
Season Two Marine Mammal Monitoring Report**

**Washington State Department of Transportation
Ferries Division**

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**Mukilteo Multimodal Project
Season Two Marine Mammal Monitoring Report**

Submitted To:

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Cover: Harbor seal at Mukilteo Project Site. February 2018. Tyler Graham. WSDOT/WSF.



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ATTACHMENTS

Marine Mammal Monitoring Plan (May 2017).

Mukilteo Multimodal Phase 2 30-inch Steel Pile Vibratory Installation – Zone of Influence
Technical Memorandum (November 17, 2017).



1.0 Description of the Activity

The WSDOT/WSF and the Federal Transit Administration (FTA) are constructing the Mukilteo Multimodal Project to improve the operations and facilities serving the mainland terminus of the Mukilteo-Clinton ferry route in Washington State. The ferry route is part of State Route (SR) 525, the major transportation corridor crossing Possession Sound, the portion of Puget Sound that separates Island County (Whidbey Island) from the central Puget Sound mainland.

The purpose of the Mukilteo Multimodal Project is to provide safe, reliable, and effective service and connection for general purpose transportation, transit, high occupancy vehicles (HOV), pedestrians, and bicyclists traveling between Island County and the Seattle/Everett metropolitan area and beyond. The Mukilteo ferry terminal has not had significant improvements for almost 30 years and needs key repairs. The existing facility is deficient in a number of aspects, such as safety, multimodal connectivity, capacity, and the ability to support the goals of local and regional long-range transportation and comprehensive plans. The project is intended to:

- ☐ Reduce conflicts, congestion, and safety concerns for pedestrians, bicyclists, and motorists by improving local traffic and safety at the terminal and the surrounding area that serves these transportation needs.
- ☐ Provide a terminal and supporting facilities with the infrastructure and operating characteristics needed to improve the safety, security, quality, reliability, efficiency, and effectiveness of multimodal transportation.
- ☐ Accommodate future demand projected for transit, HOV, pedestrian, bicycle, and general purpose traffic. The Mukilteo Multimodal Project consists of four in-water construction seasons:

1.1 Construction Seasons

The project consists of four in-water work seasons:

- ☐ Season 1 was the demolition of the Tank Farm Pier and dredging of the navigation channel, which was completed in 2015/16.
- ☐ No in-water work took place in 2016/17.
- ☐ Season 2 included ground improvement, trestle and terminal building foundation piles, and was completed in 2017/18 (in-water work ended 2/15/18).
- ☐ Season 3 will consist of installation of the remaining in-water piles, which will be completed in 2018/19.
- ☐ Season 4 will consist of the demolition of the existing Mukilteo terminal, which will be completed in 2019/18.



When planning for Season 2 construction, it was uncertain how much pile work would be completed in 2017/18. To be conservative, all in-water pile installation work was included in the Season 2 Incidental Harassment Authorization (IHA) application, but only ~30% of the pile work was completed in 2017/18. Table 1-1 summarizes the piles that were planned for Season 2, those that were completed, and those planned for Season 3.

1.1.1 In-water Project Elements Completed in 2017/18 (Season 2)

1.1.1.1 Test Pile Project

A test pile project was implemented before major construction began. The purpose of the test pile project was to confirm pile load-bearing capacity. The test pile project consisted of driving two temporary 30-inch-diameter hollow steel piles, first with a vibratory hammer, then with an impact hammer to collect pile capacity data. The piles were driven in the upland and nearshore, in line with the location of the proposed permanent upland trestle foundation piles. The piles were removed with a vibratory hammer. During the test, acoustic monitoring was implemented to gather in-water noise data on flanking sound. Monitoring was implemented to protect species of concern and record permitted take.

1.1.1.2 Trestle and Terminal Building Piles

The trestle and portion of the terminal building will be supported by (25) 30-inch steel piles below mean higher high water (MHHW). The 30-inch trestle piles were installed with a vibratory hammer. Since these are load-bearing piles, they were proofed with an impact hammer.

1.1.1.3 In-water Ground Stabilization

The in-water slope waterward of the terminal building was stabilized with 134-steel H-piles in a grid pattern over a 4,500 square foot area. The H-piles were installed with a vibratory hammer fixed with a leader from a barge-mounted derrick. In its final configuration, the top of the pile was placed below the mud line. There was very little benthic disturbance because each H-pile occupies less than one square foot of substrate and was pushed below the mud line.

1.1.1.4 Stormwater Outfall

The proposed upland terminal design discharges 7.2 acres of impervious and 2.9 acres of pervious surface to two outfalls. The current design uses an existing outfall along Park Avenue and includes installation of a new outfall to the east of the Terminal Building. New outfall installation was to require temporary construction of a cofferdam consisting of 90 sheet piles, followed by dewatering and excavation on the beach to install the outfall. However a design change resulted in the use of another shoring technique to install the outfalls, which did not require the use of sheet pile in the water. Therefore, installation and removal of the 90 sheet piles was not needed.



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Table 1-1. Pile Numbers Planned/Completed by Season

Method	Pile Size (inch)	Season 2 Planned	Season 2 Completed	Season 3 Planned	Comment
Vibratory Drive	12	139	134	0	Fewer needed, complete
	24	69	4	65	Up to 69 temporary
	24	48	0	26	Fewer needed, permanent
	30	40	25	16	Permanent
	36	6	0	6	Permanent
	78	2	0	2	Permanent
	120	1	0	1	Permanent
	sheet	90	0	0	Design change, not needed
Vibratory Removal	24	69	4	65	Temporary
	30	9	0	9	Permanent
	sheet	90	0	0	Design change, not needed
Impact Drive	24	69	4	65	Proofed for load-bearing
	30	30	25	0	Fewer needed, complete



2.0 Project Setting and Land Use

The Mukilteo Ferry Terminal is located in the City of Mukilteo, Snohomish County, Washington. The terminal is located in Township 28 North, Range 4 East, Section 3, in Possession Sound. The new terminal would be approximately 1,700 feet (ft.) east of the existing terminal in Township 28N, Range 4E, Section 33 (Figure 1-2). Land use in the Mukilteo area is a mix of residential, commercial, industrial, and open space and/or undeveloped lands.

Project Description

WSF is proposing to relocate the Mukilteo Ferry Terminal approximately one-third of a mile east of the existing terminal. The Mukilteo terminal has not had significant improvements since the early 1980s and components of the facility are aging and do not meet current seismic standards. The current terminal layout makes it difficult for passengers to get in and out of the terminal and contributes to traffic congestion, safety concerns and conflicts between vehicle and pedestrian traffic. The new terminal will improve operations and multimodal connections and safety.

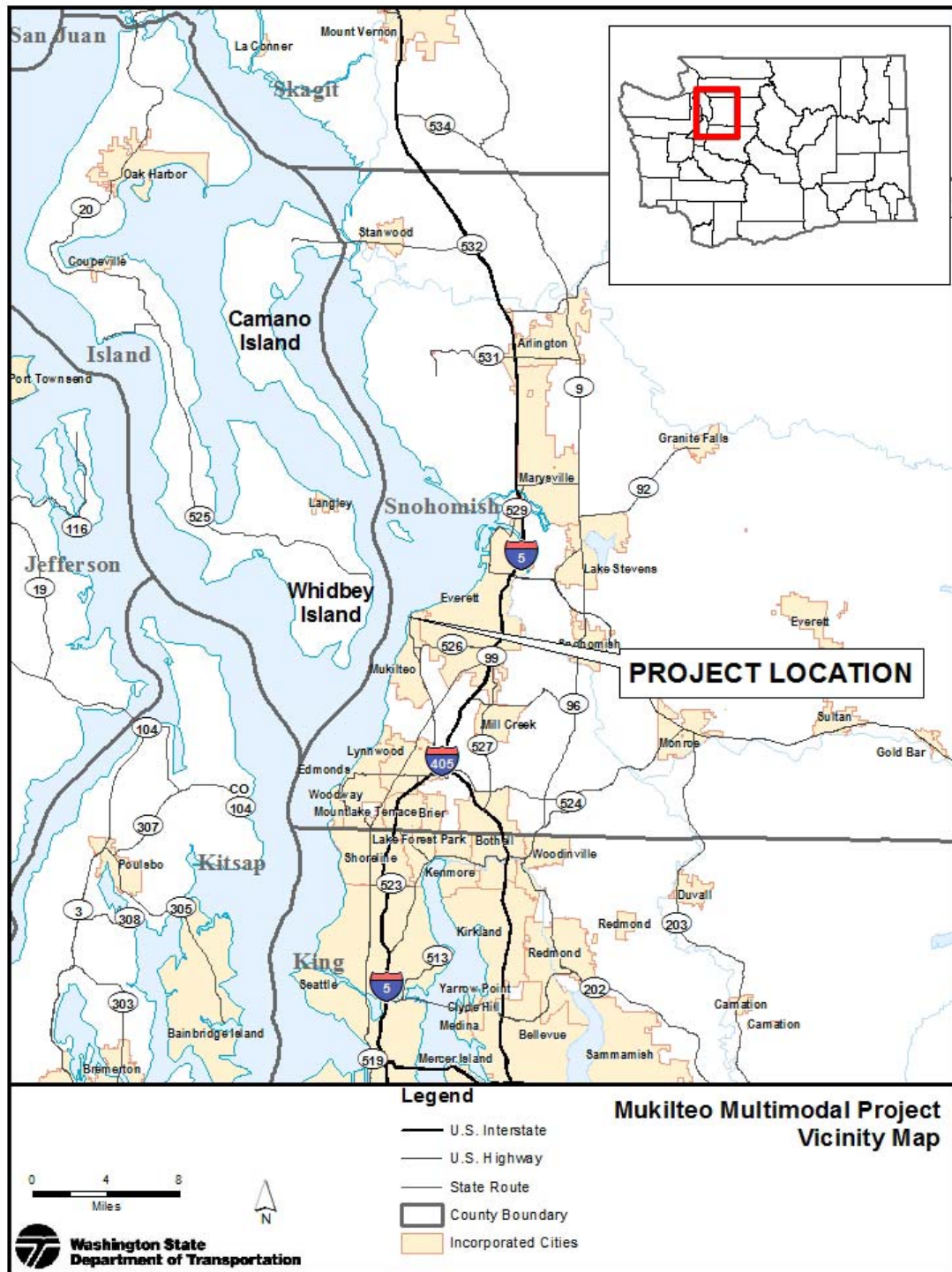


Figure 2-1. Location of Mukilteo Ferry Terminal and nearby features.



3.0 Take Results and Monitoring

Marine mammal monitoring was implemented for all pile driving and removal in the 2017/18 in-water work window (August 1 to February 15). The marine mammal monitoring plan is attached. Pile driving/removal was paused for 12 hours in Year Two in order to avoid unpermitted take or prevent injury. Permitted take, observations and take used are provided below:

Table 3-1. Permitted Take

Species	Total	Level A	Level B
Harbor Seal	1,225	63	1,162
Northern Elephant Seal	20	0	20
California Sea Lion	1,225	0	1,225
Steller Sea Lion	320	0	320
SR Killer Whale	0	0	0
Transient Killer Whale	21	0	21
Gray Whale	44	0	44
Humpback Whale	6	0	6
Harbor Porpoise	6,711	61	6,650
Dall's Porpoise	418	4	414

Table 3-2. Observations and Take Used

Species	Individuals Observed	Total Take Used	Level A Used	Level B Used
Harbor Seal	1,525	499	15	484
Northern Elephant Seal	0	0	0	0
California Sea Lion	707	217	0	217
Steller Sea Lion	7	1	0	1
SR Killer Whale	0	0	0	0
Transient Killer Whale	16	4	0	4
Gray Whale	0	0	0	0
Humpback Whale	0	0	0	0
Harbor Porpoise	85	28	0	28
Dall's Porpoise	2	0	0	0



WSDOT conducted sound source verification site measurements of the Level B harassment zone from vibratory pile driving of a 30-inch steel pile at the Mukilteo Project in November 2017 (report attached). The results show that underwater noise cannot be detected at a distance of 8.0 km (5.0 miles) for 30-inch piles; therefore, this distance was used to redefine the vibratory ZOI for 24- and 30-inch steel piles.

All data was collected in ArcGIS Survey 123. Data fields collected are listed below, and are available upon request.

Table 3-3. Data Fields

Protected Species Observer Data Fields
PSO Monitor Name
Project
PSO Monitoring Station ID
Construction Activity
Weather Conditions
Specify other. (Weather)
Observation Date & Time
Species Observed
Specify other. (Species)
Duplicate Sighting
Number of Individuals Observed
Direction of Sighting from the PSO
Distance from the PSO
Compass Bearing towards Animal from PSO (optional data)
Distance from PSO to Animal (Meters) (optional data)
Compass Bearing to Noise Source from PSO (optional data)
Distance from PSO to Noise Source (Meters) (optional data)
Calculated Angle between the Bearings (optional data)
Distance of Animal from Noise Source (Meters) (optional data)
Observed Behavior
Direction of Travel
Comments about the Sighting
Zone Selection
Number of Individuals in Shutdown Zone
Number of Individuals in Harassment Zone
Harassment/Shutdown Comments