Mukilteo Multimodal Project

Season 3 Marine Mammal Monitoring

April 2018

In accordance with the April 2018, Washington State Ferries Mukilteo Multimodal Project Phase 2 Incidental Harassment Authorization Request, qualified Protected Species Observers (PSOs) will be present on site at all times during pile removal and driving to monitor for marine mammal presence. Data to be collected includes marine mammal behavior, overall numbers of individuals observed, frequency of observation, and the time corresponding to the daily tidal cycle.

Distances to Zones of Exclusion (ZOEs) and Zones of Influence (ZOIs) are provided in Table 1. Monitoring ZOEs/Shutdown Zones have been conservatively simplified (25 m provisional/55 m primary for seals/sea lions; 275 m for cetaceans) in order to make PSO monitoring easier to implement during construction (Table 2).

Table 1. Distances to ZOEs and ZOIs

Installation Method	Pile Size (inches)	ZOE Distance (m)					(km)
		LF Cetacean	MF Cetacean	HF Cetacean	Phocid	Otariid	ZOI
Vibratory Install	24	35	10	85	**25***	10	8.0
	30	25	10	35	10	10	8.0
	36	10	10	10	10	10	8.0
	78	10	10	105	25	10	20.0
	120	55	10	65	10	10	20.0
Vibratory Removal	24	105	10	**275**	**55**	10	8.0
	30	25	10	55	10	10	8.0
Impact	24	10	10	10	10	10	1.0

*Provisional shutdown implemented only if necessary.

However, if the project experiences too many shutdowns, smaller ZOEs will be activated to allow the project to be completed, while staying within permit limits. For example, during 24”-steel pile vibratory driving, modeling results show a high-frequency cetacean (porpoise) Level A harassment zone of 85 m. If too many shutdowns take place due to porpoise being present inside of 275 m, then the plan would activate the 85 m ZOE/Shutdown Zone for that species. Similar zone activations may also take place for other species.

Table 2. Monitoring Zones

ZOE/ZOI	Pile Size/Method	Species	Threshold	Distance to Threshold	Figure
ZOE-1	All sizes/methods	Seals, Sea Lions	Shutdown	55 m/180 ft.	1
ZOE-2	All sizes/methods	Whales, Dolphins, Porpoise	Shutdown	275 m/900 ft.	1
ZOE-3*	All sizes/methods	Seals, Sea Lions	Shutdown	25 m/90 ft.	1
ZOI-1	24-inch steel/impact	All**	Level B Harassment	1.0 km/0.6 miles	1
ZOI-2	24-, 30-, 36-inch steel/vibratory	All**	Level B Harassment	8.0 km/5 miles	2
ZOI-3	78-, 120-inch steel shafts/vibratory	All**	Level B Harassment	20 km/12.5 miles	2

*Implemented only if necessary.

**Shutdown zone for Southern Resident Killer Whale

Monitoring for Shutdown and to Record Level B Take

WSF proposes the following in order to prevent Level A take in the ZOE (shutdown), and to record Level B take in the ZOIs:

- During all pile driving and removal, work will shut down if a Seal or Seal Lion approaches ZOE-1, or if Whales, Dolphins or Porpoises approach ZOE-2 (Figure 1/2). Provisional ZOE-3 will be implemented only if necessary (Figure 2). Work will not resume until the marine mammal has been observed leaving the Shutdown Zone, or if the animal has not been observed for at least 5 minutes.
- During impact driving of 24-inch diameter steel piles, three land-based PSOs will monitor ZOE-1/2 and ZOI-1 (Figure 1).
- During 24-, 30-, 36-inch steel vibratory driving/removal four land-based and one ferry-based PSO will monitor ZOE-1/2 and ZOI-2 (Figure 2).
- During 78- and 120 inch steel vibratory driving/removal five land-based and one ferry-based PSO will monitor ZOE-1/2 and ZOI-3 (Figure 2).
- If visibility is limited (as determined by the WSF Lead PSO), 2 ferry-based PSOs may be used to monitor ZOI-2/3.

- The Lighthouse PSO shall have a spotting scope available to supplement eye and binocular monitoring. The scope shall have minimum zoom lens of 20-60 x 80mm and will be of comparable quality to Nikon or Vortex brands. A sturdy tripod to support the scope shall be used.
- To verify the required monitoring distance, the ZOEs and ZOIs will be determined by using a range finder or hand-held global positioning system device.
- The ZOEs and ZOIs will be monitored for the presence of marine mammals 30 minutes before, during, and 30 minutes after any pile removal/installation 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 ZOIs, and their reaction (if any) to pile removal or 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 ZOIs during pile removal or driving, work will be paused until the SRKW exit the ZOIs to avoid Level B harassment take.
- If killer whales approach the ZOIs during pile removal or driving, 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.

Minimum Qualifications for Protected Species Observers (Marine Mammal)

Qualifications for PSOs 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).
- Possess a smartphone or tablet capable of supporting ArcGIS Survey123 for marine mammal data collection (the survey forms will be provided by WSF).

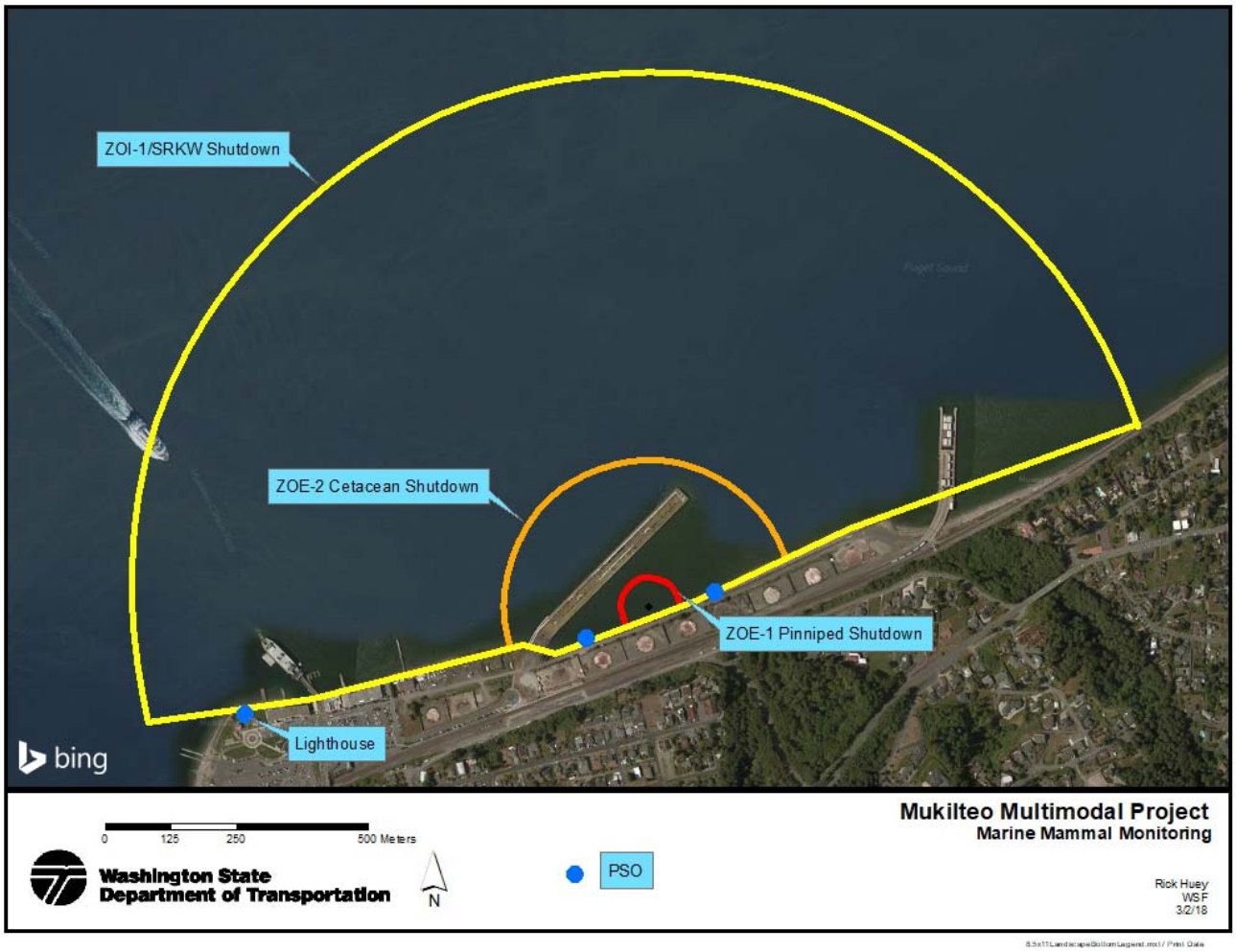

Figure 1 – Nearshore monitoring/24" steel pile impact driving Level B zone

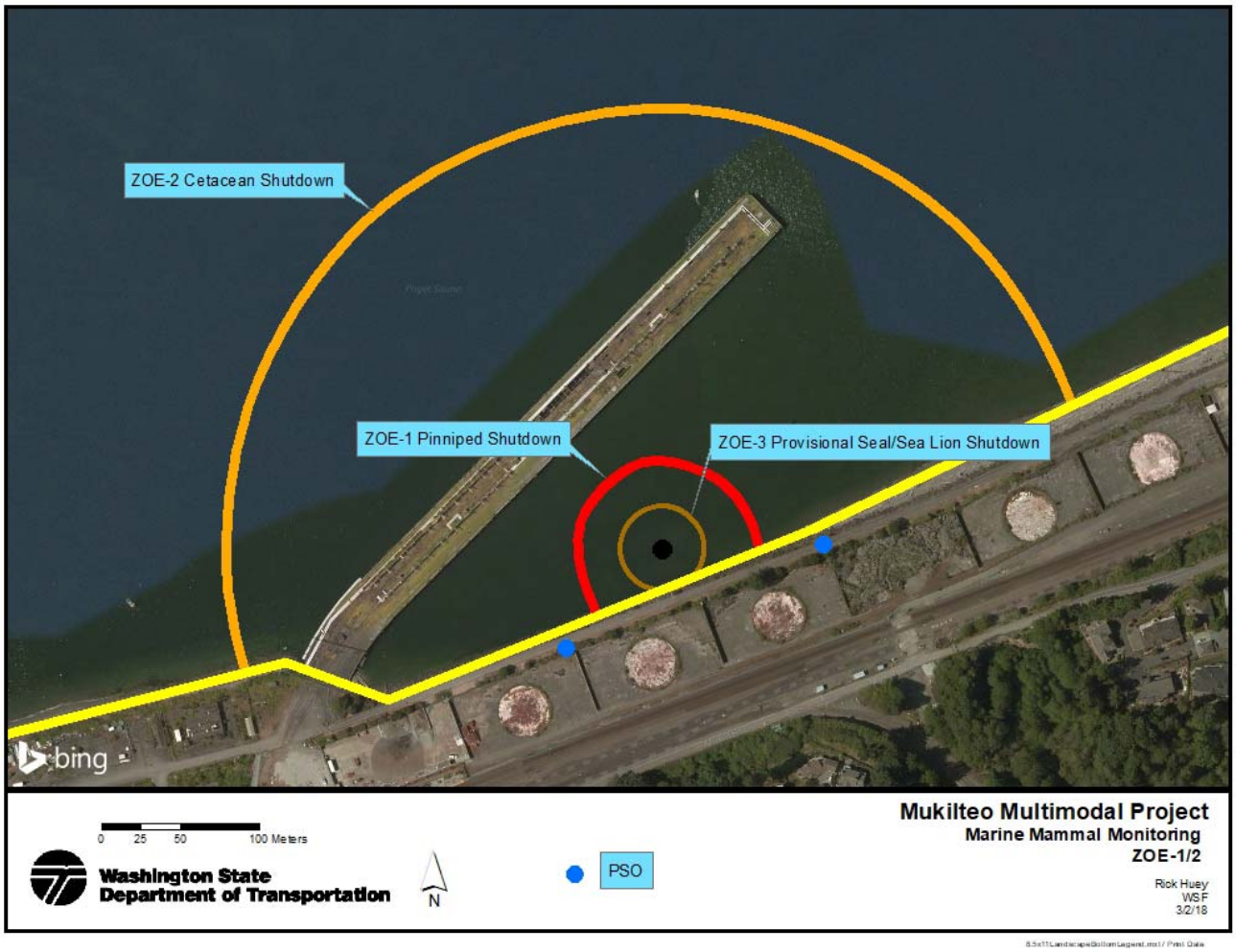

Figure 2 – Nearshore monitoring/Provisional ZOE-3

Figure 3 – Monitoring locations during vibratory pile driving/removal