

Port of Bellingham

Bellingham Shipping Terminal (BST)

Marine Infrastructure Maintenance and Rehabilitation

Appendix D- Marine Mammal Monitoring Plan

January 12, 2022

The Port of Bellingham is proposing repairs and maintenance to rehabilitate the Bellingham Shipping Terminal (BST). The Port proposes terminal repairs and structural component replacement to provide tenants and vessels with a more robust heavy load area on the wharf, as much of the existing structure has either deteriorated or been damaged by bulk loading/unloading across the deck (i.e., large “jetty rock” damage). The Port also proposes to complete maintenance dredging of the area in front of Berths 1 and 2 to return safe vessel access to the berths. These two independent maintenance and rehabilitation activities constitute proposed Marine Infrastructure Maintenance and Rehabilitation at BST and are referred to as “the project” throughout this Marine Mammal Monitoring Plan (MMMP). Please see Sections 1 and 2 of the Biological Evaluation (BE) for further project details.

1. Endangered Species Act (ESA)-listed Marine Mammals

Southern Resident killer whales and humpback whales could occur within the project Action Areas, although based on historical sightings, their presence within the Action Area is considered unlikely. According to sighting data retrieved from the Orca Network, within the last 5 years there have been approximately two Southern Resident killer whale recorded sightings within the Steel Action Area and zero sightings within the Concrete Action Area (Orca Network 2021). There has been approximately one recorded humpback whale sighting within the Steel Action Area and zero sightings within the Concrete Action Area (Orca Network 2021).

2. Non-ESA-Listed Marine Mammals

Harbor seals (*Phoca vitulina*) are likely the most abundant marine mammal to occur in or near the Action Areas. Harbor seals are not listed as endangered or threatened but are protected under the MMPA. There are two harbor seal haulouts within the in-air Concrete Action Area and one haulout within the in-water Concrete Action Area (WDFW 2000). There are approximately three haulouts within the in-air Steel Action Area and approximately three haulouts within the in-water Steel Action Area. Other non-ESA-listed marine mammals that could occur within the Action Areas include California sea lions (*Zalophus californianus*), harbor porpoises (*Phocoena phocoena*), North Pacific stock gray whales (*Eschrichtius robustus*), minke whale (*Balaenoptera acutorostrata*), and transient killer whales (*Orcinus orca*). There are no Steller sea lion haulouts within the Action Areas (NMFS 2012).



It is anticipated that harbor porpoises could occur within the Action Areas on rare occurrences. In addition, gray whales, minke whales and transient killer whales could occur within the Action Areas, although based on historical sightings, their presence within the Action Areas is considered unlikely. Whale sighting data from 2017 through 2021 was retrieved from the Orca Network and is summarized in Table 1.

Table 1. Whale Sighting Data 2017-2021

Species	Sightings in Concrete Action Area	Sighting in Steel Action Area
Minke Whale	0	2
Gray Whale	15	16
Transient Killer Whale	0	18

3. Potential Noise Impacts

Noise has the potential to directly impact marine mammals by causing physical injury or altering behavior when noise threshold levels are exceeded. NOAA NMFS has identified Level A (potential injury) and Level B (potential disturbance) thresholds for marine mammals based on their hearing class (NMFS 2021). These thresholds as well as the distances to these thresholds for the proposed pile driving activities are shown in Table 2 and Table 3. Harbor seals are phocid pinnipeds, sealions are otariid pinnipeds, harbor porpoises are high frequency cetaceans, Southern Resident killer whales are mid-frequency cetaceans, humpback whales are low-frequency cetaceans, gray whales are low-frequency cetaceans, minke whales are low-frequency cetaceans, and transient killer whales are mid-frequency cetaceans.

Level A harassment is defined under the MMPA as “any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild”. Level B harassment is defined as “any act of pursuit, torment, or annoyance that 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, but does not have the potential to injure a marine mammal or marine mammal stock in the wild”.

Potential noise impacts are based on the greatest potential noise generation. Typical project related noise impacts would be anticipated to be less than the maximum used for this impact analysis. Pile installation activities would be short-term, and a soft start would be implemented to allow marine mammals to leave the threshold areas before full force pile driving begins. To reduce in-water noise during steel pile installation, a bubble curtain would be installed around each pile. This is anticipated to reduce noise levels by at least to 5 dB. This reduction has been incorporated into the calculations presented in this Marine Mammal Monitoring Plan. Pile installation activities would be short-term. Installation of 24-inch diameter steel or concrete piles could occur for approximately 17 days, installation of 15-inch diameter steel piles could take approximately 3 days, and the installation of



14- to 16-inch diameter ACZA-treated timber piles could take 2 days. A portion of the piles would be installed in the dry (about fourteen 24-inch diameter steel or concrete piles waterward of the existing bulkhead and another 14 behind the bulkhead).



Table 2. Noise Thresholds for Marine Mammals

NOAA NMFS Threshold	High Frequency Cetacean	Mid Frequency Cetacean	Low Frequency Cetacean	Phocid	Otariid
<i>Impact pile Driving – Steel 24-inch piles with use of bubble curtain</i>					
Level A (Injury)	155 dB SELcum	185 dB SELcum	183 dB SELcum	185 dB SELcum	203 dB SELcum
Distance to threshold	442.1 meters	13.2 meters	371.2 meters	198.6 meters	14.5 meters
Level B (Behavioral)	160 dBrms				
Distance to threshold	1,000 meters				
<i>Impact pile driving – Concrete 24-inch piles</i>					
Level A (Injury)	155 dB SELcum	185 dB SELcum	183 dB SELcum	185 dB SELcum	203 dB SELcum
Distance to threshold	55 meters	1.6 meters	46.2 meters	24.7 meters	1.8 meters
Level B (Behavioral)	160 dBrms				
Distance to threshold	46.4 meters				
<i>Vibratory Pile Driving – Steel 24-inch piles</i>					
Level A(Injury)	173 dB SELcum	198 dB SELcum	199 dB SELcum	201 dB SEL cum	219 dB SELcum
Distance to threshold	40.1 meters	2.4 meters	27.1 meters	16.5 meters	1.2 meters
Level B (Behavioral)	120 (updated to 130 dBrms)				
Distance to threshold	2,512 meters				



Table 3. In-air Noise Thresholds for Hauled out Pinnipeds

NOAA NMFS Threshold	Phocid Pinnipeds	Otariid Pinnipeds
<i>Impact pile Driving – Steel 24-inch piles with use of bubble curtain</i>		
Level B (Behavioral)	90 dBrms	100 dBrms
Distance to threshold	35 meters	11 meters
<i>Impact pile driving – Concrete 24-inch piles</i>		
Level B (Behavioral)	90 dBrms	100 dBrms
Distance to threshold	38 meters	12 meters
<i>Vibratory Pile Driving – Steel 24-inch piles</i>		
Level B (Behavioral)	90 dBrms	100 dBrms
Distance to threshold	38 meters	12 meters



4. Construction Monitoring

One or more protected species observers (PSOs), able to accurately identify and distinguish species of marine mammals, will be present before and during all in-water pile driving activities. Prior to in-water pile driving activities, an exclusion (i.e., shut-down) zone will be established. The proposed exclusion zones are shown in Table 4. The proposed exclusion zones would prevent all possible Level A or Level B harassment to ESA and non-ESA listed cetaceans.

The BST is located within the City of Bellingham's industrial waterfront to the south of city center in marine waters of the Whatcom Waterway, which provides vessel access into Port facilities from Bellingham Bay. Pinniped's current use of areas within proximity to active Port operations suggests that these pinnipeds have adapted to a high level of human activity and noise. Therefore, behavioral impacts to pinnipeds are not anticipated from the proposed short-term pile driving activities within this industrial area. The project proposes a 200-meter exclusion zone for all pinnipeds to protect against potential Level A injury. Furthermore, methods to reduce in-water noise will be implemented such as implementation of a soft start technique, use of a wood cushion block, and/or use of a bubble curtain. Noise reduction techniques will be chosen and implemented based on pile material-specific effectiveness.

Prior to project commencement, the Port of Bellingham, or a contractor on behalf of the Port of Bellingham, will hire one to two qualified PSO(s) to complete monitoring during construction. The employed PSO(s) will determine the most appropriate observation location(s) for monitoring during pile installation. If necessary, observations may occur from two locations simultaneously.

The minimum qualifications for PSOs will include:

1. Visual acuity in both eyes (correction is permissible) sufficient to discern moving targets at the water's surface with ability to estimate target size and distance. Use of binoculars or spotting scope may be necessary to correctly identify the target.
2. Advanced education in biological science, wildlife management, mammalogy or related fields (Bachelor's degree or higher is preferred), or equivalent Alaska Native traditional knowledge.
3. Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
4. Experience or training in the field identification of marine mammals (cetaceans and pinnipeds).
5. Sufficient training, orientation or experience with vessel operation and pile driving operations to provide for personal safety during observations
6. Writing skills sufficient to prepare a report of observations. Reports should include such information as the number, type, and location of marine mammals observed; the behavior of marine mammals in the area of potential sound effects during construction; dates and times



when observations and in-water construction activities were conducted; dates and times when in-water construction activities were suspended because of marine mammals, etc.

7. Ability to communicate orally, by radio or in person, with project personnel to provide real time information on marine mammals observed in the area, as needed.

In addition, the following conditions will be met:

1. The PSO(s) will be positioned such that the entire exclusion zone is visible to them. If weather or sea conditions restrict the observer's ability to observe for species, or become unsafe for the monitoring vessel(s) to operate, cease pile installation until conditions allow for monitoring to resume.
2. The PSO(s) will have the following to aid in determining the location of observed listed species, to take action if listed species enter the exclusion zone, and to record these events:
 - a. Binoculars
 - b. Range finder
 - c. GPS
 - d. Compass
 - e. Two-way radio communication with construction foreman/superintendent
 - f. A log book of all activities which will be made available to the USACE and NMFS upon request
3. The PSO(s) will have no other primary duty than to watch for and report on events related to marine mammals.
4. The PSO(s) will be in direct communication with on-site project lead and will have shutdown authority.
5. The PSO(s) will scan the exclusion zone waters for 30 minutes before and continuously during all pile driving. If marine mammals enter or are observed near the identified exclusion zones during or 20 minutes before pile driving, the observer(s) will immediately notify the on-site supervisor or inspector, and require that pile driving either not be initiated or temporarily cease until the animals have moved outside of the area of potential sound effects on its own.
6. A final technical report will be submitted to NMFS within 90 days after the final pile has been driven for the project. The report will summarize findings, and results of marine mammal monitoring conducted during pile driving activities.
7. If a listed marine mammal is taken (i.e., a listed marine mammal(s) is observed entering the exclusion zone before pile-driving operations can be shut down), reinitiation of consultation is required, and the take must be reported to NMFS within one business day.



Table 4. Proposed Exclusion/ Monitoring Zones

	Cetaceans (ESA and non-ESA-listed)	Pinnipeds (harbor Seals and sealion)
<i>Impact pile Driving – Steel 24-inch piles with use of bubble curtain</i>		
Proposed Exclusion Zone	1,000 meters	200 meters
<i>Impact pile driving – Concrete 24-inch piles</i>		
Proposed Exclusion Zone	46.4 meters	25 meters
<i>Vibratory Pile Driving – Steel 24-inch piles</i>		
Proposed Exclusion Zone	2,512 meters	17 meters

References

- National Marine Fisheries Service (NMFS). 2021. ESA Section 7 Consultation Tools for Marine Mammals on the West Coast. Accessed at: <https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/esa-section-7-consultation-tools-marine-mammals-west>
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