

Pier B213 Fender Pile Replacement Project

Marine Mammal Monitoring Report

Manchester Fuel Depot, Manchester, Washington

NAVFAC work order no. BDFVNY

Contract no. N44255- 17-D-4015/N44255-20-F-4183



ON BEHALF OF:



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TABLE OF CONTENTS

LIST OF TABLES	iii
LIST OF FIGURES	iii
ACRONYMNS AND ABBREVIATIONS	iv
INTRODUCTION	1
METHODS.....	1
Project Area.....	1
<i>Observer Monitoring Locations</i>	<i>3</i>
Monitoring and Shutdown Zones	6
<i>Injury - Level A Harassment Zone.....</i>	<i>6</i>
<i>Mitigation - Shutdown Zone</i>	<i>6</i>
<i>Behavioral Threshold - Level B Harassment Zone.....</i>	<i>6</i>
Monitoring Protocols.....	7
<i>Pre-activity Monitoring</i>	<i>7</i>
<i>During-Activity Monitoring.....</i>	<i>8</i>
<i>Post-Activity Monitoring.....</i>	<i>8</i>
<i>Data Collection Methods</i>	<i>8</i>
<i>Reporting</i>	<i>10</i>
RESULTS	10
Monitoring Effort.....	10
Environmental Conditions	11
Pile Data	12
<i>Pile Installation.....</i>	<i>12</i>
<i>Pile Removal.....</i>	<i>12</i>
Marine Mammal Sightings.....	12
<i>Marine Mammal Behaviors Observed.....</i>	<i>13</i>
Marine Mammal Take Estimates.....	15
<i>Marine Mammal Detections Resulting in Level B Take.....</i>	<i>15</i>
<i>Refined Estimate of Take.....</i>	<i>15</i>
Mitigation Measures.....	17
LITERATURE CITED	17
Appendix A: Marine Mammal Monitoring Plan, US Navy, March 2021.	18
Appendix B: Letter of Authorization.....	41
Appendix C: Daily Summary Report Forms.....	49

LIST OF TABLES

Table 1. Monitor locations ("Worker Positions") at Pier B213, Manchester Fuel Depot Naval Installation, Kitsap County, Washington.....	3
Table 2. Monitoring and shutdown zones during impact concrete pile driving.....	6
Table 3. Authorized Level B takes	7
Table 4. Summary of monitoring effort.....	10
Table 5. Environmental conditions encountered during sightings.....	11
Table 6. Summary of marine mammal species detected during impact pile driving and all monitoring.....	13
Table 7. Level B takes for marine mammal species.....	16
Table 8. Marine mammal sightings resulting in mitigation delay or shutdown.....	17

LIST OF FIGURES

Figure 1. Location of Pier B213 at Manchester Fuel Depot Naval Installation, Kitsap County, Washington.	2
Figure 2. Typical monitor locations (WP #1-4) at project site Pier B213 Fender Pile Replacement, Manchester Fuel Depot, Kitsap County, WA.....	4
Figure 3. Marine mammal monitoring zones and monitoring locations for impact pile driving at Manchester Fuel Depot, Kitsap County, Washington.....	5

ACRONYMNS AND ABBREVIATIONS

BSS	Beaufort Sea State
dB	decibel(s)
ft	feet
km	kilometer(s)
LOA	Letter of Authorization
m	meter(s)
mi	mile(s)
MC	Monitoring Coordinator
MMPA	Marine Mammal Protection Act
MMMP	Marine Mammal Monitoring Plan
MMO	Marine Mammal Observer
Navy	U.S. Department of the Navy
NAVBASE	U.S. Naval Base
NAVFAC	Naval Facilities Engineering Systems Command
NMFS	National Marine Fisheries Service
U.S.	United States

INTRODUCTION

Harris Environmental Group, Inc. was sub-contracted by Pacific Pile & Marine Construction to provide Marine Mammal Observer (MMO) services at the Pier B213 Fender Pile Replacement Project at NAVBASE Kitsap Manchester Fuel Depot, Kitsap County, Washington. Pacific Pile & Marine was contracted with Veterans Northwest Construction to carry out the NAVFAC NW contract (N44255-17-D-4015/N44255-20-F-4183) titled "Replace Fender Piles West Side Pier – MFD, Manchester Fuel Depot Navy Installation, Manchester, WA, or hereafter the "Pier B213 Fender Pile Replacement Project". This report summarizes the marine mammal monitoring effort implemented during pile driving activities, and estimates potential take to assist with the Navy's reporting to the National Marine Fisheries service (NMFS).

The purpose of the Pier B213 Fender Pile Replacement Project was to update and replace the existing barge fendering system on the west side trestle of the fuel pier at Manchester Fuel Depot. The pile installation method for in-water construction of the new fender structure consisted of twenty (20) 24-in. by 24 in. square concrete piles driven to design depth using impact pile. Demolition activities included the removal of approximately forty-one (41) existing fendering piles by direct pull method.

The Manchester Fuel Department Fender Pile Repair Marine Mammal Monitoring Plan (MMMP, March 2021, Appendix A) provided the protocols used for the duration of this project, in combination with the NMFS Letter of Authorization (LOA, July 2021, Appendix B) allowing for the specified number of Level B take for certain species of marine mammals. The MMMP and LOA were referenced for take analysis. Take of Level A harassment that may result in direct injury or mortality of marine mammal species listed in Table 2 as well as all other marine mammal species was prohibited under the LOA.

The MMMP included the requirement that a marine mammal monitoring report be prepared and submitted to NMFS within 90 work-days of the completion of marine mammal monitoring. This document is meant to assist the Navy in satisfying that reporting requirement.

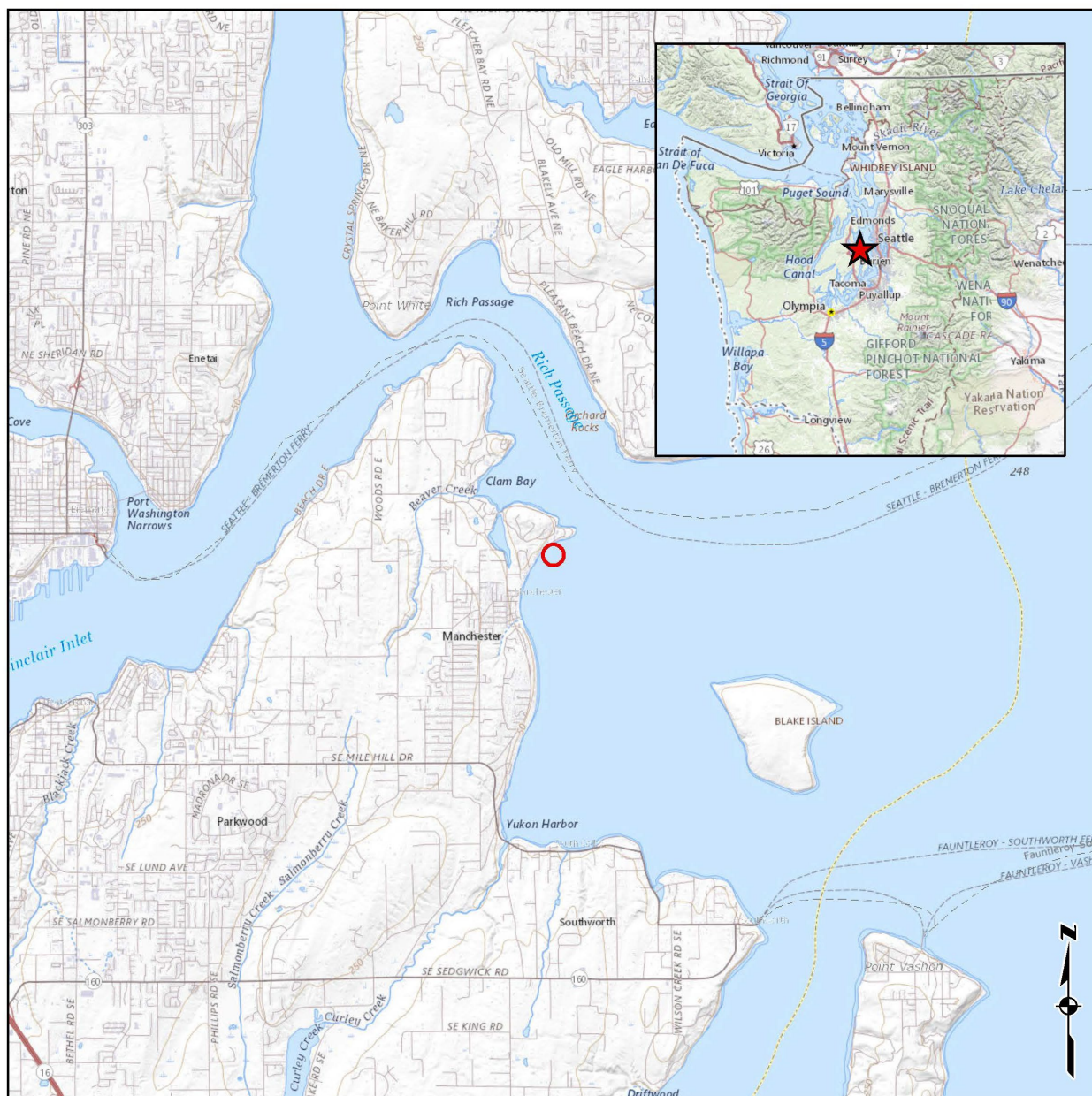
METHODS

PROJECT AREA

The NAVBASE Kitsap Manchester Fuel Depot is located within Kitsap County along the midwestern edge of the Kitsap Peninsula, along the shore of Puget Sound (Figure 1). The project site of Pier B213 resides on the eastern coastline portion of the 234-acre Manchester Fuel Depot Installation, within the jurisdiction of Naval Base Kitsap, and is approximately 12 miles (19.4 kilometers) southeast of Naval Base Kitsap Bangor.

Marine Mammal Monitoring Report

Pier B213 Fender Pile Replacement Project







<p>LEGEND</p> <p> Project Location</p>	<p>0 1 2 3 4</p> <p></p> <p>Kilometers</p> <p>0 0.5 1 1.5 2</p> <p></p> <p>Miles</p>	<p>Produced By: L. Urreiztieta Harris Environmental Group 2022</p>
<p>Coordinate System: WGS 1984 UTM Zone: 10N Projection: Transverse Mercator GCS/Datum/Spheroid: WGS 1984 Scale: 1:80,000 (Inset: 1:5,000,000)</p>	<p>Service Layer Credits: Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National</p>	<p> HARRIS ENVIRONMENTAL GROUP INC</p>

Figure 1. Location of Pier B213 at Manchester Fuel Depot Naval Installation, Kitsap County, Washington.

OBSERVER MONITORING LOCATIONS

Pier B213 at the Manchester Fuel Depot is located along the western edge of the Kitsap Peninsula, which extends into the waters of the Puget Sound (Figure 1). Two MMOs were stationed on the pier itself at the midpoint and south sections, and a third MMO was initially to be stationed at the north end of the pier or on the lower beach adjacent to the pier, however on the first morning on-site it was determined that the elevated parking area above the beach to the northwest of the barge provided a better vantage point (see WP #4, Figure 2, Table 1).

At these locations the monitors were able to view the extent of the required monitoring area, while remaining in view of the pile being driven, pile-driving equipment, and the site supervisor. Stations were chosen to provide the best vantage points of the monitoring zone, while also taking into account the safety and security of the marine mammal monitor during varying environmental conditions that may occur due to on-going construction activity and weather. Monitoring locations changed in relation to the viewing or safety conditions for the monitor. Exact locations of observers for each observation are provided with observer data in Attachment A.

Table 1. Monitor locations ("Worker Positions") at Pier B213, Manchester Fuel Depot Naval Installation, Kitsap County, Washington. Locations are provided in WGS 1984 coordinate system.

Location Name	Position Code	Latitude	Longitude	Northing (Y)	Easting (X)
North Pier	(WP #1)	47.561615	-122.535672	5267681	534929
Middle Pier	(WP #2)	47.56181	-122.535827	5267703	534917
South Pier	(WP #3)	47.560776	-122.535251	5267588	534961
Beach	(WP #4)	47.562928	-122.537947	5267826	534757





<p>LEGEND</p> <p> Observer Positions</p>	<p>0 50 100 150 200</p> <p>Meters</p> <p>0 125 250 375 500</p> <p>Feet</p>	<p>Produced By: L. Urreiztieta Harris Environmental Group 2022</p>
<p>Coordinate System: WGS 1984 UTM Zone: 10N Projection: Transverse Mercator GCS/Datum/Spheroid: WGS 1984 Scale: 1:3,000</p>	<p>Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community</p>	<p> HARRIS ENVIRONMENTAL GROUP INC.</p>

Figure 2. Typical monitor locations (WP #1-4) at project site Pier B213 Fender Pile Replacement, Manchester Fuel Depot, Kitsap County, WA.

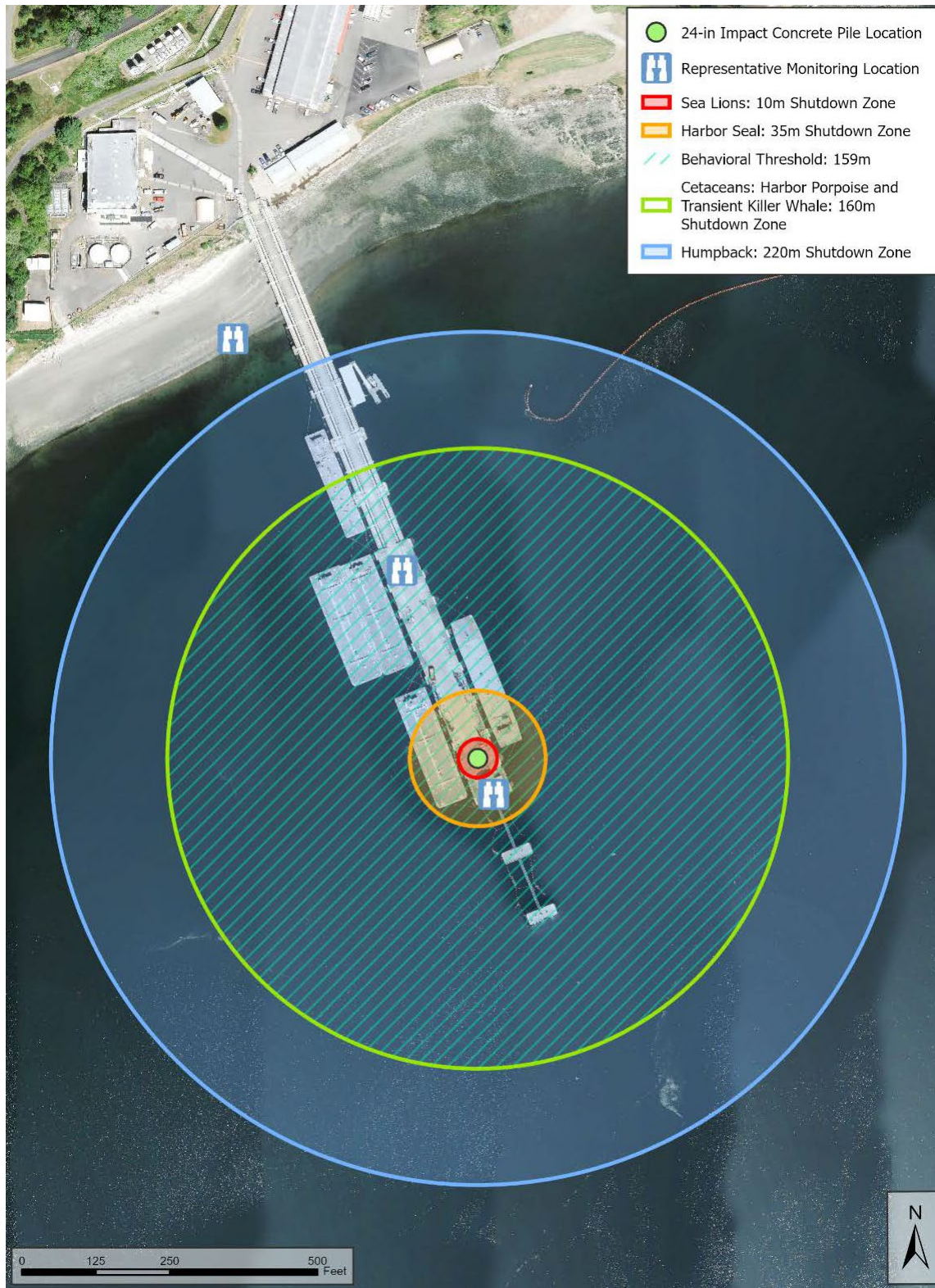


Figure 3. Marine mammal monitoring zones and suggested monitoring locations for impact pile driving at Manchester Fuel Depot, Kitsap County, Washington. Source: Appendix A, Marine Mammal Monitoring Plan, Figure D-3.

MONITORING AND SHUTDOWN ZONES

INJURY - LEVEL A HARASSMENT ZONE

The Level A zone was in place to represent the threshold for Level A take, defined in the Monitoring Plan (Appendix B) as " ...injury to marine mammals from noise due to impact pile driving steel and physical interaction with construction equipment". Level A take was not authorized under the LOA, and observers carefully monitored the injury zone and shutdown zones to ensure that Level A take did not occur over the course of the project.

MITIGATION - SHUTDOWN ZONE

Shutdown zones thresholds were established in the Monitoring Plan to reduce the potential for Level A take within the injury monitoring zone. Should a marine mammal approach or enter their respective shutdown zone established under the Monitoring Plan (see Figure 3) for vibratory or impact pile driving, all pile driving activities would be halted.

For pinnipeds (seal, sea lion), the shutdown zone encompassed the extent of the Level A zone and an additional buffer area (Table 2, Figure 3), so that any pinniped entering their respective shutdown zone would result in a cessation of pile driving activities before entering the actual injury zone.

For cetaceans (harbor porpoise), the shutdown zone included the extent of the injury zone as well as the extent of the Level B zone that MMOs could practicably monitor, referred to in the Monitoring Plan as the Level B zone and hereafter as the "monitoring zone". Additionally, should any cetacean be detected within the Level B zone all pile driving activities would cease.

BEHAVIORAL THRESHOLD - LEVEL B HARASSMENT ZONE

Level B take was estimated for those species granted authorized take under the LOA (see Appendix C). For this assessment, we used criteria from the LOA and MMMP (Table 2) to determine take, including our recommended estimate, the minimum level, and maximum number of Level B take throughout the project.

Table 2. Monitoring and shutdown zones during impact concrete pile driving.

Marine Mammal Group	Level B Behavioral Threshold	Level A Injury Threshold	Shutdown Zone
Cetaceans: Harbor Porpoise	159 meters	136 meters	160 meters
Humpback		216 meters	220 meters
Transient killer whale		34 meters	160 meters
Harbor Seal		34 meters	35 meters
Sea Lions		2 meters	10 meters

MONITORING PROTOCOLS

A minimum of three Marine Mammal Monitors (MMO), including the Monitoring Coordinator (MC) were required to implement the monitoring protocol during pile driving and installation activities as described within the MMMP, the NMFS-approved Marine Mammal Observation Record Form (Appendix A), and the LOA 2021 permit.

The LOA 2021 permit authorized take for Level B harassment for eleven (11) species (Table 3): humpback whale (*Megaptera novaeangliae*), minke whale (*Balaenoptera acutorostrata scammoni*), grey whale (*Eschrichtius robustus*), killer whale transient ecotype (*Orcinus orca*), killer whale resident ecotype (*Orcinus orca*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena vomerina*), Steller sea lion (*Eumatopia jubatus*), California sea lion (*Zalophus californianus*), harbor seal (*Phoca vitulina richardii*), and northern elephant seal (*Mirounga angustirostris*). In-water construction activities were limited to daylight hours only.

Table 3. Authorized Level B takes

Species	Level B Takes Authorized
Humpback whale	4
(<i>Megaptera novaeangliae</i>)	
Minke whale	4
(<i>Balaenoptera acutorostrata scammoni</i>)	
Gray whale	4
(<i>Eschrichtius robustus</i>)	
Killer whale - transient	12
(<i>Orcinus orca</i>)	
Killer whale - resident	40
(<i>Orcinus orca</i>)	
Dall's porpoise	146
(<i>Phocoenoides dalli</i>)	
Harbor porpoise	98
(<i>Phocoena phocoena vomerina</i>)	
Steller sea lion	500
(<i>Eumatopias jubatus</i>)	
California sea lion	2,150
(<i>Zalophus californianus</i>)	
Harbor seal	477
(<i>Phoca vitulina richardii</i>)	
N. Elephant seal	2
(<i>Mirounga angustirostris</i>)	

PRE-ACTIVITY MONITORING

- Weather and visibility conditions assessed to ensure acceptable conditions for the scanning, detection, and identification of the species of concern within the designated monitoring zone. Pile driving activities were delayed or ceased when conditions did not allow for the MMO team to have visibility of the entire monitoring zone.
- Pre-monitoring for at least 15 minutes prior to pile-driving activities to visually scan the monitoring zone for presence of marine mammals. When no marine mammals were detected approaching or within their respective shutdown zone during this time, the pile-driving foreman was given the all-clear to initiate pile-driving activities. Any marine mammal detected approaching or already within respective shutdown zones would result in a delay of onset of pile driving until either 15 minutes had passed without resighting the animal, or confirmation of the animal having left the construction zone.

DURING-ACTIVITY MONITORING

- Continuous scanning to monitor the zones during all pile-driving activities, adhering to the Monitoring Protocol.
- Pinnipeds detected within the monitoring zone or Level B zone but remaining outside of the shutdown zone resulted in sighting information being collected according to the Marine Mammal Observation Record Form (Appendix A), and pile driving activities were neither delayed or ceased unless the animal approached the shutdown zone.
- Detections of cetaceans within the Level B zone during all active pile driving would result in a cessation of pile driving activities, and sighting information collected according to the Marine Mammal Observation Record Form.
- If marine mammals approached or entered the Level A zone or shutdown zone during imminent or active pile driving, the MC would initiate a shutdown or “all-stop” to pile driving.
- The MMOs' survey effort for marine mammals was continuous during the entire construction day except for brief breaks during periods when construction was not active or imminent. All breaks in monitoring followed post- and pre-construction monitoring procedures, to account for all marine mammals visible within the monitoring zones.

POST-ACTIVITY MONITORING

- Monitoring efforts continued for 30 minutes after pile driving ceased (post-monitoring), as specified in the Monitoring Plan. This post-monitoring effort upon completion of pile driving was also implemented to ensure that no animals were present but undetected within the shutdown zone during active pile driving, and to observe for any potential signs of injury to animals.

DATA COLLECTION METHODS

MMOs used equipment standard to marine mammal monitoring, including a GPS unit, laser rangefinder, a clipboard for protocol, notes and data sheets, a marine mammal identification guide, and binoculars (8x42) to confirm species identity as necessary. MMOs utilized personal protective equipment necessary for working on a construction site, including a hard hat, safety glasses, high-visibility safety vest, steel-toed shoes, protective gloves, a face mask to reduce the potential for viral transmission whenever in close proximity to others, and a personal floatation device (when necessary).

All data were recorded using a mobile application developed via the Epicollect5 mobile data-gathering platform. This application included all of the data fields from the NMFS-approved Marine Mammal Observation Record Form included in the Marine Mammal Monitoring Plan (Appendix A), and allowed

observers to efficiently record sightings, weather, and construction activity data. All data was downloaded daily and reviewed for completeness and accuracy.

The MMOs on site communicated via "radio" transmissions using the mobile app "Zello", and coordinated data entries to prevent multiple entries of the same animal at the same time. The app records voice and text transmissions with a time stamp, and these were later used in the quality control of sighting events to confirm if new or repeated sightings were likely to have occurred, as well as aiding in the analysis of take events during project reporting.

Photography was not allowed on base at Manchester Fuel Depot due to it being a secure access area. MMOs were allowed use of their cell phones for data collection and communication purposes only.

Data recorded during marine mammal monitoring included:

- Observer name and monitoring position (WP#1-4, see Table 1);
- Date & time of entry;
- GPS location of observer in latitude, longitude & easting, northing;
- Event code such as effort on, sighting, pre-monitoring, etc.;
- Environmental data such as wave height, swell direction, % glare, and weather conditions;
- Beaufort Sea State (BSS);
- Sighting data including species, number (1.0, 2.0, 2.1, 2.2, etc.), group size, age, etc.;
- Behavior code describing observed behavior and direction of travel, if any;
- Distance of marine mammal/s from observer and pile driving activities
- Mitigation efforts required, if any;
- Comments providing additional context, including descriptions of animal, behavioral response, or work activity.

All effort was made to balance scanning for incoming marine mammals and tracking individual harbor seals so as not to inflate the number of seals or miss other taxa. However, seals were accounted for in separate full data entries when they changed locations and especially if they moved into or outside of the monitoring zone, when new behaviors were observed, or if there was any uncertainty that it was the same animal seen previously.

The total number of animals observed for each observation/detection event was noted, and some entries included numbers of grouped animals if they moved together either within, or outside of, the monitoring zone. Animals that the MMOs were reasonably certain to be the same as detected previously were either included with the original detection with an extended observation time, or if their position or behavior changed considerably a new detection entry was assigned a "sighting number" that tied the animal to the previous detection (e.g., sighting "1.0", "1.1", etc.).

A qualified biologist with experience conducting marine mammal monitoring for in-water construction activities served as the dedicated Monitoring Coordinator (MC) leading monitoring efforts on-site on all pile-driving days, and assisted in producing daily summary reports for the contractor, Navy and NMFS.

REPORTING

The data was reviewed and prepared by the MC and the Monitoring Project Manager after monitoring efforts were completed each day, and again post-completion of in-water construction so as to provide additional quality assurance, and to ensure complete and accurate compliance with the MMMP. Daily summaries included a list of on-site MMOs, start and end times of monitoring efforts, weather conditions, a narrative of construction activities, and narrative summary of any authorized take or mitigation that may have occurred.

RESULTS

MONITORING EFFORT

Monitoring was concurrent with in-water pile driving work from 28 September through 10 December 2021. Three MMOs simultaneously monitored for a total of 63.28 hours over 11 days (Table 4), which included time periods of active pile driving activity and periods between pile driving events. Impact pile driving occurred on each day monitors were on site for the day, except for October 18, 19 and November 2, when equipment issues precluded pile driving (Table 4).

Table 4. Summary of monitoring effort.

Date	Start Time (hh:mm)	End Time (hh:mm)	Total Time (hh:mm)	Total Time (hours)	Impact Drive Time(hours)
9/28/2021	10:00	16:09	6:09	6.15	0.32
10/4/2021	9:00	14:49	5:49	5.82	0.92
10/18/2021	8:30	15:15	6:45	6.75	0.00
10/19/2021	9:55	12:19	2:24	2.40	0.00
11/2/2021	8:00	11:45	3:45	3.75	0.00
11/3/2021	8:45	15:15	6:30	6.50	0.50
11/17/2021	7:45	16:33	8:48	8.80	0.52
11/23/2021	8:55	16:25	7:29	7.49	1.22
11/24/2021	7:45	9:41	1:56	1.93	0.30
12/9/2021	7:45	16:31	8:46	8.77	1.42
12/10/2021	7:45	12:40	4:55	4.92	0.80
Total Hours:				63.28	5.98

We documented 5.98 hours of active pile driving construction time (Table 4), i.e., time devoted to driving individual piles except for brief equipment calibration, measurement, or testing-related pauses. On one occasion the MC initiated a brief shutdown event of approximately one (1) minute due to a harbor seal being detected during the pre-monitoring period just inside the shutdown zone (see Mitigation Measures).

ENVIRONMENTAL CONDITIONS

Mild weather and sea state conditions were encountered on most days. Weather conditions were predominantly partly cloudy or overcast and visibility was most frequently described as good. Over the course of each day weather conditions would occasionally improve to partly cloudy or sunny. Beaufort Sea State (BSS) encountered typically ranged from BSS 0 - 1, with all wave heights recorded as light, between 0-3 feet in height. Glare on the water was uncommon, but occasionally encountered in the evenings as being between 10 - 25% of the monitoring zone. Glare was encountered as being higher than 25% of an observer's field of view less than 5% of the time (Table 5).

Table 5. Environmental conditions encountered during sightings.

	Visibility			Total
	Moderate (M)	Good (G)	Excellent (E)	
Count	3	348	37	388
% of Total	0.8%	89.7%	9.5%	100%

	Weather						Total
	OC	F	SR	LR	PC	S	
Count	141	0	0	18	180	49	388
% of Total	36.3%	0.0%	0.0%	4.6%	46.4%	12.6%	100%

	Glare						Total
	0-10	10-25	25-50	50-75	75-90	90-100	
Count	319	51	11	5	0	1	388
% of Total	82.2%	13.1%	2.8%	1.3%	0.0%	0.3%	100%

	Beaufort Sea State			Total
	BSS 0-1	BSS 2-3	BSS 4-5	
Count	187	140	61	388
% of Total	48.2%	36.1%	15.7%	100%

	Wave Height			Total
	Light	Moderate	Heavy	
Count	388	0	0	388
% of Total	100.0%	0%	0%	100%

	Direction of Swell								Total
	N	NE	E	SE	S	SW	W	NW	
Count	7	3	217	38	51	49	21	2	388
% of Total	1.8%	0.8%	55.9%	9.8%	13.1%	12.6%	5.4%	0.5%	100%

PILE DATA

PILE INSTALLATION

A total of twenty (20) 24 in. by 24 in. square precast concrete piles were placed. All piles were driven for approximately ten (10) minutes or until the impact hammer reached the top of the template. Impact pile driving then resumed after the template was removed and piles were driven to final design depth, which took approximately five (5) more minutes each. Each pile was driven/impacted for approximately fifteen (15) minutes total. The piles ranged in length from 88 ft. to 55 ft. The drive force for the impact hammer used was approximately 127,000 ft-lbs. No mechanical sound attenuation system was used. The depth of water in which the piles were driven was approximately 3 ft. to 38 ft. The depth of substrate in which all piles were embedded ranged from 20 ft. to 26 ft.

PILE REMOVAL

Forty-one (41) 12 in. composite UHMW/Grout/Steel piles were extracted via crane “Dead Sticking”. The machinery used for pile extraction was an American 11320 Crane with a nylon choker. The extraction process took less than five (5) minutes per pile, and monitors were not required to be present during pile extractions.

MARINE MAMMAL SIGHTINGS

A total of 399 marine mammals were documented within 220 groups or detection events, with all detections within active impact driving periods and during all monitoring times summarized in Table 5 and presented in more detail (times, behaviors, distance to pile, etc.) in the Monitoring Data File, Attachment A. A total of 49 marine mammals were detected within 19 groups or detection events during pile driving (Table 6) and those that were detected within the monitoring zone during pile driving are discussed in the sections Marine Mammal Behaviors Observed and Marine Mammal Take Estimates.

The majority of detections were harbor seals and California sea lion, though 17 total harbor porpoise were detected over 6 occasions and individual Steller sea lion(s) were detected on three separate occasions (Table 6, and see Attachment A for all observations). Additionally, a river otter (*Lontra canadensis*) was detected swimming alongside the beach through the project area on one occasion (12 December). While river otters are not protected under the MMPA or considered in the LOA, we mention the observation here only because the species is noted in the MMMP’s data form.

Table 6. Summary of marine mammal species detected during impact pile driving and all monitoring.

Species	During Impact Driving		All Detections					
	Groups/ Detections	Animals	All Groups/ Detections	Total Animals	Mean Group Size	Min. Group Size	Max. Group Size	Closest Distance to Pile site (m)
California sea lion	9	24	137	276	2.0	1	12	22
Harbor porpoise	0	0	6	17	2.7	1	6	260
Harbor seal	10	25	74	103	1.4	1	13	*20
Steller sea lion	0	0	3	3	1.0	1	1	280
Total	19	49	221	401				

*Harbor seal detected at 20 m closest distance to pile driving site occurred on 12/09/21, during a period when no pile driving occurred. See Attachment A for full details of observation.

Harbor seals were commonly observed alone. On three occasions a juvenile was detected with an adult and once as unaccompanied, and on four occasions there were 3-4 seals traveling together. On one occasion (9 December) a relatively-large group of 13 closely-associating harbor seals were detected foraging together several hundred meters south of the pier, likely feeding on a forage fish gathering as there were numerous seabirds nearby as well. The larger group sizes were much less frequent, and were mostly observed travelling slowly outside the monitoring area, except in one instance. A minimum of 1 confirmed individual was noted as likely being resident to the project area, based on daily presence and behaviors. All harbor seal sightings occurred while the seals were in the water, with typical behaviors and instances of potential responses to pile driving described below under *Marine Mammal Behaviors Observed*.

California sea lions were most often seen (n = 75 of 137 detections) as lone animals, less often in groups of two (n = 33), three (n= 13) or four or more (n=17). On 17 November a large group of up to 13 California sea lions were observed moving together at a steady pace during a brief lull in pile driving, but were determined to have likely been within the 160 m Monitoring Zone during recent pile driving effort

The majority of all detections (n = 141 of 219) were within the 160 m monitoring zone (Figure 3). However, at no point during the project were cetaceans or pinnipeds detected within their respective shutdown zones during active pile driving; thus, no animals were detected within the Level A take/injury zones for which the shutdown zones encompassed (Figure 3, and Table 2).

MARINE MAMMAL BEHAVIORS OBSERVED

TYPICAL BEHAVIORS

California sea lion individuals and groups were observed both during active pile driving and outside of pile driving periods with most frequent noted behavior being either swimming in a specific direction with purpose, or swiftly traveling east-bound through the monitoring zone on most monitoring days. Notable behavioral observations for California sea lions un-related to pile driving activities are given below, while potential responses to pile driving activities are given in *Potential Behavioral Reactions to Pile Driving*.

- November 17 at 1315, a single California sea lion male was detected tearing up and eating a large salmonid 120 m from pile driving site. No impact pile driving was occurring at that point in time.
- November 24 at 0858, a group of approximately five (5) California sea lions were observed to be playing, lifting pectoral flippers, and rolling around off rocky point to the east at 320 m from pile driving site during active impact pile driving. They were outside of the Level B harassment zone and no take occurred.

Harbor seals were frequently observed swimming to/from foraging areas and looking at the construction site or MMOs during both active pile driving and outside of pile driving periods. Other frequent behaviors observed outside of periods of active pile driving included sinking and diving. There did not seem to be any specific reaction in these cases, and we interpret the behavior to be the animal confirming the situation remained the same, i.e., that no new or immediate threat was posed from the human activity in its environment. Notable behavioral observations for harbor seals un-related to pile driving activities are given below, while potential responses to pile driving activities are given in *Potential Behavioral Reactions to Pile Driving*.

- November 17 at 1618 during post-monitoring period, a group of two (2) small harbor seals were spotted porpoising, playing, and traveling 125 m from pile driving site below several Bonaparte's gulls (*Chroicocephalus philadelphia*) that were vocalizing and diving for fish, possibly driving up bait ball.
- On December 9 at 1543 during impact pile driving but outside of the Level B harassment zone, a single immature (~60% grown) harbor seal was detected at 240 m from pile driving site when the MMO heard it breathing loudly as it swam around the barges on the west side of the pier. They then watched it swim under the north end of the main pier. MMO was observing from one of the two dolphin/extensions to the pier. It was breathing as if it had exerted itself. The MMO did not see where it went under the pier but suspected it was going to rest.

Harbor porpoise were observed only six (6) times (Table 6) on monitoring days October 18, 19, and November 2, 23. In every instance they were seen swimming, traveling, or porpoising (Master Data File, Attachment A), with general direction noted by MMOs as south or westbound. No pile driving occurred on three (3) of the four (4) days when harbor porpoise were observed on October 18, 19, and November 2 (Table 4). All harbor porpoise sightings occurred outside of active impact pile driving periods, and no unusual or notable behaviors were observed.

Individual Steller sea lions were observed only on three (3) occasions (Table 6) on monitoring days September 28, October 18, and December 10 (Master Data File, Attachment A). Behavioral observations for Steller sea lions were un-related to pile driving activities and are given below.

- On September 28 at 1247 during post-monitoring period, a male Steller sea lion was detected hauled out on the bow of a large container ship 970 m from pile driving site.
- On October 18 at 1437 when no pile driving was occurring, a single Steller sea lion was detected swimming and traveling 300 m from pile driving site, moving toward the dock area.
- On December 10 at 0819 before pile driving had occurred that day, a single Steller sea lion was detected 280 m from pile driving site. The animal was exhibiting multiple behaviors, including

swimming, traveling eastbound, and diving, and the MMO noted that the sea lion appeared to be disoriented in its actions.

POTENTIAL BEHAVIORAL REACTIONS TO PILE DRIVING

The following instances may indicate some level of awareness and potential change in behavior due to pile driving, but other than a single reaction by a non-marine mammal species described below, could be considered to be coincidental with pile driving with cause unknown. No other obvious sources of underwater noise were noted at the times of these observations, and no orcas of the transient (mammal-eating) eco-type were known to be in the area.

- Non-marine mammal reaction, but notable and clearly in response to initiation of impact pile driving: November 3 at 1316 an individual spotted sandpiper (*Actitis macularius*) flushed from beach northeast of the pile driving site upon start of impact pile driving.
- November 3 at 1316 and 1321, two MMOs at WP #4 and WP #3, respectively, detected an adult California sea lion exhibit multiple full breach behaviors upon start of full power impact pile driving. The animal was outside of the Level B zone at 315 m from active pile driving, traveling eastbound when first noted by WP #4, and 230 m from active pile driving site when detected by WP #3. The MMO at WP #3 recorded the official sighting and noted “Outside zone but during active pile driving, animal began repeatedly breaching from the water completely clearing water with its body at least 6-8 times”. The MMO at WP #4 added this note afterwards “Immediately upon start of initial (full power) pile driving, KS spotted first breach 315m from WP #4 on shore, outside of Level B zone, but SH saw subsequent breaches and filled in the sighting”.
- November 24 at 0907, a single California sea lion was detected at least 160 m from pile driving site and porpoised completely out of water once then dove. The animal resurfaced off of rocky point much further away in opposite direction of the pier. This occurred during impact pile driving and was close to, but outside of, the Level B harassment zone and no take occurred.

MARINE MAMMAL TAKE ESTIMATES

MARINE MAMMAL DETECTIONS RESULTING IN LEVEL B TAKE

A total of 11 harbor seals were observed within the 159 m Level B behavioral threshold monitoring zone when pile driving was imminently, currently, or recently active (Table 6, Table 7), and detailed in detection events within Attachment A. The LOA allowed for the Level B take limit of up to 477 harbor seals (Table 7), and pile driving work was neither delayed nor shut down for harbor seal detections within the Level B zone. The sole exception to this was a harbor seal detected within the shutdown zone on Nov 3 (see Mitigation Measures).

Similarly, 14 California sea lions were observed in the 159 m Level B behavioral threshold monitoring zone during pile driving operations, or observed just prior or just after active pile driving, and could be reasonably assumed to be within the Level B harassment zones.

REFINED ESTIMATE OF TAKE

No marine mammals were detected within the Level A Take/Injury Zones during pile driving operations.

Marine Mammal Monitoring Report
Pier B213 Fender Pile Replacement Project

Using the MMMP and LOA (Appendices A and B, respectively), we reviewed the collected data (Attachment A, and Daily Reports, Appendix C) and suggest the total number of authorized Level B take on the project to be the following:

- 11 take of harbor seal
- 14 take of California sea lion

No other marine mammal species given authorized Level B take were detected within the Level B behavioral threshold zone during pile driving activities.

Table 7. Level B takes for marine mammal species.

Species	Level B Takes Authorized	Level B Takes Actual	Level B Takes Remaining
California sea lion (<i>Zalophus californianus</i>)	2,150	14	2,136
Harbor seal (<i>Phoca vitulina richardii</i>)	477	11	464

NARRATIVE ACCOUNT OF LEVEL B TAKE

Detection data (Attachment A) is summarized below with narrative descriptions per species of the Level B behavioral threshold zone take events. Environmental factors relevant to take events are included in the narratives. Narrative accounts provide context to the assessment of take, as well as actions performed to minimize or prevent take from occurring as required under the MMMP (Appendix A).

CALIFORNIA SEA LIONS: LEVEL B TAKE TOTAL (14)

Five (5) detections of individuals or groups of California sea lions occurred over four (4) days of monitoring for pile driving activities. All Level B take events were of individual animals except for one of three events occurring at 1406 on 11/17, where a group of ten (10) animals were observed traveling through the Level B zone at a steady pace as close as 75 m during post-monitoring period. Taking into account their location in Level B zone at first sighting, observed slow speed of travel, spread of group, and that they were observed only eight (8) minutes post-pile driving, we assume they were within the 159-m Level B zone during active pile driving.

HARBOR SEALS: LEVEL B TAKE TOTAL (11)

Over the course of the project (11 days total) there was at least 1 distinct harbor seal consistently detected within the monitoring zone and Level B behavioral threshold zone. This assumed “resident” harbor seal is based on MMO observations regarding pelage, age class, behaviors, and simultaneous sightings used to distinguish between individual seals. If harbor seals were detected outside of active pile driving times, but within the pre- or post-monitoring periods, and could reasonably be assumed to have been within the Level B Zone (159 meters) during impact pile driving, they were included within the total take count.

Based solely on sightings of confirmed harbor seals detected within the Level B zone, and being sure to not double count seals known to be in the Level B take zone twice in one day (occurring on 9/28 and 10/4,

Attachment A), we recommend a refined Level B take total of 11 harbor seals. See Attachment A for details regarding individual harbor seal take events.

MITIGATION MEASURES

On November 3 a single harbor seal was detected at 32 meters within the Level A take zone 1 minute prior to start of impact pile driving, then dove underwater. Lead MMO immediately sought to notify pile driving foreman, and was able to communicate the need for a shutdown right as impact pile driving was initiated, leading to a pause in pile driving activities of several minutes while MMOs confirmed that the seal had moved outside of the zone. Concurrent to pile driving start, the animal of concern emerged appearing unhurried and unconcerned well outside of the shutdown zone, within the 160-meter Level B zone. Based on the animal's location and behavior, the MMO concluded during the shutdown event that the individual was the same as previously seen within the zone, and that its behavior was not consistent with fleeing, that it had left the Level A / shutdown zone prior to start of pile driving, and thus was recorded as a Level B take event only.

Table 8. Marine mammal sightings resulting in mitigation delay or shutdown.

Date	Time	Species*	Distance to Pile (m)	Behavior	Constr. Activity	Zone	#Animals in Zone	Mitigation	Comments
11/3/2021	12:48:00	HS	144	Dive, Look	Impact Pile Driving	Shutdown Zone (35 m harbor seals)	1	SD	Seen inside of shutdown zone (32m) just prior to (1min) start of impact, but upon start it was seen well outside of level A/shutdown zone. Level B take, but they shut down impact momentarily just to be sure.

LITERATURE CITED

National Marine Fisheries Service. 2021. Letter of Authorization Naval Base Kitsap Manchester National Oceanic and Atmospheric Administration, National Marine Fisheries Service. 2021 Version. 1315 East- West Highway, Silver Spring, Maryland, 20910. 8 Pages.

US Navy. 2021. Manchester Fuel Department Fender Pile Repair Marine Mammal Monitoring Plan Navy Region Northwest, Silverdale, WA. March 2021 Version. Naval Facilities Engineering Command Northwest, 1101 Tautog Circle, Silverdale, WA 98315. 21 pages.

APPENDIX A: MARINE MAMMAL MONITORING PLAN, US NAVY, MARCH 2021.

Please see following 22 pages for the main body of the U.S. Navy's Marine Mammal Monitoring Plan for the Manchester Fuel Depot, updated in March 2021. For brevity, we omitted two appendices from that document (Appendix –Beaufort Sea State and Appendix C—Chain of Custody Form)

Manchester Fuel Department Fender Pile Repair Marine Mammal Monitoring Plan

Marine Structure Maintenance and Pile Replacement Program



**Navy Region Northwest
Silverdale, WA**

March 2021

**Naval Facilities Engineering Command Northwest
1101 Tautog Circle
Silverdale, WA 98315**

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TABLE OF CONTENTS

1	INTRODUCTION	1
2	METHODS.....	1
2.1	Observer Qualifications	1
2.2	Data Collection.....	1
2.3	Equipment.....	2
2.4	Pile Driving Visual Monitoring and Shutdown Zones.....	3
2.5	Observer Monitoring Locations	7
2.6	Monitoring Techniques.....	7
2.6.1	Visual Survey Protocol – Pre-Activity Monitoring.....	9
2.6.2	Visual Survey Protocol – During Activity Monitoring.....	9
2.6.3	Visual Survey Protocol – Post-Activity Monitoring	9
3	INTERAGENCY NOTIFICATION.....	10
4	MONITORING REPORTS.....	11

List of Figures

Figure D-1. Monitoring and Shutdown for Cetaceans	5
Figure D-2. Monitoring and Shutdown for Pinnipeds.....	6
Figure D-3. Example of Marine Mammal Visual Monitoring Zone with Representative Monitoring Locations Indicated	8

List of Table

Table D-1. Monitoring and Shutdown Zones during Impact Concrete Pile Driving.....	4
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List of Appendices

A	Marine Mammal Observation Record Form.....	D-13
B	Beaufort Wind Scale	D-19
C	Chain of Custody Record.....	D-25

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1 INTRODUCTION

The U.S. Department of the Navy (Navy) proposes to conduct maintenance and repair activities at marine waterfront structures over a 5-year period at six installations within Navy Region Northwest (Region). These installations, which are located in the Puget Sound region of Washington State, include: Naval Base (NAVBASE) Kitsap Bangor, NAVBASE Kitsap Bremerton, NAVBASE Kitsap Keyport, NAVBASE Kitsap Manchester, Zelatched Point, and Naval Station (NAVSTA) Everett. The installation covered in this plan is NAVBASE Kitsap Manchester Fuel Department

The purpose of the project at Manchester Fuel Department is to update and replace the existing barge fendering system on the west side of the Fuel Pier. The installation of the new fender piles and camels will require impact installation of twenty (20) 24-inch concrete piles. Approximately 41 fender piles will also be removed using direct pull. To the greatest extent practicable, piles shall be removed entirely. Any piles that cannot be completely removed will be cut at the mudline.

The purpose of this plan is to provide a protocol for marine mammal monitoring that will occur during in-water construction scheduled to occur from July 16, 2021 to February 15, 2022. Visual marine mammal monitoring will be conducted before, during, and after pile driving activities where noise levels may behaviorally disturb marine mammals. Noise levels from pile driving were determined to exceed the behavioral and injury thresholds for marine mammals, and a zone surrounding piles being installed will be visually monitored and pile driving will be shut-down if marine mammals are in the injury zone. This measure will preclude physical harm to marine mammals. This monitoring plan was developed to ensure compliance with the Letter of Authorization issued for this project by the National Marine Fisheries Service.

2 METHODS

2.1 Observer Qualifications

Monitoring will be conducted by qualified, trained marine mammal observers (hereafter, “observer”). An observer is a biologist with prior training and experience in conducting marine mammal monitoring or surveys, and who has the ability to identify marine mammal species and describe relevant behaviors that may occur in proximity to in-water construction activities. A trained observer will be placed at the best vantage point(s) practicable (e.g., from a small boat, the pile driving barge, on shore, or any other suitable location) to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. The observers will have no other construction related tasks while conducting monitoring.

A dedicated monitoring coordinator will be on-site during all construction days. The monitoring coordinator will oversee marine mammal observers. The monitoring coordinator will serve as the liaison between the marine mammal monitoring staff and the construction contractor to assist in the distribution of information.

2.2 Data Collection

Observers will use a National Marine Fisheries Service (NMFS)-approved Marine Mammal Observation Record Form (Appendix A) which will be completed by each observer for each survey day.

- Name of Observer.
- Date and time that pile driving begins or ends
- Construction activities occurring during each sighting
- Weather parameters (e.g., percent cover, percent glare, visibility)
- Water conditions (e.g., tidal state [incoming (flood), slack (neither direction), or outgoing (ebb)], and sea state). The Beaufort Sea State Scale (Appendix B) will be used to determine sea-state.
- Species, numbers, and if possible, sex and age class of marine mammals
- Marine mammal behavior patterns observed, including bearing from observer and direction of travel. If possible, include the correlation to sound pressure levels for context.
- Distance from pile driving activities to marine mammals and distance from the marine mammal to the observation point
- Locations of all marine mammal observations
- Other human activity in the area. Record the hull numbers of fishing vessels if possible.

The monitoring coordinator will complete a Marine Mammal Observation Record Form (Appendix A) for each day of monitoring. The summary form compiles information collected on the individual sighting forms and provides additional details about construction activities during marine mammal monitoring. The summary form will be provided to the Navy each day following monitoring.

2.3 Equipment

The following equipment will be required to conduct marine mammal monitoring:

- Hearing protection for biologists and boat operators working near heavy construction equipment
- At a minimum, portable marine radios with extra batteries and headsets for the observers to communicate with the monitoring coordinator, construction contractor, and other observer(s). Red and green flags can be added as back-up or in addition to the radios.
- Cellular phones that do not have a camera (depending on installation restrictions) and the contact information for the other observer(s), monitoring coordinator, and Navy point of contact.
- Nautical charts
- Daily tide tables for the project area
- Watch or Chronometer
- Binoculars (quality 7 x 50 or better, can have built-in rangefinders or reticles) and/or rangefinders
- Monitoring plan, IHA permit, and/or other relevant permit requirement specifications in sealed clear plastic cover
- Notebook with pre-standardized monitoring Marine Mammal Observation Record forms on non-bleeding paper (e.g., Rite-in-the-Rain)
- Marine mammal identification guides on waterproof paper
- Clipboard
- Pen/Pencil

2.4 Pile Driving Visual Monitoring and Shutdown Zones

During all pile driving, the Navy will visually monitor Injury and Behavioral Disturbance Zones as follows:

- An **Injury Monitoring Zone** shall be established and monitored to prevent injury to marine mammals from noise due to impact pile driving concrete and physical interaction with construction equipment. Injury Zones for impact, non-steel piles have a minimum Shutdown Zone of 10 meters to prevent injury to marine mammals from interaction with construction equipment.
- During pile driving, a **Behavioral Disturbance Monitoring Zone** will be established that will encompass as much of the Behavioral Disturbance Zone (i.e., for impact driving, the zone where impact pile driving levels are estimated to be at or above 160 dB re 1 μ Pa and for vibratory driving, the zone where vibratory pile driving noise levels are estimated to be at or above 120 dB RMS) that can be practicably monitored from observer positions described in Section 2.5. The Behavioral Disturbance Threshold extends to 159 meters during concrete impact pile driving. See Table D-1.

During all pile driving, the Navy will establish Shutdown Zones as follows:

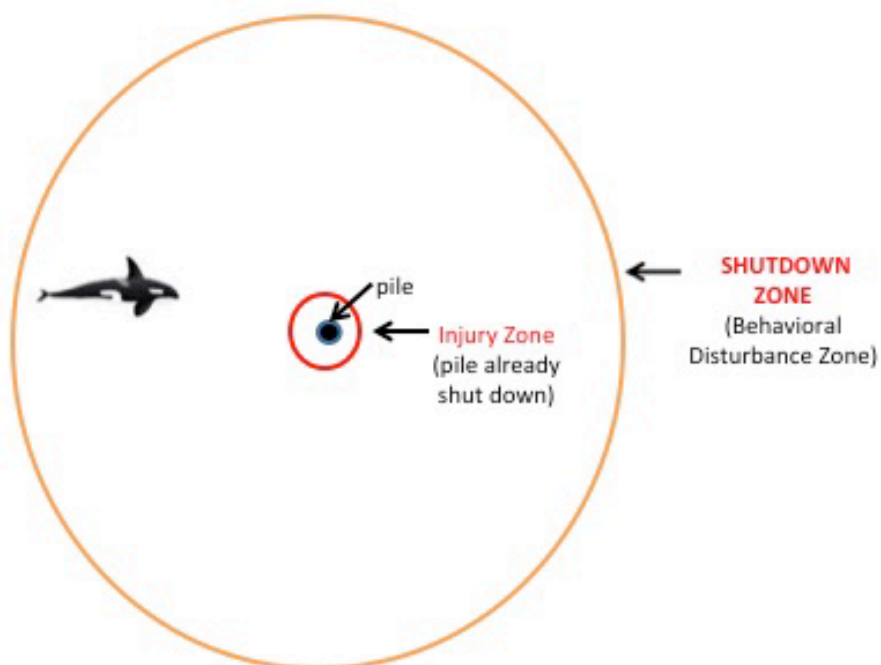
- A **Shutdown Zone for cetaceans** will include the Injury Zone and the portion of the Behavioral Disturbance Zone that can be practicably monitored from observer positions described in Section 2.5. If a cetacean approaches or enters the Shutdown Zone, pile driving will cease. During impact installation of concrete piles, the Shutdown Zone for harbor porpoise and transient killer whale) is 160 meters. The Shutdown Zone for the humpback whale is 220 meters. See Table D-1.
- A **Shutdown Zone for pinnipeds** will include the Injury Zone. If a pinniped enters the Shutdown Zone, pile driving will cease, but if it enters only the Behavioral Disturbance Zone, a take would be recorded and behaviors documented. That pile would be completed without cessation, unless the animal approaches or enters the Shutdown Zone, at which point all pile driving activities will be halted. During impact installation of concrete piles, the Shutdown Zone radius for harbor seals is 35 meters and 10 meters for sea lions. See Table D-1. If marine mammals are seen outside the Behavioral Disturbance Zone, these animals will also be recorded (not as a take) and their location identified.
- Distances for all monitoring zones are provided in Table D-1 below.

Table D-1. Monitoring and Shutdown Zones during Impact Concrete Pile Driving

<i>Marine Mammal Group</i>	<i>Behavior Threshold</i>	<i>Monitoring Zone</i>	<i>Injury Threshold</i>	<i>Shutdown Zone</i>
Cetaceans: Harbor Porpoise	159 meters	160 meters	136 meters	160 meters
Humpback		220 meters	216 meters	220 meters
Transient killer whale		160 meters	34 meters	160 meters
Harbor Seal		35 meters	34 meters	35 meters
Sea Lions		10 meters	2 meters	10 meters

Monitoring and Shutdown Cetaceans

The **shutdown** zone for cetaceans includes the **Behavioral Disturbance Zone**¹ and the **Injury Zone** when pile driving machinery is on.



¹ If the behavioral disturbance zone is very large, the entire behavioral zone may be beyond the site distance monitors can survey. Shutdown within the behavioral zone will occur as soon as a cetacean is identified within this area.

Figure D-1. Monitoring and Shutdown for Cetaceans

Monitoring and Shutdown Pinnipeds

The **shutdown** zone for pinnipeds is the **Injury Zone** for pile driving. Shutdown will also occur within the behavioral zone if the pinniped is swimming toward the pile driving equipment that is turned on/in use, to avoid potential injury to a pinniped swimming toward the Injury Zone. If the pinniped is within the Behavioral Disturbance Zone, construction will be allowed to continue, and marine mammal monitors will **document behavior and location and will track** animal to ensure that it does not enter the shutdown zone.



1 If the behavioral disturbance zone is very large, the entire behavioral zone may be beyond the site distance monitors can survey. Shutdown within the behavioral zone will occur as soon as a cetacean is identified within this area.

Figure D-2. Monitoring and Shutdown for Pinnipeds

2.5 Observer Monitoring Locations

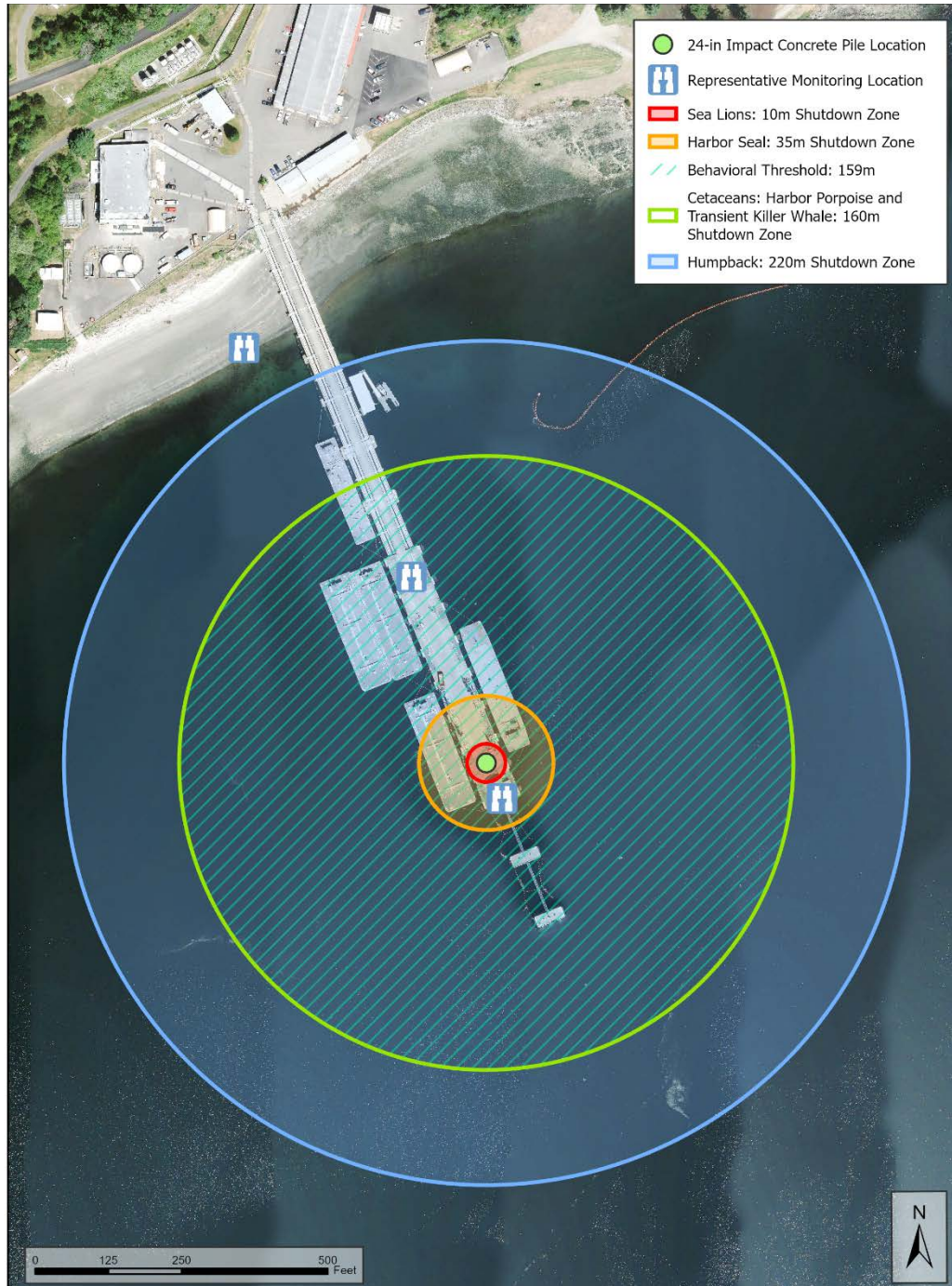
To effectively monitor the Injury and Behavioral Disturbance Zones during pile driving, marine mammal observers will be positioned at the best practicable vantage points, taking into consideration security, safety, and space limitations at the waterfront. During concrete pile driving three observers will be positioned on the pier to monitor the Shutdown Zone and Behavioral Threshold areas. See Figure D-3. Each monitoring location will have a minimum of one dedicated marine mammal observer.

2.6 Monitoring Techniques

The observers will collect sighting data and behaviors of marine mammal species observed pre-, during, and post- pile driving period. The efficacy of visual detection depends on several factors including the observer's ability to detect the animal, the environmental conditions (visibility and sea state), and monitoring platforms. The following survey methodology will be implemented for all monitoring activities:

- Observers will survey the Injury and Behavioral Disturbance Zones. Monitoring will take place 15 minutes prior to initiation through 30 minutes post-completion of pile driving to ensure there are no marine mammals present.
- In case of reduced visibility due to weather or sea state, the observers must be able to see the Shutdown Zones or pile driving will not be initiated until visibility in these zones improves to acceptable levels.
- The Injury and Behavioral Disturbance Monitoring Zones will be monitored throughout the time required to install a pile.
- Marine Mammal Observation Record forms (Appendix A) will be used to document observations.
- Any survey boats engaged in marine mammal monitoring will maintain speeds equal to or less than 10 knots.
- Observers will be trained and experienced marine mammal observers in order to accurately verify species sighted.
- Observers will use binoculars and the naked eye to search continuously for marine mammals.

Figure D-3. Example of Marine Mammal Visual Monitoring Zone with Representative Monitoring Locations Indicated



2.6.1 Visual Survey Protocol – Pre-Activity Monitoring

The following survey methodology will be implemented prior to commencing pile driving:

- Visual surveys of the Injury and Behavioral Zone will occur for at least 15 minutes prior to the start of construction.
- If marine mammal(s) are present within or approaching a Shutdown Zone prior to pile driving, the start of these activities will be delayed until the animal(s) leave the Shutdown Zone voluntarily and have been visually confirmed beyond the Shutdown Zone, or 15 minutes has elapsed without re-detection of the animal.
- If marine mammal(s) are not detected within a Shutdown Zone (i.e., the zone is deemed clear of marine mammals), the observers will inform the monitoring coordinator/construction contractor that pile driving can commence.
- If a marine mammal approaches or enters the Shutdown Zone, pile driving will be delayed until the animal(s) leave the zone. If pinnipeds (s) are present within the Behavioral Disturbance Monitoring Zone, pile driving would not need to be delayed, but observers would monitor and document, to the extent practical, the behavior of marine mammals that remain in the zone.

2.6.2 Visual Survey Protocol – During Activity Monitoring

The Injury and Behavioral Disturbance Monitoring Zones will be monitored throughout pile driving. The following survey methodology will be implemented during pile driving:

- If a cetacean approaches or enters the Shutdown Zone for cetaceans, pile driving will cease until the animal(s) leave the zone. If a pinniped enters the Shutdown Zone for pinnipeds, pile driving will cease until the animal(s) leave the zone. If a pinniped is observed within or entering the Behavioral Disturbance Zone during pile driving, a take would be recorded, behaviors documented, and the Shutdown Zone monitor alerted to the position of the animal. However, that pile segment would be completed without cessation, unless the animal approaches or enters the Shutdown Zone for pinnipeds, at which point all pile driving activities will be halted. The observers shall immediately radio to alert the monitoring coordinator/construction contractor. This action will require an immediate “all-stop” on pile operations.
- Once a shutdown has been initiated, pile driving and other in-water construction activities will be delayed until the animal has voluntarily left the Shutdown Zone and has been visually confirmed beyond the Shutdown Zone, or 15 minutes have passed without re-detection of the animal (i.e., the zone is deemed clear of marine mammals). The monitoring coordinator will inform the construction contractor that activities can re-commence.
- If shutdown and clearance procedures would result in an imminent concern for human safety, as determined by the construction contractor, the Navy Point of Contact will be notified prior. The Navy POC will notify NMFS within 24 hours.

2.6.3 Visual Survey Protocol – Post-Activity Monitoring

Monitoring of the Shutdown Zones will continue for 30 minutes following completion of pile driving. These surveys will record marine mammal observations, and will focus on observing and reporting unusual or abnormal behavior of marine mammals. During these surveys, if any injured, sick, or dead marine mammals are observed, procedures outlined below in Section 3.0 should be followed.

3 INTERAGENCY NOTIFICATION

In the event that the Navy needs to modify terms of this monitoring plan, the NMFS representative will be promptly contacted for discussion of the requested modification. In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as an injury (Level A harassment), serious injury, or mortality, Navy shall immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division (301-427-8425), Office of Protected Resources, NMFS, and the Northwest Regional Stranding Coordinator (206-526-6550), NMFS. The report must include the following information:

- Time and date of the incident
- Description of the incident
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility)
- Description of all marine mammal observations in the 24 hours preceding the incident
- Species identification or description of the animal(s) involved
- Fate of the animal(s) and
- Photographs or video footage of the animal(s)

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with Navy to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure Marine Mammal Protection Act compliance. Navy may not resume their activities until notified by NMFS.

In the event that an observer discovers an injured or dead marine mammal, and the lead observer determines that the cause of the injury or death is unknown and the death is relatively recent (e.g., in less than a moderate state of decomposition), Navy shall immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Northwest Regional Stranding Coordinator, NMFS. The report will include the same information as listed above. Activities may continue while NMFS reviews the circumstances of the incident. The Navy will work with NMFS to determine whether additional mitigation measures or modifications to the activities are appropriate.

In the event that an observer discovers an injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Navy shall report the incident to the Chief of Permits and Conservation Division, Office of Protected Resources, NMFS, and the Northwest Regional Stranding Coordinator, NMFS, within 24 hours of the discovery. Navy shall provide photographs or video footage or other documentation of the stranded animal sighting to NMFS.

Care should be taken in handling dead specimens to preserve biological materials in the best possible state for later analysis of cause of death, if that occurs. In preservation of biological materials from a dead animal, the finder (i.e., marine mammal observer) has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. The Navy will prepare a Chain of Custody Record (Appendix C) to document handling of specimens.

Primary points of contact for the Navy are:

1. Doug Tailleux – (360) 476-2664
2. Julia Stockton – (360) 476-6067
3. Greg Leicht – (360) 315-5411

The Navy primary point of contact will contact NMFS. The primary points of contact at NMFS are:

1. Modification to protocol – (360) 753-5835
2. Chief of the Permits and Conservation Division – (301-427-8425)
3. Northwest Regional Stranding Coordinator – (206-526-6550)

4 MONITORING REPORTS

A draft report will be submitted to NMFS within 90 work days of the completion of marine mammal monitoring. A final report will be prepared and submitted to the NMFS within 30 days following receipt of comments on the draft report from the NMFS. At a minimum, the report shall include:

- General data:
 - Date and time of activities
 - Water conditions (e.g., sea-state, tidal state)
 - Weather conditions (e.g., percent cover, visibility)
- Specific pile data:
 - Description of the pile driving activities including the size and type of pile
 - The installation methods used for each pile and the duration each method was used per pile
 - Impact or vibratory hammer force used to drive/extract piles
 - Detailed description of the sound attenuation system, including the design specifications
 - Depth of water in which the pile was driven
 - Depth into the substrate that the pile was driven
- Specific pile removal data:
 - Description of the pile removal activities being conducted
 - Size and type of piles
 - The machinery used for removal
 - Duration each pile removal method was used
 - The vibratory driver force
- Pre-activity observational survey-specific data:
 - Dates and time survey is initiated and terminated
 - Description of any observable marine mammal behavior in the immediate area during monitoring

- If possible, the correlation to underwater sound levels occurring at the time of the observable behavior
- Actions performed to minimize impacts to marine mammals.
- During-activity observational survey-specific data:
 - Description of any observable marine mammal behavior within monitoring zones or in the immediate area surrounding monitoring zones including the following:
 - Distance from animal to source
 - Reason why/why not shutdown implemented
 - If a shutdown was implemented, behavioral reactions noted and if they occurred before or after implementation of the shutdown
 - If a shutdown is implemented, the distance from animal to source at the time of the shutdown
 - Behavioral reactions noted during soft starts¹ and if they occurred before or after implementation of the soft start
 - Distance to the animal from the source during soft start
 - Actions performed to minimize impacts to marine mammals
 - Times when pile driving is stopped due to presence of marine mammals within the Shutdown Zones and time when pile driving resumes
- Post-activity observational survey-specific data:
 - Results, which include the detections of marine mammals, species and numbers observed, sighting rates and distances, behavioral reactions within and outside of monitoring zones
 - A refined take estimate based on the number of marine mammals observed during the course of construction

¹ The objective of a soft-start is to provide a warning and/or give animals in close proximity to pile driving a chance to leave the area prior to a vibratory or impact driver operating at full capacity thereby, exposing fewer animals to loud underwater and airborne sounds.

Appendix A

Marine Mammal Observation Record Form

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APPENDIX A MARINE MAMMAL OBSERVATION RECORD FORM

Project Name: _____

Monitoring Location _____
(Pier Location, Vessel based, Land Location, other)

Page _____ of _____

Date: _____

Vessel Name: _____

Time Effort Initiated: _____

Time Effort Completed: _____

Sighting Data

Event Code	Sighting Number (1 or 1.1 if resight)	Time/Duration watching sighting (Start/End time if continuous)	WP # (every time a sighting is made)	Observer	Sighting cue	Species	Dist/ Dir to Animal (from Observer)	Dist to Pile (btwn animal & pile)	# of Animals Group Size (min/max/best) # of Calves	Relative Motion/and Behavior Code (see code sheet)	Const Type During Sighting	Mitigation used during sighting?	Mitigation Type?	Visibility	% Glare	Weath Cond	Sea State and Wave Ht	Swell Dir	Behavior Change/ Response to Activity/Comments
		: : : :					m or km °	m or km	/ / — calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / — calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / — calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / — calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / — calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / — calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E			Light Mod Heavy	N or S W or E	
		: : : :					m or km °	m or km	/ / — calves	opening closing parallel none	PRE POST SSV SSI V I PC DP ST NONE	Y N	DE SD	B P M G E				N or S W or E	

Sighting # = chronological number of sightings, if resight of same animal, then 1.1, 1.2, etc. WP (Waypoint) = GPS recording of lat/long, time/date stamp. Critical for vessel observers.

Sighting Codes

(Sighting Cue & Behavior Codes)

Behavior codes

Code	Behavior	Definition
BR	Breaching	Leaps clear of water
CD	Change Direction	Suddenly changes direction of travel
CH	Chuff	Makes loud, forceful exhalation of air at surface
DI	Dive	Forward dives below surface
DE	Dead	Shows decomposition or is confirmed as dead by investigation
DS	Disorientation	An individual displaying multiple behaviors that have no clear direction or purpose
FI	Fight	Agonistic interactions between two or more individuals
FO	Foraging	Confirmed by food seen in mouth
MI	Milling	Moving slowly at surface, changing direction often, not moving in any particular direction
PL	Play	Behavior that does not seem to be directed towards a particular goal; may involve one, two or more individuals
PO	Porpoising	Moving rapidly with body breaking surface of water
SL	Slap	Vigorously slaps surface of water with body, flippers, tail etc.
SP	Spyhopping	Rises vertically in the water to "look" above the water
SW	Swimming	General progress in a direction. Note general direction of travel when last seen [Example: "SW (N)" for swimming north]
TR	Traveling	Traveling in an obvious direction. Note direction of travel when last seen [Example: "TR (N)" for traveling north]
UN	Unknown	Behavior of animal undetermined, does not fit into another behavior
Pinniped only		
EW	Enter Water (from haul out)	Enters water from a haul-out for no obvious reason
FL	Flush (from haul out)	Enters water in response to disturbance
HO	Haul out (from water)	Hauls out on land
RE	Resting	Resting onshore or on surface of water
LO	Look	Is upright in water "looking" in several directions or at a single focus
SI	Sink	Sinks out of sight below surface without obvious effort (usually from an upright position)
VO	Vocalizing	Animal emits barks, squeals, etc.
Cetacean only		
LG	Logging	Resting on surface of water with no obvious signs of movement

Sighting Codes (continued)

Marine Mammal Species

Code	Marine Mammal Species
CASL	California Sea Lion
HSEA	Harbor Seal
STSL	Steller Sea Lion
HPOR	Harbor Porpoise
DPOR	Dall's Porpoise
ORCA	Killer Whale
HUMP	Humpback Whale
UNLW	Unknown Large Whale
RIVO	River Otter (not a marmam)
OTHR	Other
UNKW	Unknown

Event

Code	Activity Type
E ON	Effort On
E OFF	Effort Off
PRE	Pre Watch
POST	Post Watch
SSV	Soft start-vibratory
SSI	Soft start-impact
WC	Weather Condition/Change
S	Sighting
M-DE	Mitigation Delay
M-SD	Mitigation Shutdown

Construction Type

Code	Activity Type
SSV	Soft Start (Vibratory)
SSI	Soft Start (Impact)
V	Vibratory Pile Driving (installation and extraction)
I	Impact Pile Driving
PC	Pneumatic Chipping
DP	Dead pull
ST	Stabbing
NONE	No Pile Driving

Mitigation Codes

Code	Activity Type
DE	Delay onset of Pile Driving
SD	Shut down Pile Driving

Sighting Codes (continued)

Visibility

Code	Distance Visible
B	Bad (<0.5km)
P	Poor (0.5 – 1.5km)
M	Moderate (1.5 – 10km)
G	Good (10 - 15km)
E	Excellent (<15km)

Glare

Percent glare should be total glare of observers' area of responsibility. Are they covering 90 degrees or 180 degrees? Total glare for that area and write that area down on the datasheet so we know later what percentage of the field of view was poor due to glare.

Weather Conditions

Code	Weather Condition
S	Sunny
PC	Partly Cloudy
L	Light Rain
R	Steady Rain
F	Fog
OC	Overcast

Sea State and Wave Height

Use Beaufort Sea State Scale for Sea State Code. This refers to the surface layer and whether it is glassy in appearance or full of white caps. In the open ocean, it also takes into account the wave height, but in inland waters the wave heights (swells) may never reach the levels that correspond to the correct surface white cap number. Therefore, include wave height for clarity.

Code	Wave Height
Light	0 – 3 ft
Moderate	4 – 6 ft
Heavy	>6 ft

Swell Direction

Swell direction should be where the swell is coming from (S for coming from the south). If possible, record direction relative to fixed location (pier). Choose this location at beginning of monitoring project.

APPENDIX B: LETTER OF AUTHORIZATION

Please see following 7 pages for the Letter of Authorization issued from the National Marine Fisheries Service to the U.S. Navy permitting pile driving activities and stipulating monitoring and reporting criteria for Manchester Fuel Depot.



LETTER OF AUTHORIZATION

The U.S. Navy (Navy) is hereby authorized under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(A)) to take marine mammals incidental to construction activities at Naval Base Kitsap Manchester, Washington, subject to the provisions of the MMPA and the Regulations Governing Taking of Marine Mammals Incidental to U.S. Navy Marine Structure Maintenance and Pile Replacement in Washington (50 CFR Part 218, Subpart C) (Regulations).

1. This Letter of Authorization (LOA) is valid from July 16, 2021, through February 15, 2022.
2. This LOA is valid only for take incidental to the specified construction activities at Naval Base Kitsap Manchester, Washington, and described in the preamble to the Regulations and in the Manchester Fuel Department Fender Pile Repair Marine Mammal Monitoring Plan, dated March 2021.
3. General Conditions
 - (a) A copy of this LOA and the approved Marine Mammal Monitoring Plan, dated March 2021, must be in the possession of Navy, its designees, and work crew personnel operating under the authority of this LOA.
 - (b) The species authorized for taking are listed in Table 1. The taking, by Level B harassment only, is limited to the species and numbers listed in Table 1.
 - (c) The taking by Level A harassment, serious injury, or death of any of the species listed in Table 1 or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA. Any taking exceeding the authorized amounts listed in Table 1 is prohibited and may result in the modification, suspension, or revocation of this IHA.
 - (d) The Navy shall conduct briefings for construction supervisors and crews, the monitoring team, and Navy staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.
 - (e) The Navy must adhere to the requirements described in the approved Marine Mammal Monitoring Plan, dated March 2021.
4. Mitigation Measures



The holder of this Authorization is required to implement the following mitigation measures:

- (a) For all pile driving activity, the Navy shall implement a minimum shutdown zone of a 10 m radius around the pile. If a marine mammal comes within or approaches the shutdown zone, such operations shall cease.
- (b) For all pile driving activity, the Navy shall implement shutdown zones with radial distances as identified in Table 2. If a marine mammal comes within or approaches the shutdown zone, such operations shall cease.
- (c) For all pile driving activity, the Navy shall designate monitoring zones with radial distances as identified in Table 2. If any cetacean is observed outside the shutdown zone, but within the designated monitoring zone, such operations shall cease.
- (d) The Navy shall deploy marine mammal observers as indicated in the NMFS-approved Marine Mammal Monitoring Plan, dated March 2021.
- (e) For all pile driving activities, a minimum of one observer shall be stationed at the active pile driving rig or in reasonable proximity in order to monitor the shutdown zone.
- (f) Prior to the start of pile driving on any day, the Navy shall take measures to ensure that southern resident killer whales are not located within the vicinity of the project area, including, but not limited to, contacting and/or reviewing the latest sightings data from the Orca Network and/or Center for Whale Research, including passive acoustic detections, to determine the location of the nearest marine mammal sightings.
- (g) Monitoring shall take place from fifteen minutes prior to initiation of pile driving activity through thirty minutes post-completion of pile driving activity. Pre-activity monitoring shall be conducted for fifteen minutes to ensure that the shutdown zone is clear of marine mammals, and pile driving may commence only if observers have declared the shutdown zone clear of marine mammals during this period. In the event of a delay or shutdown of activity resulting from marine mammals in the shutdown zone, the marine mammals shall be allowed to remain in the shutdown zone (*i.e.*, must leave of their own volition) and their behavior shall be monitored and documented. Monitoring shall occur throughout the time required to drive a pile. A determination that the shutdown zone is clear cannot be made unless the observer(s) have good visibility of the shutdown zone during the entire fifteen-minute observation period (*i.e.*, the entire shutdown zone must be visible to the naked eye and unobscured by dark, rain, fog, poor lighting conditions, etc.).
- (h) If a marine mammal approaches or enters the shutdown zone, the Navy shall halt

all pile driving activities at that location. If pile driving is halted or delayed due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or fifteen minutes have passed without re-detection of the animal.

- (i) If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the monitoring zone, the Navy must halt pile driving activities immediately using delay and shutdown procedures. Activities must not resume until the animal has been confirmed to have left the area or the fifteen-minute observation period has elapsed
- (j) The Navy shall use soft start techniques for impact pile driving. Soft start for impact drivers requires contractors to provide an initial set of three strikes at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy three-strike sets. Soft start shall be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of thirty minutes or longer.

5. Monitoring

The holder of this Authorization is required to conduct monitoring and reporting in accordance with the approved Monitoring Plan, dated March 2021.

- (a) Monitoring shall be conducted by trained observers, who shall have no other assigned tasks during monitoring periods. Trained observers shall be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown or delay procedures when applicable through communication with the equipment operator. The Navy shall adhere to the following additional observer qualifications:
 - (i) Independent observers (i.e., not construction personnel) are required.
 - (ii) At least one observer must have prior experience working as an observer.
 - (iii) Other observers may substitute education (degree in biological science or related field) or training for experience.
 - (iv) Where a team of three or more observers are required, one observer shall be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as an observer.
- (b) Trained observers shall receive a general environmental awareness briefing conducted by Navy staff. At a minimum, training shall include identification of the marine mammals that may occur in the project vicinity and relevant mitigation and monitoring requirements. All observers shall have no other construction-

related tasks while conducting monitoring.

- (c) The Navy shall deploy additional observers to monitor disturbance zones according to the minimum requirements defined in the approved Marine Mammal Monitoring Plan, dated March 2021. These observers shall collect sighting data and behavioral responses to pile driving for marine mammal species observed in the region of activity during the period of activity, and shall communicate with the shutdown zone observer as appropriate with regard to the presence of marine mammals. All observers shall be trained in identification and reporting of marine mammal behaviors.
- (d) During each in-water work period, the Navy shall update NMFS every two months on the progress of ongoing projects.
- (e) For shutdown zone monitoring, the Navy shall report on implementation of shutdown or delay procedures, including whether the procedures were not implemented and why (when relevant).

6. Reporting

The holder of this Authorization is required to submit information to NMFS as follows:

- (a) The Navy must submit a summary report to NMFS not later than 90 days following the end of construction activity covered by this LOA. The Navy shall provide a final report within 30 days following resolution of comments on the draft report. The report must contain the following information:
 - (i) Date and time that monitored activity begins or ends;
 - (ii) Construction activities occurring during each observation period;
 - (iii) Weather parameters (*e.g.*, wind speed, percent cloud cover, visibility);
 - (iv) Water conditions (*e.g.*, sea state, tide state);
 - (v) Species, numbers, and, if possible, sex and age class of marine mammals;
 - (vi) Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
 - (vii) Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
 - (viii) Description of implementation of mitigation measures (*e.g.*, shutdown or delay);

- (ix) Locations of all marine mammal observations; and
 - (x) Other human activity in the area.
- (b) The Navy must submit a comprehensive summary report addressing activities conducted under all LOAs issued pursuant to the Regulations to NMFS not later than ninety days following the conclusion of marine mammal monitoring efforts conducted pursuant to the Regulations.
- (c) In the event that a live marine mammal is found stranded, whether on shore or in or on any structure or vessel, the following steps shall be taken:
- (i) Project personnel who discover the marine mammal shall immediately notify the most appropriate onsite personnel with relevant expertise (e.g., marine mammal observers) as well as the Navy (if non-Navy project personnel initially discover the animal).
 - (ii) The Navy shall then immediately notify the West Coast Regional Stranding Coordinator, NMFS, (866-767-6114) and, in consultation with the Stranding Coordinator, shall immediately notify the most appropriate qualified individual (i.e., biologist or veterinarian) to respond to the event.
 - (iii) In the interim, or in the event that no qualified individual other than onsite marine mammal observers is available to respond to the event, the Navy shall manage the event response and shall take action to prevent any further deterioration of the animal's condition, to the extent possible. Appropriate action may be specific to the event. At minimum, the Navy should provide shade for the animal (if possible), shall not move the animal or cause the animal to move, and shall suspend project activity until the situation is resolved.
 - (iv) The Navy shall report the incident to the Office of Protected Resources (OPR), NMFS, (301-427-8401) within 48 hours after discovery.
- (d) In the unanticipated event that the specified activity clearly causes the take of at least one marine mammal in a prohibited manner, the Navy shall immediately cease such activity and report the incident to OPR and the West Coast Regional Stranding Coordinator, NMFS. Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with the Navy to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The Navy may not resume their activities until notified by NMFS. The report must include the following information:
- (i) Time, date, and location (latitude/longitude) of the incident;

- (ii) Description of the incident;
 - (iii) Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility);
 - (iv) Description of all marine mammal observations in the 24 hours preceding the incident;
 - (v) Species identification or description of the animal(s) involved;
 - (vi) Fate of the animal(s); and
 - (vii) Photographs or video footage of the animal(s). Photographs may be taken once the animal(s) have been moved from the waterfront area.
- (e) In the event that the Navy discovers an injured or dead marine mammal and determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition), the Navy shall immediately report the incident to OPR and the West Coast Regional Stranding Coordinator, NMFS. The report must include the information identified in paragraph (6)(c) of this LOA. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with the Navy to determine whether additional mitigation measures or modifications to the activities are appropriate.
- (f) In the event that the Navy discovers an injured or dead marine mammal and determines that the injury or death is not associated with or related to the specified activities (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, scavenger damage), Navy shall report the incident to OPR and the West Coast Regional Stranding Coordinator, NMFS, within 24 hours of the discovery. The Navy shall provide photographs or video footage or other documentation of the stranded animal sighting to NMFS. Photographs may be taken once the animal has been moved from the waterfront area.

7. This Authorization may be modified, suspended or revoked if the Holder fails to abide by the conditions prescribed herein (including, but not limited to, failure to comply with monitoring or reporting requirements), or if NMFS determines: (1) the authorized taking is likely to have or is having more than a negligible impact on the species or stocks of affected marine mammals or (2) the prescribed measures are likely not or are not effecting the least practicable adverse impact on the affected species or stocks and their habitat.

Catherine Marzin
Acting Director,
Office of Protected Resources,
National Marine Fisheries Service.

APPENDIX C: DAILY SUMMARY REPORT FORMS

Please see following pages for eleven (11) Marine Mammal Daily Summary forms dated September 28, 2021 through December 10, 2021. Summary forms submitted after each day's monitoring effort at Manchester Fuel Depot.



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates: 9/28/2021 (start)		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): James Titus--Lead, Marine Mammal Observer (MMO) at station "WP 2" at mid-pier, closest to the pile driving Charlie Wright—MMO at south position toward end of the Pier at WP 3 Suzanne Harkness—MMO at north position at WP 1 (north pier) or WP 4 (above beach in the parking lot east of job trailer, NW of barge/pile driving), based on best vantage point. Glenn Johnson on site 0700-1115 for training/orientation, management and coordination.			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	09/28/2021		
Day Start Time:	0700 (arrival)	Effort Start Time:	1000
Day End Time:	1630 (leave)	Effort End Time:	1609
Weather:	Partly Cloudy / Sunny with occasional light showers; Light Wave height, and average BSS (Beaufort Sea State) of 2 – 3. Good / Excellent visibility.		
Activities Summary:	Pile No. 1-3: Three (3) of four (4) total concrete fender piles for this segment of the project installed with template using impact pile driving, not yet driven to depth.		
Issues or Delays:	N/A		
Actions Taken:	N/A		
Other Comments:	A minimum of three (3) adult California sea lions, four (4) harbor seals, and one (1) Steller sea lion detected as either resident to or traveling through the project area. Two harbor seals were detected during pile driving within the 160 m behavioral monitoring zone (i.e., the Level B take/ harassment zone) but were more than 35 m from the pile being driven (i.e. not in the Shutdown/Level A take / injury zone) and thus these animals were documented, and pile driving operations were not shut down. One of the two harbor seals resighted in the Level B take zone later in the		



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	day, but was not counted as take twice.
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Marine Mammal Takes for MFD Project--9/28/2021 (Level B Take from July 2021 Letter of Authorization)

Species	Level B Takes Authorized	Level B Takes Today	Level B Takes at Project To Date	Level B Takes Remaining
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall's porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	662
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	357
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	5,831
Harbor seal (<i>Phoca vitulina richardii</i>)	477	2	2	475
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Charlie Wright</u> —MMO at northwest position WP 4 (above beach at edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	10/04/2021		
Day Start Time:	0845 (arrival)	Effort Start Time:	0900
Day End Time:	1500 (departure)	Effort End Time:	1449
Weather:	Partly Cloudy / Sunny; Light Wave height, and BSS (Beaufort Sea State) ranged from 1 – 3. Good / Excellent visibility.		
Activities Summary:	Pile No. 1-4: Installation was completed for a total of four (4) concrete fender piles using impact pile driving: the 4 th of the first 4 piles driven on the project was driven in place with a template, and then all 4 of these first 4 piles previously set were driven to depth after template removal. Total of four piles driven over 9/28 and 10/4.		
Issues or Delays:	N/A		
Actions Taken:	N/A		
Other Comments:	A minimum of five (5) adult California sea lions and nine (9) harbor seals detected, which could be either resident to or traveling through the project area. Four (4) harbor seals were detected within the behavioral monitoring zone during pile driving, and logged as Level B Take. These animals were documented, and pile driving operations were not shut down.		

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Table 1. Marine Mammal Takes for MFD Project—10/4/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	4	6	471
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Charlie Wright</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Suzanne Harkness</u> —MMO at northwest position WP 4 (above beach at edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	10/18/2021		
Day Start Time:	0730 (arrival)	Effort Start Time:	0830
Day End Time:	1530 (departure)	Effort End Time:	1515
Weather:	Partly Cloudy / Overcast; Light wave height, and BSS (Beaufort Sea State) of 1. Good visibility.		
Activities Summary:	No pile driving occurred.		
Issues or Delays:	Preparations took place, and then equipment breakdown occurred and repairs were needed. Pile driving delayed until Tuesday, 10/19.		
Actions Taken:	N/A		
Other Comments:	A minimum of twelve (12) adult California sea lions, six (6) harbor seals, one (1) Steller sea lion, and two (2) harbor porpoise were detected, which could be either resident to or traveling through the project area. These animals were documented according to protocol.		

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Table 1. Marine Mammal Takes for MFD Project—10/18/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	6	471
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Glenn Johnson</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	10/19/2021		
Day Start Time:	0750 (arrival)	Effort Start Time:	0840
Day End Time:	1230 (departure)	Effort End Time:	1219
Weather:	Partly Cloudy / Sunny; Light wave height, and BSS (Beaufort Sea State) of 1. Good visibility.		
Activities Summary:	No pile driving occurred. Monitoring team was on standby for completion of crane repair (that started on 10/18). When repair was complete, one pile was moved into position within the template. While moving the second pile into position, another equipment issue arose which delayed pile driving until another day.		
Issues or Delays:	Pile driving delayed until approximately 10/25 to assess and repair equipment.		
Actions Taken:	N/A		
Other Comments:	A minimum of fourteen (14) adult California sea lions, four (4) harbor seals, and one (1) harbor porpoise were detected. These animals were documented according to protocol.		

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Table 1. Marine Mammal Takes for MFD Project—10/19/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	6	471
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Glenn Johnson</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Suzanne Harkness</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/02/2021		
Day Start Time:	0740 (arrival)	Effort Start Time:	0800
Day End Time:	1200 (departure)	Effort End Time:	1125
Weather:	Partly Cloudy / Overcast; Light wave height, and BSS (Beaufort Sea State) of 1. Good visibility.		
Activities Summary:	No pile driving occurred. Monitoring team was on standby after mechanical testing or repairs were requested. Released by pile driving foreman upon the determination that a mechanic would likely require the rest of the day to address required checks/repairs.		
Issues or Delays:	Pile driving delayed until 11/03 to assess and/or repair equipment.		
Actions Taken:	N/A		
Other Comments:	A minimum of twenty (20) adult California sea lions, one (1) harbor seals, and one (1) harbor porpoise were detected. These animals were documented according to protocol.		

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Table 1. Marine Mammal Takes for MFD Project—11/02/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	6	471
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Kelsey Sandoval</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/03/2021		
Day Start Time:	0830 (arrival)	Effort Start Time:	0845
Day End Time:	1530 (departure)	Effort End Time:	1515
Weather:	Overcast/Light Rain; Light wave height, and BSS (Beaufort Sea State) of 1-3. Good visibility.		
Activities Summary:	Pile No. 5-8: Four (4) concrete piles set in template, then driven to top extent of template using impact hammer, but not yet driven to depth.		
Issues or Delays:	A single harbor seal was detected within the Level A take zone 1 minute prior to start of impact pile driving, then dove underwater. Lead MMO immediately sought to notify pile driving foreman, and was able to communicate the need for a shutdown right as impact pile driving was initiated, leading to a pause in pile driving activities of several minutes while MMOs confirmed that the seal had moved outside of the zone. Concurrent to pile driving start, the animal of concern emerged well outside of the shutdown zone, within the 160-meter Level B Harassment Zone. Based on the animal's location and behavior, the MMO concluded during the shutdown event that the individual was the same as previously seen within the zone, and that its behavior was not consistent with fleeing, that it had left the Level A / Shutdown Zone prior to start of pile driving, and thus was recorded as a Level B take event only.		

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Actions Taken:	Shutdown Event to allow MMOs to confirm that the animal had left the Mitigation - Shutdown Zone.
Other Comments:	A minimum of thirty-seven (37) adult California sea lions, eight (8) harbor seals, and one (1) harbor porpoise were detected. These animals were documented according to protocol, with three (3) detections of Level B Take recorded for harbor seals during impact pile driving.

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Table 1. Marine Mammal Takes for MFD Project—11/03/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	3	9	468
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Charlie Wright</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/17/2021		
Day Start Time:	0735 (arrival)	Effort Start Time:	0745
Day End Time:	1645 (departure)	Effort End Time:	1633
Weather:	Mostly clear conditions with occasional overcast/partly cloudy; Light to significant wave height, and BSS (Beaufort Sea State) of mostly a 1 near the pile driving operation, but out on the end of the pier and further in the water BSS was 4-5 for much of the afternoon. Generally good visibility.		
Activities Summary:	Pile No. 9-12: Four (4) concrete piles set in template in the first part of the a.m., then driven to top extent of template using impact hammer. Some of the piles were in soft soil and needed to be supported before the template could be removed and pile driving finished, and support construction occurred for most of the day. Pile driving resumed in the late afternoon and finished at 1603.		
Issues or Delays:	After conducting post-monitoring for pile driving that ended at 1448, the MMO team briefly moved from their monitoring positions at 1518 upon seeing the impact hammer and crane in what they thought were meant to be overnight, inactive positions. However, at 1527 the MMO team were returned to their positions after being informed that pile driving would resume. Two pile driving occurrences (2 minutes each) occurred between 1543 and 1603. The MMO team were reminded to confirm with the pile driving supervisor before ending monitoring.		

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Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.
Other Comments:	Detections included a minimum of sixty-three (63) adult California sea lions (mostly singles or in groups of 2-3, but several larger groups of 5 or 6 animals, and one group of 10 animals; all appeared to be moving through with no duplicate sightings) and eight (8) harbor seals. These animals were documented according to protocol, including Level B Take recorded for eleven (11) of the California sea lions (includes the group of 10) and one (1) harbor seal (Table 1), as these animals were all within the behavioral monitoring zone when impact pile driving occurred.

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Table 1. Marine Mammal Takes for MFD Project—11/17/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	11	11	2,139
Harbor seal (<i>Phoca vitulina richardii</i>)	477	1	10	467
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Charlie Wright</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/23/2021		
Day Start Time:	0845 (arrival)	Effort Start Time:	0855
Day End Time:	1635 (departure)	Effort End Time:	1625
Weather:	Conditions were overcast/partly cloudy, with periods of sun later in the day; Light wave height, and BSS (Beaufort Sea State) mostly 3-4 in the morning, then calming down to 1 in the afternoon. Good visibility.		
Activities Summary:	Pile No. 13-16: Four (4) concrete piles set in template, then driven to top extent of template using impact hammer. Template was then removed and 1 of 4 piles driven to depth. Pile driving occurred in the morning, and resumed in the afternoon and finished at 1555.		
Issues or Delays:	No issues or delays.		
Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.		
Other Comments:	Detections included a minimum of twenty-four (24) California sea lions, twelve (12) harbor seals, and seven (7) harbor porpoise. These animals were documented according to protocol, including Level B Take recorded for one (1) of the California sea lions, as the animal was traveling southbound within the behavioral monitoring zone when impact pile driving occurred. All other animals detected during pile driving efforts were outside of the harassment zones and did not count as take.		

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Table 1. Marine Mammal Takes for MFD Project—11/23/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	1	12	2,138
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	10	467
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Kelsey Sandoval, Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Glenn Johnson</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/24/2021		
Day Start Time:	0730 (arrival)	Effort Start Time:	0745
Day End Time:	0945 (departure)	Effort End Time:	0941
Weather:	Conditions were partly cloudy to sunny. Light wave height, and BSS (Beaufort Sea State) ranged between 1-2 throughout the monitoring period. Visibility was Good / Excellent.		
Activities Summary:	Pile No. 13-16: After having driven all four (4) concrete piles with the template in place the day prior, then removing the template and driving one (1) of the four (4) piles to depth, today the three (3) remaining concrete piles were driven to extent using an impact hammer. Pile driving finished at 0911.		
Issues or Delays:	No issues or delays.		
Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.		
Other Comments:	Detections included a minimum of twenty-six (26) California sea lions and one (1) harbor seal. These animals were documented according to protocol, including Level B Take recorded for one (1) of the California sea lions, as the animal was traveling southbound within the behavioral monitoring zone concurrent with impact pile driving. All other animals		



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	detected during pile driving efforts were outside of the harassment zones and did not count as take.
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Table 1. Marine Mammal Takes for MFD Project—11/24/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	1	13	2,137
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	10	467
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – Present		Name: Kelsey Sandoval, Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Glenn Johnson</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Suzanne Harkness</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	12/09/2021		
Day Start Time:	0730 (arrival)	Effort Start Time:	0745
Day End Time:	1645 (departure)	Effort End Time:	1631
Weather:	Conditions were overcast, partly cloudy, then sunny as the day progressed. Light wave height, and BSS (Beaufort Sea State) ranged between 3-4 in the morning then down to 1-2 in the late afternoon. Visibility was Good.		
Activities Summary:	Pile No. 17 -19. Three (3) concrete piles driven with the template in place today using an impact hammer. Pile driving was intermittent throughout day, starting at 0858 and ending at 1601.		
Issues or Delays:	There was some confusion regarding monitoring protocol in relation to the steel piles that support the template (i.e., the template's four "legs") and if these can be slightly embedded using the impact hammer's weight and/or very low power setting. Monitoring lead and project manager for Harris Environmental will discuss, and seek clarification from contractor and agency if needed.		
Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.		
Other Comments:	Detections included a minimum of twenty-five (25) California sea lions, fifteen (15) harbor seals, and one (1) river otter (river otters are not considered a marine mammal and do not fall under the MMPA's		

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	<p>protections). All animals were documented according to protocol, including Level B Take recorded for one (1) of the California sea lions and one (1) of the harbor seals, as both animals were detected within the behavioral monitoring zone during post-monitoring, only minutes after impact pile driving occurred. The animals' travel speed and location at time of detection indicated they were within the behavioral monitoring zone during active pile driving. All other animals detected during pile driving efforts were outside of the harassment zones and did not count as take.</p>
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Table 1. Marine Mammal Takes for MFD Project—12/09/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopius jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	1	14	2,136
Harbor seal (<i>Phoca vitulina richardii</i>)	477	1	11	466
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/28/2021 – 12/10/2021		Name: Kelsey Sandoval, Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Charlie Wright</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	12/10/2021		
Day Start Time:	0730 (arrival)	Effort Start Time:	0745
Day End Time:	1245 (departure)	Effort End Time:	1240
Weather:	Conditions were Overcast with Light Rain at the end of the day. Light wave height, and BSS (Beaufort Sea State) was mostly 2 in the morning then went up to 5 in the afternoon. Visibility was Good.		
Activities Summary:	Pile No. 17 -20. The one (1) final concrete pile was driven with the template in place, then the template was removed and all four (4) concrete piles were driven to depth. The impact hammer was used for all pile driving. Pile driving was intermittent throughout day, starting at 0909 and ending at 1210. Installation completed for all twenty (20) project piles.		
Issues or Delays:	There were no issues or delays regarding pile driving activity today.		
Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.		
Other Comments:	Detections included a minimum of twenty-two (22) California sea lions, two (2) harbor seals, and one (1) Steller's sea lion. All animals were documented according to protocol. No Take was observed. All animals detected during pile driving efforts were outside of the harassment zones and did not count as take.		

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Table 1. Marine Mammal Takes for MFD Project—12/10/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Gray whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumetopias jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	14	2,136
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	11	466
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2

Table 1. Authorized Take by Level B Harassment

Species	Authorized take ¹
Humpback whale	4 ²
Minke whale	4 ²
Gray whale	4 ²
Killer whale (transient)	12 ²
Killer whale (resident)	40 ²
Dall's porpoise	146 ²
Harbor porpoise	98
Steller sea lion	500
California sea lion	2,150
Harbor seal	477
Elephant seal	2 ²

¹Values represent the total amount of take that may be authorized over the five-year period of effectiveness of the Regulations, and the amount of take expected to occur incidental to the activities conducted during the period of validity of this LOA may be less than these totals.

²These values represent the total amount of take that may be authorized over the five-year period of effectiveness of the Regulations at all U.S. Navy facilities covered by the Regulations. During 2021-22, these values represent the combined total of takes authorized through this LOA as well as through the separate LOA issued for construction activities planned to occur at Naval Base Kitsap Bangor.

Table 2. Minimum Shutdown and Monitoring Zones (meters)

Pile size, type, and method	Minimum shutdown zones					Minimum monitoring zone
	Phocid	Otariid	Low-frequency	Mid-frequency	High-frequency	
24-in concrete piles, impact	35	10	220	160	160	160 ¹

¹The estimated Level A harassment zone for low-frequency cetaceans exceeds the estimated Level B harassment zone. Therefore, while the shutdown requirement described in 4(c) of this LOA applies to the monitoring zone for mid- and high-frequency cetaceans, the de facto minimum monitoring zone is equivalent to the largest shutdown zone (*i.e.*, the 220-m zone for low-frequency cetaceans).



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates: September 2021		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): James Titus--Lead, Marine Mammal Observer (MMO) at station "WP 2" at mid-pier, closest to the pile driving Charlie Wright—MMO at south position toward end of the Pier at WP 3 Suzanne Harkness—MMO at north position at WP 1 (north pier) or WP 4 (above beach in the parking lot east of job trailer, NW of barge/pile driving), based on best vantage point. Glenn Johnson on site 0700-1115 for training/orientation, management and coordination.			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	09/28/2021		
Day Start Time:	0700 (arrival)	Effort Start Time:	1000
Day End Time:	16:30 (leave)	Effort End Time:	1609
Weather:	Partly Cloudy / Sunny with occasional light showers; Light Wave height, and average BSS (Beaufort Sea State) of 2 – 3. Good / Excellent visibility.		
Activities Summary:	Three concrete fender piles installed using impact pile driving.		
Issues or Delays:	N/A		
Actions Taken:	N/A		
Other Comments:	A minimum of three (3) adult California sea lions, four (4) harbor seals, and one (1) Steller sea lion detected as either resident to or traveling through the project area. Two harbor seals were detected during pile driving within the 160 m behavioral monitoring zone (i.e., the Level B take/ harassment zone) but were more than 35 m from the pile being driven (i.e. not in the Shutdown/Level A take / injury zone) and thus these animals were documented, and pile driving operations were not shut down.		

Harris Environmental Group, Inc

Marine Mammal Takes for MFD Project--9/28/2021 (Level B Take from July 2021 Letter of Authorization)

Species	Level B Takes Authorized	Level B Takes Today	Level B Takes at Project To Date	Level B Takes Remaining
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall's porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	662
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	357
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	5,831
Harbor seal (<i>Phoca vitulina richardii</i>)	477	3	3	474
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Charlie Wright</u> —MMO at northwest position WP 4 (above beach at edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	10/04/2021		
Day Start Time:	0845 (arrival)	Effort Start Time:	0900
Day End Time:	1500 (departure)	Effort End Time:	1449
Weather:	Partly Cloudy / Sunny; Light Wave height, and BSS (Beaufort Sea State) ranged from 1 – 3. Good / Excellent visibility.		
Activities Summary:	Installation was completed for a total of 4 concrete fender piles using impact pile driving: first, the 4 th of the first 4 piles driven on the project was driven in place with a template, and then all 4 of these first 4 piles previously set were driven to depth after template removal.		
Issues or Delays:	N/A		
Actions Taken:	N/A		
Other Comments:	A minimum of five (5) adult California sea lions and nine (9) harbor seals detected, which could be either resident to or traveling through the project area. Four (4) harbor seals were detected within the behavioral monitoring zone during pile driving, and logged as Level B Take. These animals were documented, and pile driving operations were not shut down.		

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Table 1. Marine Mammal Takes for MFD Project—10/4/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	4	7	470
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Charlie Wright</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Suzanne Harkness</u> —MMO at northwest position WP 4 (above beach at edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	10/18/2021		
Day Start Time:	0730 (arrival)	Effort Start Time:	0830
Day End Time:	1530 (departure)	Effort End Time:	1515
Weather:	Partly Cloudy / Overcast; Light wave height, and BSS (Beaufort Sea State) of 1. Good visibility.		
Activities Summary:	No pile driving occurred.		
Issues or Delays:	Preparations took place, and then equipment breakdown occurred and repairs were needed. Pile driving delayed until Tuesday, 10/19.		
Actions Taken:	N/A		
Other Comments:	A minimum of twelve (12) adult California sea lions, six (6) harbor seals, one (1) Steller sea lion, and two (2) harbor porpoise were detected, which could be either resident to or traveling through the project area. These animals were documented according to protocol.		

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Table 1. Marine Mammal Takes for MFD Project—10/18/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	7	470
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Glenn Johnson</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	10/19/2021		
Day Start Time:	0750 (arrival)	Effort Start Time:	0840
Day End Time:	1230 (departure)	Effort End Time:	1219
Weather:	Partly Cloudy / Sunny; Light wave height, and BSS (Beaufort Sea State) of 1. Good visibility.		
Activities Summary:	No pile driving occurred. Monitoring team was on standby for completion of crane repair (that started on 10/18). When repair was complete, one pile was moved in to position within the template, however while moving second pile in to position an equipment issue arose which precluded further pile driving work.		
Issues or Delays:	Pile driving delayed until approximately 10/25 to assess and repair equipment.		
Actions Taken:	N/A		
Other Comments:	A minimum of fourteen (14) adult California sea lions, four (4) harbor seals, and one (1) harbor porpoise were detected. These animals were documented according to protocol.		

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Table 1. Marine Mammal Takes for MFD Project—10/18/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	7	470
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Glenn Johnson</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Suzanne Harkness</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/02/2021		
Day Start Time:	0740 (arrival)	Effort Start Time:	0800
Day End Time:	1200 (departure)	Effort End Time:	1125
Weather:	Partly Cloudy / Overcast; Light wave height, and BSS (Beaufort Sea State) of 1. Good visibility.		
Activities Summary:	No pile driving occurred. Monitoring team was on standby after mechanical testing or repairs were requested. Released by pile driving foreman upon the determination that a mechanic would likely require the rest of the day to address required checks/repairs.		
Issues or Delays:	Pile driving delayed until 11/03 to assess and/or repair equipment.		
Actions Taken:	N/A		
Other Comments:	A minimum of twenty (20) adult California sea lions, one (1) harbor seals, and one (1) harbor porpoise were detected. These animals were documented according to protocol.		

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Table 1. Marine Mammal Takes for MFD Project—11/02/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	7	470
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Glenn Johnson, Kelsey Sandoval	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Kelsey Sandoval</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/03/2021		
Day Start Time:	0830 (arrival)	Effort Start Time:	0845
Day End Time:	1530 (departure)	Effort End Time:	1515
Weather:	Overcast/Light Rain; Light wave height, and BSS (Beaufort Sea State) of 1-3. Good visibility.		
Activities Summary:	Four (4) concrete piles set in template, then driven to top extent of template using impact hammer.		
Issues or Delays:	A single harbor seal was detected within the Level A take zone 1 minute prior to start of impact pile driving, then dove underwater. Lead MMO immediately sought to notify pile driving foreman, and was able to communicate the need for a shutdown right as impact pile driving was initiated, leading to a pause in pile driving activities of several minutes while MMOs confirmed that the seal had moved outside of the zone. Concurrent to pile driving start, the animal of concern emerged well outside of the shutdown zone, within the 160-meter Level B Harassment Zone. Based on the animal's location and behavior, the MMO concluded during the shutdown event that the individual was the same as previously seen within the zone, and that its behavior was not consistent with fleeing, that it had left the Level A / Shutdown Zone prior to start of pile driving, and thus was recorded as a Level B take event only.		

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Actions Taken:	Shutdown Event to allow MMOs to confirm that the animal had left the Mitigation - Shutdown Zone.
Other Comments:	A minimum of thirty-seven (37) adult California sea lions, eight (8) harbor seals, and one (1) harbor porpoise were detected. These animals were documented according to protocol, with three (3) detections of Level B Take recorded for harbor seals during impact pile driving.

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Table 1. Marine Mammal Takes for MFD Project—11/03/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	0	2,150
Harbor seal (<i>Phoca vitulina richardii</i>)	477	3	10	467
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Charlie Wright</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/17/2021		
Day Start Time:	0735 (arrival)	Effort Start Time:	0745
Day End Time:	1645 (departure)	Effort End Time:	1633
Weather:	Mostly clear conditions with occasional overcast/partly cloudy; Light to significant wave height, and BSS (Beaufort Sea State) of mostly a 1 near the pile driving operation, but out on the end of the pier and further in the water BSS was 4-5 for much of the afternoon. Generally good visibility.		
Activities Summary:	Four (4) concrete piles set in template in the first part of the a.m., then driven to top extent of template using impact hammer. Some of the piles were in soft soil and needed to be supported before the template could be removed and pile driving finished, and support construction occurred for most of the day. Pile driving resumed in the late afternoon and finished at 1603.		
Issues or Delays:	After conducting post-monitoring for pile driving that ended at 1448, the MMO team briefly moved from their monitoring positions at 1518 upon seeing the impact hammer and crane in what they thought were meant to be overnight, inactive positions. However, at 1527 the MMO team were returned to their positions after being informed that pile driving would resume. Two pile driving occurrences (2 minutes each) occurred between 1543 and 1603. The MMO team were reminded to confirm with the pile driving supervisor before ending monitoring.		

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Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.
Other Comments:	Detections included a minimum of sixty-three (63) adult California sea lions (mostly singles or in groups of 2-3, but several larger groups of 5 or 6 animals, and one group of 10 animals; all appeared to be moving through with no duplicate sightings) and eight (8) harbor seals. These animals were documented according to protocol, including Level B Take recorded for eleven (11) of the California sea lions (includes the group of 10) and one (1) harbor seal (Table 1), as these animals were all within the behavioral monitoring zone when impact pile driving occurred.

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Table 1. Marine Mammal Takes for MFD Project—11/17/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	11	11	2,139
Harbor seal (<i>Phoca vitulina richardii</i>)	477	1	11	466
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Charlie Wright</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/23/2021		
Day Start Time:	0845 (arrival)	Effort Start Time:	0855
Day End Time:	1635 (departure)	Effort End Time:	1625
Weather:	Conditions were overcast/partly cloudy, with periods of sun later in the day; Light wave height, and BSS (Beaufort Sea State) mostly 3-4 in the morning, then calming down to 1 in the afternoon. Good visibility.		
Activities Summary:	Four (4) concrete piles set in template, then driven to top extent of template using impact hammer. Pile driving occurred in the morning, and resumed in the afternoon and finished at 1555.		
Issues or Delays:	No issues or delays.		
Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.		
Other Comments:	Detections included a minimum of twenty-four (24) California sea lions, twelve (12) harbor seals, and seven (7) harbor porpoise. These animals were documented according to protocol, including Level B Take recorded for one (1) of the California sea lions, as the animal was traveling southbound within the behavioral monitoring zone when impact pile driving occurred. All other animals detected during pile driving efforts were outside of the harassment zones and did not count as take.		

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Table 1. Marine Mammal Takes for MFD Project—11/23/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	1	12	2,138
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	11	466
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



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Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Kelsey Sandoval, Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Glenn Johnson</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	11/24/2021		
Day Start Time:	0730 (arrival)	Effort Start Time:	0745
Day End Time:	0945 (departure)	Effort End Time:	0941
Weather:	Conditions were partly cloudy to sunny. Light wave height, and BSS (Beaufort Sea State) ranged between 1-2 throughout the monitoring period. Visibility was Good / Excellent.		
Activities Summary:	After having driven all four (4) concrete piles with the template in place the day prior, then removing the template and driving one (1) of the four (4) piles to depth, today the three (3) remaining concrete piles were driven to extent using an impact hammer. Pile driving finished at 0911.		
Issues or Delays:	No issues or delays.		
Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.		
Other Comments:	Detections included a minimum of twenty-six (26) California sea lions and one (1) harbor seal. These animals were documented according to protocol, including Level B Take recorded for one (1) of the California sea lions, as the animal was traveling southbound within the behavioral monitoring zone concurrent with impact pile driving. All other animals detected during pile driving efforts were outside of the harassment zones and did not count as take.		

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Table 1. Marine Mammal Takes for MFD Project—11/24/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	1	13	2,137
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	11	466
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Kelsey Sandoval, Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Glenn Johnson</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Suzanne Harkness</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	12/09/2021		
Day Start Time:	0730 (arrival)	Effort Start Time:	0745
Day End Time:	1645 (departure)	Effort End Time:	1631
Weather:	Conditions were overcast, partly cloudy, then sunny as the day progressed. Light wave height, and BSS (Beaufort Sea State) ranged between 3-4 in the morning then down to 1-2 in the late afternoon. Visibility was Good.		
Activities Summary:	Three (3) concrete piles driven with the template in place today using an impact hammer. Pile driving was intermittent throughout day, starting at 0858 and ending at 1601.		
Issues or Delays:	There was some confusion regarding monitoring protocol in relation to the steel piles that support the template (i.e., the template's four "legs") and if these can be slightly embedded using the impact hammer's weight and/or very low power setting. Monitoring lead and project manager for Harris Environmental will discuss, and seek clarification from contractor and agency if needed.		
Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.		
Other Comments:	Detections included a minimum of twenty-five (25) California sea lions, fifteen (15) harbor seals, and one (1) river otter (river otters are not considered a marine mammal and do not fall under the MMPA's		

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	<p>protections). All animals were documented according to protocol, including Level B Take recorded for one (1) of the California sea lions and one (1) of the harbor seals, as both animals were detected within the behavioral monitoring zone during post-monitoring, only minutes after impact pile driving occurred. The animals' travel speed and location at time of detection indicated they were within the behavioral monitoring zone during active pile driving. All other animals detected during pile driving efforts were outside of the harassment zones and did not count as take.</p>
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Table 1. Marine Mammal Takes for MFD Project—12/09/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	1	14	2,136
Harbor seal (<i>Phoca vitulina richardii</i>)	477	1	12	465
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2



Harris Environmental Group, Inc

Marine Mammal Daily Summary & Take Estimate

Marine Mammal Observer (MMO) Daily Log for
Replace Fender Piles West Side Fuel Pier — MFD, N44255-15-R-0009
Manchester Fuel Depot Navy Installation, Manchester, WA

Dates of MMO Effort: 9/26/2021 – Present		Name: Kelsey Sandoval, Glenn Johnson	
Marine Mammal Observer (MMO) Team and Locations (see data file for coordinates): <u>James Titus</u> —Lead, Marine Mammal Observer (MMO) at station WP 2 (at mid-pier, closest to the pile driving). <u>Suzanne Harkness</u> —MMO at south position at WP 3 (toward end of the Pier). <u>Charlie Wright</u> —MMO at northwest position WP 4 (above beach at western edge of the parking lot, NW of barge/pile driving).			
Survey Vessel (where applicable): N/A		Captain (where applicable): N/A	
Date:	12/10/2021		
Day Start Time:	0730 (arrival)	Effort Start Time:	0745
Day End Time:	1245 (departure)	Effort End Time:	1240
Weather:	Conditions were Overcast with Light Rain at the end of the day. Light wave height, and BSS (Beaufort Sea State) was mostly 2 in the morning then went up to 5 in the afternoon. Visibility was Good.		
Activities Summary:	The one (1) final concrete pile was driven with the template in place, then the template was removed and all four (4) concrete piles were driven to depth. The impact hammer was used for all pile driving. Pile driving was intermittent throughout day, starting at 0909 and ending at 1210.		
Issues or Delays:	There were no issues or delays regarding pile driving activity today.		
Actions Taken:	No shutdown events or other mitigation actions were needed, as no animals approached or entered the shut down zone during pile driving.		
Other Comments:	Detections included a minimum of twenty-two (22) California sea lions, two (2) harbor seals, and one (1) Steller's sea lion. All animals were documented according to protocol. No Take was observed. All animals detected during pile driving efforts were outside of the harassment zones and did not count as take.		

Harris Environmental Group, Inc

Table 1. Marine Mammal Takes for MFD Project—12/10/2021. “Level B Takes Authorized” from July 2021 N.O.A.A./N.M.F.S. Letter of Authorization.

Species	<i>Level B Takes Authorized</i>	<i>Level B Takes Today</i>	<i>Level B Takes at Project to Date</i>	<i>Level B Takes Remaining</i>
Humpback whale (<i>Megaptera novaeangliae</i>)	4	0	0	4
Minke whale (<i>Balaenoptera acutorostrata scammoni</i>)	4	0	0	4
Grey whale (<i>Eschrichtius robustus</i>)	4	0	0	4
Killer whale - transient (<i>Orcinus orca</i>)	12	0	0	12
Killer whale - resident (<i>Orcinus orca</i>)	40	0	0	40
Dall’s porpoise (<i>Phocoenoides dalli</i>)	146	0	0	146
Harbor porpoise (<i>Phocoena phocoena vomerina</i>)	98	0	0	98
Steller sea lion (<i>Eumatopia jubatus</i>)	500	0	0	500
California sea lion (<i>Zalophus californianus</i>)	2,150	0	14	2,136
Harbor seal (<i>Phoca vitulina richardii</i>)	477	0	12	465
N. Elephant seal (<i>Mirounga angustirostris</i>)	2	0	0	2