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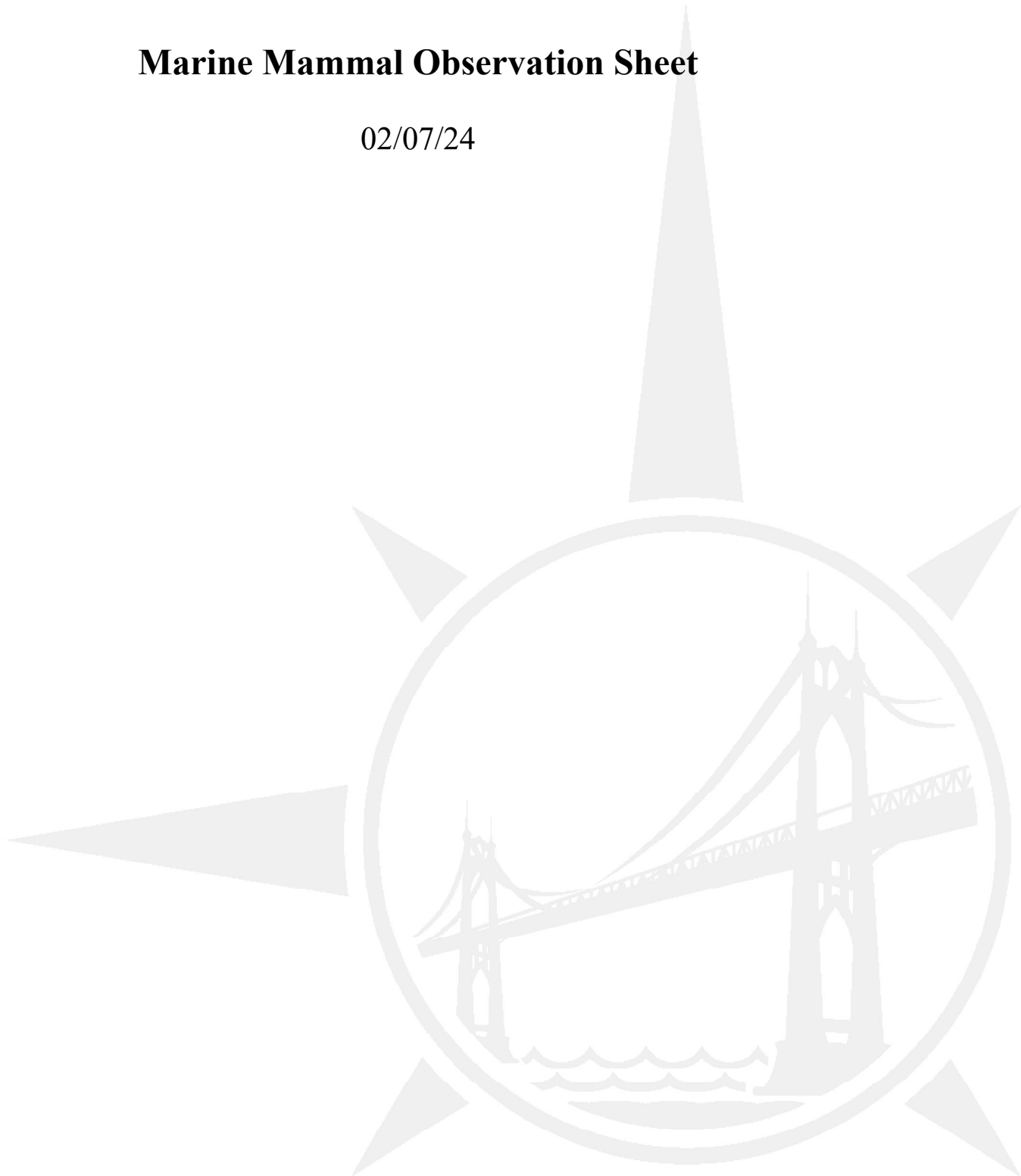
U.S. Army Corps of Engineers
Portland District
333 SW 1st Avenue
Portland, OR 97204

The Dalles Lock and Dam Miter Gate Repair
Contract: W9127N-22-C-0023

AAC Project: 1122-858

Marine Mammal Observation Sheet

02/07/24



Memorandum

February 7, 2024

To: Travis Waggner, Advanced American Construction

From: Caanan Cowles, CMC Consulting

cc:

Re: Mouth of the Columbia Sand Island Pile Dike Repair

This report provides the marine mammal monitoring results for Season 1 (Summer and Fall 2023) for the Mouth of the Columbia Sand Island Dike Repair Project located at Near East and West Sand Islands at the Mouth of the Columbia River, between Clatsop County, OR and Pacific County, WA. In compliance with the Endangered Species Act and the Marine Mammal Protection Act, marine mammal monitoring was conducted during all in-water pile driving activities for the Project. As part of the Marine Mammal Protection Act compliance, the National Marine Fisheries Service issued an Incidental Harassment Authorization IHA for in-water pile driving and removal, which allows take of marine mammals by harassment incidental to pile driving activities in the Mouth of the Columbia River.

Marine Mammal Monitoring Methods

Season 1 marine mammal monitoring methods and protocols were established per agency guidelines and permits, based on information in the following Project monitoring plan and permit documents:

- *Incidental Harassment Authorization: Mouth of the Columbia River Sand Island Dike Repair August 1, 2023, through July 31, 2024 (NOAA 2022)*
- *Marine Mammal Protection Act Incidental Harassment Authorization for the Mouth of the Columbia River Sand Island Dike Repair Project (NOAA 2022)*

Under the 2023 IHA, the Project is required to monitor 7 species (NOAA 2022). The 7 species are organized into the following five functional hearing groups:

- High-Frequency Cetaceans (Porpoises)
 - Harbor porpoise (*Phocoena phocoena*)
- Mid-Frequency Cetaceans (Dolphins and Whales)
 - West coast transient killer whales (*Orcinus orca*)
- Low-Frequency Cetaceans (Whales)
 - Humpback whale *Megaptera novaeangliae*
- Otariid Pinnipeds (Sea Lions/Eared)
 - California sea lion *Zalophus californianus*

- Steller sea lion *Eumetopias jubatus*
- Phocid Pinnipeds (Seals/Earless)
 - Elephant seal *Mirounga angustirostris*
 - Harbor seal *Phoca vitulina*

The monitoring area included a Level A Harassment Zone and a Level B Harassment Zone for each group. The two zones varied by the type of pile work and marine mammal functional hearing group (see Table 1 . The Shutdown Zone was composed of areas where a Stop Work Order was to be issued if species were present see Table 2 . Within the Level B Harassment Zones, marine mammals were closely monitored, and take was documented, and work allowed to continue; if the mammals were killer whales or humpback whales, a Stop/Change/Delay Work would be initiated. Level A Harassment Zones and Level B Harassment Zones were established for each hearing group based on the type of in-water pile driving construction activities, including the following:

- 24-inch steel pile installation via vibratory hammer
- 24-inch steel pile installation via impact hammer
- Sheet pile installation via impact hammer
- Sheet pile installation via vibratory hammer

During Season 1, a vibratory hammer and an impact hammer were used for steel pile installation. The Level A Harassment Zones and Level B Harassment Zones implemented during Season 1 are presented on Table 1 and Shutdown Zones are presented on Table 2.

Table 1: Level A Harassment and B Harassment Zones in meters

Pile Type and Method	Level A Harassment Zone (m)					Level B Harassment zone m
	LF Cetacean	MF Cetacean	HF Cetacean	Phocid Pinniped	Otariid Pinniped	
24-in Steel Pile Impact Installation	430	15.3	512.2	230.1	16.8	1000
24-in Steel Pile Vibratory installation	7.9	0.7	11.7	4.8	0.3	5412
Steel Sheet Pile Impact Installation	36.8	3.3	54.4	22.4	1.6	4642
Steel Sheet Pile Vibratory Installation	9.6	0.9	14.2	5.8	0.4	4642

Source: NOAA 2022

Table 2: Shutdown Zones by Hearing Groups

Pile Type and Method	Shutdown Zones by Hearing Group m					Shutdown Zones for Unauthorized Species m)
	LF Cetacean	MF Cetacean	HF Cetacean	Phocid Pinniped	Otariid Pinniped	
24-in Steel Pile Impact Installation	430	25	515	50a	25	1000
24-in Steel Pile Vibratory installation	25	25	25	25	25	5412
Steel Sheet Pile Impact Installation	40	25	55	25	25	4642
Steel Sheet Pile Vibratory Installation	25	25	25	25	25	4642

Source: NOAA 2022

Monitoring was performed by two monitors at opposite ends of the barge in which all pile driving activities occurred. One observer was located at the Project construction site during all vibratory and impact pile installation. One additional observer conducted monitoring at the opposite end of the working barge with an unobstructed view of the surrounding area.

Trained marine mammal monitors from CMC Consulting, used binoculars to search the monitoring zones for the presence of marine mammals during pile driving activities. Observations and positions of marine mammals were recorded on date collection sheets. The following data were collected:

- Date
- Time monitoring activity begins and ends.
- Construction activity during monitoring period.
- Weather conditions and environmental conditions that could deter or prevent marine mammal detections.
- Marine mammal species observed and number of species and sex and age class, if possible
- Time, duration, and location of marine mammals observed.
- Observable species behavior during pile driving and removal activities.
- Pile-related activities taking place during monitoring.
- Distances from pile activities to marine mammals.

Mouth of the Columbia Sand Island Dike Repair Season 1 Marine Mammal Monitoring Results

Marine mammal monitoring during vibratory installation of steel piles, and impact steel pile installation activities was performed by trained marine mammal monitors from CMC Consulting for

44 days between September 4th, 2023, and November 17th, 2023. Vibratory and impact installations were the primary activities performed during Season 1.

Throughout Season 1, 4 of the 7 potential marine mammal species were observed during the monitoring period: California sea lion, Steller sea lion, harbor seal, and Harbor porpoise. Three species were observed in the Level B Harassment Zone during pile vibratory driving activities. Total Level B takes documented during monitoring included 22 California sea lions, 78 harbor seals, and 1 Steller sea lion. Total Level A Harassment takes documented is zero, no species of marine mammal were observed during impact driving activities. Overall, no observable changes in behavior in the marine mammal species were noted during vibratory or impact installation of the 24" steel piles.

During Season 1 monitoring, the number of takes documented for California sea lions, harbor seals, and Steller sea lions were considerably below the maximum number of Level B takes authorized for these species in the Project IHA for Season 1 (NOAA 2022). There were no Level A takes for any observed species in Season 1. Table 3 compares documented take per species to the amount of authorized Level A and Level B takes.

Table 3: Season 1 Take Per Species

Species	Documented Level A Take	IHA-Authorized Level A Take	Documented Level B Take	IHA-Authorized Level B Take
California Sea Lion	0	0	22	3,781
Harbor Seal	0	38	78	15,780
Steller Sea Lion	0	0	1	19,176
Humpback Whale	0	0	0	6
Killer Whale	0	0	0	2
Harbor Porpoise	0	16	0	118
Northern Elephant Seal	0	0	0	6

Stop Work Initiation

In Season 1, shutdown occurred due to a California sea lion being observed 17m from pile driving activity (within the shutdown zone). The shutdown lasted for 2 minutes. Work resumed once the California sea lion was observed swimming out of the shutdown zone and steadily heading away from the pile driving activity.

California Sea Lions

In addition to the 22 California sea lion takes documented during the monitoring, 38 California sea lions were observed during the monitoring period that were not documented takes because they were observed more than 30 minutes outside of pile driving and removal activities, outside the

Level B Harassment Zone, or were already documented as takes for the day. There were no observable changes in California sea lion behavior during vibratory or impact installation.

California sea lion information from the daily monitoring forms is presented in the tables in Attachment A.

Harbor Seals

In addition to the 78 harbor seal Level B takes documented during the monitoring, 114 harbor seals were observed during the monitoring period that were not documented takes because they were observed more than 30 minutes outside of pile driving and removal activities, outside the Level B Harassment Zone, or were already documented as takes for the day. There were no observable changes in harbor seal behavior during vibratory or impact installation.

Harbor seal information from the daily monitoring forms is presented in the tables in Attachment A.

Steller Sea Lion

In addition to the 1 Steller sea lion Level B take documented during the monitoring, 2 Steller sea lions were observed during the monitoring period that were not documented takes because they were observed more than 30 minutes outside of pile driving and removal activities, outside the Level B Harassment Zone, or were already documented as takes for the day. There were no observable changes in steller sea lion behavior during vibratory or impact installation.

Steller sea lion information from the daily monitoring forms is presented in the tables in Attachment A.

Harbor Porpoise

Two harbor porpoises were observed during the monitoring period that were not documented takes because they were observed more than 30 minutes outside of pile driving and removal activities, outside the Level B Harassment Zone, or were already documented as takes for the day. There were no observable changes in harbor porpoise behavior during vibratory or impact installation.

Harbor porpoise information from the daily monitoring forms is presented in the tables in Attachment A.

Killer Whales

No killer whales were observed during Season 1 pile driving activities.

Humpback Whales

No humpback whales were observed during Season 1 pile driving activities.

Northern Elephant Seals

No northern elephant seals were observed during Season 1 pile driving activities.

Mouth of the Columbia River Sand Island Dike Repair Season 1 Supporting Details

Attachment A – Monitoring Data

Detailed data collected during Season 1 monitoring are presented in the following tables:

- Table A-1 provides a summary of the daily log and total number of observations and takes kept by the Protected Species Observers located at the Project site.
- Table A-2 provides a summary daily start and end times for marine mammal monitoring.
- Table A-3 provides a description of each pile and driving information for vibratory hammer use.
- Table A-4 provides a description of each pile and driving information for impact hammer use.

Attachment B – Field Notes/Data

References

NOAA 2022. *Request for Incidental Harassment Authorization: Waterfront Park Reconstruction Project 2022–2023*. Waterfront Park Reconstruction Project. 2021.

NMFS (National Marine Fisheries Service , 2018. *Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts*. U.S. Dept. of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-59, 178 p.

NOAA (National Oceanic and Atmospheric Administration , 2022. *Marine Mammal Protection Act Incidental Harassment Authorization for the Pier 58 Reconstruction Project*. May 2022.

Attachment A

Monitoring Data

Table A-1: Daily Log and Total Observation of All Species And Takes

Date	Observer	Observer Location	Species	Time	Number	Bearing	Distance to Pile	Behavior	Weather	Beaufort	Construction Activity/ Driving Method	Take Level	Time Spent in Harassment Zone
9/6/2023	CC	Bow	HASE	1417	1	285	350	Dive	Clear	2	None		
9/6/2023	MP	Stern	HASE	1412	1	240	110	Swimming	Cloudy	1	None		
9/6/2023	MP	Stern	HASE	1442	1	140	150	Swimming	Cloudy	1	None		
9/6/2023	MP	Stern	HASE	1509	1	250	110	Stationary	Cloudy	1	None		
9/7/2023	MP	Stern	HASE	1253	1	200	140	Swimming	Cloudy	1	None		
9/7/2023	MP	Stern	HASE	1337	1	135	150	Swimming	Cloudy	1	None		
9/8/2023	MP	Stern	HASE	1241	1	240	100	Stationary	Clear	1	None		
9/11/2023	MP	Stern	CASE	1330	1	70	115	Swimming	Clear	1	None		
9/11/2023	MP	Stern	HASE	1151	1	50	90	Swimming	Clear	1	None		
9/11/2023	MP	Stern	CASE	1217	1	250	125	Swimming	Clear	1	None		
9/11/2023	MP	Stern	CASE	1221	2	32	230	Swimming	Clear	1	None		
9/11/2023	MP	Stern	HASE	1224	1	350	240	Swimming	Clear	1	None		
9/11/2023	MP	Stern	HASE	1234	1	25	130	Swimming	Clear	1	None		
9/11/2023	MP	Stern	CASE	1242	1	65	110	Porpoising	Clear	1	None		
9/11/2023	MP	Stern	HASE	1335	1	25	110	Swimming	Clear	1	Vibratory	Level B	
9/11/2023	MP	Stern	CASE	1351	1	0	150	Swimming	Clear	1	None		
9/11/2023	MP	Stern	HASE	950	1	200	135	Stationary	Cloudy	2	None		
9/11/2023	MP	Stern	HASE	1018	3	110	200	Swimming	Cloudy	2	None		
9/11/2023	MP	Stern	CASE	1024	1	112	80	Swimming	Cloudy	2	None		
9/11/2023	CC	Bow	CASE	1330	1	200	211	Swimming	Cloudy	2	None		
9/11/2023	CC	Bow	HASE	1203	1	95	212	Swimming	Cloudy	2	None		
9/11/2023	CC	Bow	CASE	1203	1	75	276	Swimming	Cloudy	2	None		
9/11/2023	CC	Bow	HASE	1235	1	90	156	Swimming	Cloudy	2	None		
9/13/2023	CC	Bow	HASE	840	1	45	93	Dive	Cloudy	1	None		
9/13/2023	CC	Bow	HASE	1007	1	130	99	Swimming	Cloudy	1	None		
9/13/2023	CC	Bow	CASE	1312	1	155	203	Stationary	Cloudy	1	None		
9/13/2023	CC	Bow	HASE	1436	1	90	63	Swimming	Cloudy	1	None		
9/13/2023	MP	Stern	CASE	903	1	175	22	Swimming	Cloudy	1	None		
9/13/2023	MP	Stern	HASE	915	1	315	105	Swimming	Cloudy	1	None		
9/13/2023	MP	Stern	HASE	1011	1	325	80	Swimming	Cloudy	1	None		
9/13/2023	MP	Stern	HASE	1029	1	120	140	Swimming	Cloudy	1	Vibratory	Level B	
9/13/2023	MP	Stern	CASE	1043	1	240	230	Swimming	Clear	1	None		
9/13/2023	MP	Stern	HASE	1130	1	30	20	Stationary	Clear	1	None		
9/13/2023	MP	Stern	STSE	1130	1	30	20	Swimming	Clear	1	None		
9/13/2023	MP	Stern	CASE	1135	1	325	85	Swimming	Clear	1	None		
9/13/2023	MP	Stern	CASE	1203	1	8	20	Swimming	Clear	1	Vibratory		
9/13/2023	MP	Stern	HASE	1339	1	300	75	Swimming	Clear	1	None		
9/13/2023	MP	Stern	HASE	1438	1	8	30	Stationary	Clear	3	None		
9/13/2023	MP	Stern	CASE	1448	1	355	40	Swimming	Clear	3	None		
9/14/2023	CC	Bow	HASE	838	1	110	76	Swimming	Clear	1	None		
9/14/2023	CC	Bow	HASE	843	1	20	120	Swimming	Clear	1	None		
9/14/2023	MP	Stern	HASE	936	1	330	75	Swimming	Clear	1	None		

Table A-1: Daily Log and Total Observation of All Species And Takes

Date	Observer	Observer Location	Species	Time	Number	Bearing	Distance to Pile	Behavior	Weather	Beaufort	Construction Activity/ Driving Method	Take Level	Time Spent in Harassment Zone
9/14/2023	MP	Stern	HASE	1050	1	60	60	Swimming	Clear	2	None		
9/14/2023	MP	Stern	CASE	1113	2	180	100	Swimming	Clear	2	None		
9/14/2023	MP	Stern	HASE	1118	1	50	40	Swimming	Clear	2	None		
9/14/2023	MP	Stern	HASE	1126	1	100	55	Swimming	Clear	2	None		
9/14/2023	MP	Stern	HASE	1136	1	345	120	Stationary	Clear	2	None		
9/14/2023	MP	Stern	CASE	1225	1	325	50	Swimming	Clear	2	None		
9/14/2023	MP	Stern	CASE	1233	1	300	120	Swimming	Clear	2	Vibratory	Level B	
9/14/2023	MP	Stern	CASE	1345	1	205	100	Swimming	Clear	1	None		
9/14/2023	MP	Stern	HASE	1349	1	340	80	Swimming	Clear	1	None		
9/14/2023	MP	Stern	HASE	1354	1	140	120	Swimming	Clear	1	None		
9/14/2023	MP	Stern	CASE	1424	1	290	200	Swimming	Clear	1	Vibratory	Level B	
9/14/2023	CC	Bow	HASE	1001	1	45	71	Dive	Clear	1	None		
9/14/2023	CC	Bow	CASE	1146	1	20	151	Swimming	Clear	1	None		
9/14/2023	CC	Bow	CASE	1224	1	290	106	Dive	Clear	1	None		
9/14/2023	CC	Bow	CASE	1234	1	290	155	Swimming	Clear	1	None		
9/14/2023	CC	Bow	HASE	1347	1	90	313	Dive	Clear	1	None		
9/14/2023	CC	Bow	HASE	1349	1	90	61	Swimming	Clear	1	None		
9/14/2023	CC	Bow	CASE	1351	1	0	111	Dive	Clear	1	None		
9/14/2023	CC	Bow	CASE	1613	1	35	98	Porpoising		1	None		
9/15/2023	MP	Stern	CASE	927	1	40	100	Swimming	Clear	1	Vibratory	Level B	
9/15/2023	MP	Stern	HASE	1045	1	120	50	Stationary	Clear	2	None		
9/15/2023	MP	Stern	HASE	1108	2	0	80	Stationary	Clear	3	None		
9/15/2023	MP	Stern	STSE	1252	1	210	75	Swimming	Clear	4	None		
9/15/2023	MP	Stern	CASE	1300	1	30	100	Swimming	Clear	3	None		
9/15/2023	MP	Stern	HAPO	1304	1	330	110	Swimming	Clear	3	None		
9/15/2023	MP	Stern	CASE	1357	1	30	65	Swimming	Clear	3	None		
9/15/2023	CC	Bow	CASE	856	1	190	128	Swimming	Clear	3	None		
9/15/2023	CC	Bow	HASE	901	1	220	106	Dive	Clear	2	None		
9/15/2023	CC	Bow	HASE	1039	1	180	91	Dive	Clear	2	None		
9/15/2023	CC	Bow	CASE	1123	1	135	77	Dive	Clear	2	Vibratory	Level B	
9/15/2023	CC	Bow	HASE	1346	1	90	111	Dive	Clear	3	Vibratory	Level B	
9/15/2023	CC	Bow	CASE	1355	1	45	71	Swimming	Clear	2	Vibratory	Level B	
9/19/2023	MP	Stern	CASE	844	1	305	85	Swimming	Clear	2	None		
9/19/2023	MP	Stern	CASE	929	1	335	100	Swimming	Clear	1	Vibratory	Level B	
9/19/2023	MP	Stern	HASE	1258	1	80	80	Stationary	Cloudy	2	None		
9/19/2023	CC	Bow	HASE	839	1	180	53	Dive	Cloudy	2	None		
9/19/2023	CC	Bow	CASE	841	1	180	101	Swimming	Cloudy	2	None		
9/19/2023	CC	Bow	HASE	845	1	180	61	Floating	Cloudy	2	None		
9/19/2023	CC	Bow	CASE	918	1	130	296	Porpoising	Cloudy	2	Vibratory	Level B	
9/19/2023	CC	Bow	CASE	918	1	180	109	Porpoising	Cloudy	2	Vibratory	Level B	
9/19/2023	CC	Bow	HASE	934	1	180	171	Dive	Cloudy	2	None		
9/19/2023	CC	Bow	HASE	943	1	180	86	Swimming	Cloudy	2	None		

Table A-1: Daily Log and Total Observation of All Species And Takes

Date	Observer	Observer Location	Species	Time	Number	Bearing	Distance to Pile	Behavior	Weather	Beaufort	Construction Activity/ Driving Method	Take Level	Time Spent in Harassment Zone
9/20/2023	MP	Stern	CASE	823	1	30	20	Stationary	Clear	3	None		
9/20/2023	MP	Stern	HASE	1049	1	130	75	Swimming	Clear	3	Vibratory	Level B	
9/21/2023	MP	Stern	CASE	915	1	210	80	Swimming	Fog	1	None		
9/21/2023	MP	Stern	CASE	1036	1	230	200	Unknown	Clear	2	None		
9/21/2023	MP	Stern	CASE	1510	1	215	180	Porpoising	Clear	2	Vibratory	Level B	
9/21/2023	CC	Bow	CASE	912	1	180	17	Swimming	Clear	2	Vibratory	Level B	2 Minutes
9/21/2023	CC	Bow	CASE	917	1	120	93	Swimming	Clear	2	None		
9/21/2023	CC	Bow	CASE	1606	1	100	88	Dive	Clear	2	None		
9/22/2023	MP	Stern	HASE	816	1	330	45	Stationary	Clear	1	None		
9/22/2023	MP	Stern	CASE	1130	1	330	85	Swimming	Clear	2	None		
9/22/2023	MP	Stern	HASE	1146	1	190	140	Stationary	Clear	2	Vibratory		
9/22/2023	MP	Stern	HASE	1317	1	55	100	Stationary	Clear	1	Vibratory	Level B	
9/22/2023	MP	Stern	CASE	1453	1	80	150	Swimming	Clear	1	None		
9/22/2023	MP	Stern	STSE	1556	1	270	220	Swimming	Clear	1	Impact	Level B	
9/22/2023	MP	Stern	CASE	1604	2	290	350	Porpoising	Clear	1	Impact	Level B	
9/22/2023	MP	Stern	CASE	1708	1	330	320	Swimming	Clear	1	Vibratory	Level B	
9/22/2023	CC	Bow	CASE	1123	1	180	32	Swimming	Clear	1	None		
9/22/2023	CC	Bow	CASE	1128	1	15	77	Dive	Clear	1	None		
9/22/2023	CC	Bow	HASE	755	1	245	28	Dive	Clear	1	None		
9/22/2023	CC	Bow	HASE	816	1	165	55	Swimming	Clear	1	None		
9/23/2023	MP	Stern	HASE	1033	1	250	90	Stationary	Rain	3	None		
9/23/2023	MP	Stern	HASE	1113	1	270	45	Stationary	Cloudy	2	Vibratory	Level B	
9/23/2023	MP	Stern	HASE	1248	1	0	70	Stationary	Cloudy	3	None		
9/23/2023	MP	Stern	HASE	1303	1	240	80	Stationary	Cloudy	3	Vibratory	Level B	
9/28/2023	MP	Stern	HASE	1130	1	100	40	Swimming	Cloudy	2	Vibratory	Level B	
9/28/2023	MP	Stern	HASE	1243	1	330	80	Swimming	Rain	2	None		
9/28/2023	MP	Stern	HASE	1303	1	30	45	Swimming	Rain	2	Vibratory	Level B	
9/28/2023	CC	Bow	HASE	1343	1	180	195	Swimming	Rain	2	None		
9/28/2023	CC	Bow	HASE	1603	1	90	77	Swimming	Rain	2	None		
9/28/2023	CC	Bow	HASE	1613	1	90	44	Swimming	Rain	2	None		
9/29/2023	MP	Stern	HASE	1001	1	300	120	Swimming	Clear	1	Vibratory	Level B	
9/29/2023	MP	Stern	HASE	1233	1	40	160	Swimming	Cloudy	2	None		
9/29/2023	MP	Stern	CASE	1254	2	130	600	Porpoising	Cloudy	3	Vibratory	Level B	
9/29/2023	CC	Bow	HASE	940	1	35	225	Dive	Cloudy	3	None		
9/29/2023	CC	Bow	HASE	1234	1	90	79	Dive	Cloudy	2	None		
9/30/2023	MP	Stern	HASE	1000	1	45	80	Swimming	Clear	1	None		
9/30/2023	MP	Stern	HASE	1017	1	30	100	Swimming	Clear	1	Vibratory	Level B	
9/30/2023	MP	Stern	HASE	1237	1	320	50	Stationary	Clear	1	None		
9/30/2023	CC	Bow	HASE	1002	1	180	115	Floating	Clear	1	None		
9/30/2023	CC	Bow	HASE	1016	1	25	108	Swimming	Clear	1	None		
9/30/2023	CC	Bow	HASE	1023	1	140	92	Dive	Clear	1	Vibratory	Level B	
10/2/2023	MP	Stern	HASE	845	1	210	100	Swimming	Rain	1	None		

Table A-1: Daily Log and Total Observation of All Species And Takes

Date	Observer	Observer Location	Species	Time	Number	Bearing	Distance to Pile	Behavior	Weather	Beaufort	Construction Activity/ Driving Method	Take Level	Time Spent in Harassment Zone
10/2/2023	MP	Stern	HASE	1056	1	60	140	Stationary	Rain	2	None		
10/2/2023	CC	Bow	HASE	1152	1	15	89	Swimming	Rain	2	Vibratory	Level B	
10/3/2023	MP	Stern	HASE	829	1	285	115	Swimming	Clear	2	Vibratory	Level B	
10/3/2023	MP	Stern	HASE	1313	1	35	75	Swimming	Cloudy	2	Vibratory	Level B	
10/3/2023	CC	Bow	HASE	1402	1	180	81	Dive	Cloudy	1	None		
10/3/2023	CC	Bow	CASE	1409	1	15	129	Dive	Cloudy	1	Vibratory	Level B	
10/4/2023	MP	Stern	HASE	1147	1	90	100	Stationary	Cloudy	1	None		
10/4/2023	MP	Stern	HASE	1250	1	105	160	Stationary	Cloudy	1	Vibratory	Level B	
10/4/2023	MP	Stern	HASE	1305	1	50	40	Swimming	Cloudy	1	None		
10/4/2023	MP	Stern	HASE	1445	1	90	130	Stationary	Cloudy	2	Vibratory	Level B	
10/7/2023	MP	Stern	HASE	936	1	230	115	Swimming	Clear	3	Vibratory	Level B	
10/12/2023	MP	Stern	HASE	937	1	95	190	Swimming	Clear	2	Vibratory	Level B	
10/12/2023	MP	Stern	HASE	1409	1	120	115	Stationary	Clear	2	None		
10/12/2023	MP	Stern	HASE	1421	1	120	115	Stationary	Clear	2	Vibratory	Level B	
10/13/2023	MP	Stern	HASE	1052	1	10	75	Swimming	Cloudy	2	Vibratory	Level B	
10/13/2023	CC	Bow	HASE	1051	1	90	79	Dive	Cloudy	2	Vibratory	Level B	
10/13/2023	CC	Bow	HASE	1107	1	10	276	Dive	Cloudy	2	Vibratory	Level B	
10/14/2023	MP	Stern	HASE	1100	1	315	170	Stationary	Cloudy	2	None		
10/17/2023	MP	Stern	HAPO	1559	2	0	180	Swimming	Cloudy	1	None		
10/17/2023	MP	Stern	HASE	1600	1	0	170	Stationary	Cloudy	1	None		
10/18/2023	MP	Stern	HASE	944	1	300	250	Stationary	Clear	3	Vibratory	Level B	
10/18/2023	MP	Stern	HASE	1008	1	130	180	Swimming	Clear	3	Vibratory	Level B	
10/18/2023	MP	Stern	HASE	1107	1	45	200	Stationary	Clear	3	Vibratory	Level B	
10/20/2023	MP	Stern	HASE	1359	1	270	140	Dive	Clear	2	Vibratory	Level B	
10/20/2023	MP	Stern	HASE	1435	2	210	280	Swimming	Clear	3	Vibratory	Level B	
10/20/2023	CC	Bow	CASE	1204	1	75	335	Swimming	Clear	3	Vibratory	Level B	
10/21/2023	MP	Stern	HASE	920	1	270	140	Dive	Cloudy	1	Vibratory	Level B	
10/21/2023	MP	Stern	HASE	927	1	165	300	Swimming	Cloudy	1	Vibratory	Level B	
10/21/2023	MP	Stern	HASE	933	1	0	200	Swimming	Cloudy	2	Vibratory	Level B	
10/21/2023	MP	Stern	CASE	935	1	180	150	Swimming	Cloudy	2	None		
10/21/2023	MP	Stern	HASE	1052	1	230	180	Floating	Cloudy	1	Vibratory	Level B	
10/21/2023	MP	Stern	CASE	1356	1	100	350	Swimming	Fog	1	Vibratory	Level B	
10/23/2023	MP	Stern	HASE	853	1	120	70	Stationary	Cloudy	2	Vibratory	Level B	
10/23/2023	MP	Stern	HASE	1255	1	285	120	Floating	Cloudy	2	Vibratory	Level B	
10/23/2023	MP	Stern	HASE	1627	2	210	145	Stationary	Cloudy	2	Vibratory	Level B	
10/25/2023	MP	Stern	HASE	1047	1	180	200	Stationary	Cloudy	2	None		
10/27/2023	MP	Stern	HASE	1135	1	215	320	Swimming	Clear	2	Vibratory	Level B	
10/27/2023	MP	Stern	HASE	1209	1	0	350	Stationary	Clear	2	None		
10/27/2023	MP	Stern	HASE	1241	1	0	100	Swimming	Clear	2	None		
10/27/2023	MP	Stern	HASE	1558	2	0	80	Dive	Clear	2	None		
10/27/2023	MP	Stern	HASE	1608	1	45	70	Stationary	Clear	2	Vibratory	Level B	
10/27/2023	MP	Stern	HASE	1637	1	45	60	Swimming	Clear	2	None		

Table A-1: Daily Log and Total Observation of All Species And Takes

Date	Observer	Observer Location	Species	Time	Number	Bearing	Distance to Pile	Behavior	Weather	Beaufort	Construction Activity/ Driving Method	Take Level	Time Spent in Harassment Zone
10/27/2023	MP	Stern	HASE	1658	1	270	110	Stationary	Clear	2	None		
10/27/2023	CC	Bow	HASE	1413	1	45	213	Swimming	Clear	2	Vibratory	Level B	
10/27/2023	CC	Bow	HASE	1545	1	0	55	Swimming	Clear	2	None		
10/28/2023	MP	Stern	HASE	1045	1	100	180	Stationary	Clear	2	Vibratory	Level B	
10/28/2023	MP	Stern	HASE	1123	1	270	300	Stationary	Clear	2	Vibratory	Level B	
10/28/2023	MP	Stern	HASE	1211	1	0	85	Stationary	Clear	2	None		
10/28/2023	MP	Stern	HASE	1310	1	315	200	Floating	Clear	3	None		
10/28/2023	MP	Stern	HASE	1435	1	315	130	Dive	Clear	3	Vibratory	Level B	
10/28/2023	CC	Bow	HASE	1329	1	90	90	Swimming	Clear	3	None		
10/28/2023	CC	Bow	HASE	1040	1	90	115	Swimming	Clear	3	Vibratory	Level B	
10/30/2023	MP	Stern	HASE	816	1	270	180	Stationary	Clear	3	Vibratory	Level B	
10/30/2023	MP	Stern	HASE	911	1	315	70	Swimming	Clear	3	Vibratory	Level B	
10/30/2023	MP	Stern	HASE	1407	1	180	35	Stationary	Clear	3	None		
10/31/2023	MP	Stern	HASE	954	1	270	160	Floating	Cloudy	2	Vibratory	Level B	
10/31/2023	MP	Stern	HASE	1125	1	90	220	Stationary	Clear	3	Vibratory	Level B	
11/1/2023	MP	Stern	HASE	853	1	0	75	Stationary	Cloudy	3	None		
11/1/2023	MP	Stern	CASE	1336	1	90	170	Swimming	Rain	3	Vibratory	Level B	
11/1/2023	CC	Bow	CASE	1357	1	0	83	Swimming	Rain	2	None		
11/7/2023	MP	Stern	HASE	923	1	330	150	Swimming	Clear	2	Vibratory	Level B	
11/7/2023	MP	Stern	HASE	1355	1	270	140	Stationary	Cloudy	3	Vibratory	Level B	
11/8/2023	MP	Stern	HASE	815	1	120	90	Stationary	Clear	2	None		
11/8/2023	MP	Stern	HASE	819	1	0	220	Stationary	Clear	2	Vibratory	Level B	
11/8/2023	MP	Stern	HASE	829	1	150	150	Swimming	Clear	2	Vibratory	Level B	
11/8/2023	MP	Stern	CASE	830	1	170	180	Swimming	Clear	2	Vibratory	Level B	
11/8/2023	MP	Stern	HASE	851	1	45	45	Swimming	Clear	3	None		
11/8/2023	MP	Stern	HASE	1034	1	30	30	Swimming	Clear	3	None		
11/8/2023	CC	Bow	HASE	1027	1	90	63	Dive	Clear	3	None		
11/13/2023	MP	Stern	HASE	1132	1	240	120	Swimming	Clear	2	Vibratory	Level B	
11/13/2023	MP	Stern	HASE	1300	1	255	140	Stationary	Clear	2	None		
11/13/2023	MP	Stern	HASE	1301	1	0	190	Stationary	Clear	2	None		
11/13/2023	MP	Stern	HASE	1324	1	60	30	Swimming	Clear	2	None		
11/13/2023	MP	Stern	HASE	1513	2	0	70	Stationary	Clear	1	None		
11/13/2023	MP	Stern	HASE	1525	2	210	120	Swimming	Clear	1	Vibratory	Level B	
11/13/2023	MP	Stern	HASE	1558	1	90	70	Stationary	Clear	2	None		
11/13/2023	CC	Bow	HASE	1148	1	70	86	Swimming	Clear	2	Vibratory	Level B	
11/13/2023	CC	Bow	HASE	1148	1	85	99	Swimming	Clear	2	Vibratory	Level B	
11/13/2023	CC	Bow	HASE	1529	1	65	49	Dive	Clear	2	Vibratory	Level B	
11/13/2023	CC	Bow	HASE	1531	3	90	100	Swimming	Clear	2	None		
11/13/2023	CC	Bow	HASE	1541	1	180	115	Swimming	Clear	2	None		
11/14/2023	MP	Stern	HASE	1042	1	70	35	Swimming	Clear	2	Vibratory	Level B	
11/14/2023	MP	Stern	HASE	1154	1	9	45	Swimming	Clear	2	None		
11/14/2023	MP	Stern	HASE	1334	2	210	120	Stationary	Clear	2	Vibratory	Level B	

Table A-1: Daily Log and Total Observation of All Species And Takes

Date	Observer	Observer Location	Species	Time	Number	Bearing	Distance to Pile	Behavior	Weather	Beaufort	Construction Activity/ Driving Method	Take Level	Time Spent in Harassment Zone
11/14/2023	MP	Stern	HASE	1520	1	240	130	Stationary	Clear	2	Impact	Level B	
11/14/2023	CC	Bow	HASE	1031	1	180	100	Swimming	Clear	2	None		
11/14/2023	CC	Bow	HASE	1035	1	75	114	Dive	Clear	1	Vibratory	Level B	
11/14/2023	CC	Bow	HASE	1036	1	90	225	Dive	Clear	2	Vibratory	Level B	
11/14/2023	CC	Bow	HASE	1101	1	45	76	Floating	Clear	2	Vibratory	Level B	
11/14/2023	CC	Bow	HASE	1120	2	200	81	Swimming	Clear	1	None		
11/14/2023	CC	Bow	HASE	1121	1	45	68	Dive	Clear	1	None		
11/14/2023	CC	Bow	HASE	1124	2	45	68	Swimming	Clear	1	Vibratory	Level B	
11/14/2023	CC	Bow	HASE	1243	1	90	91	Floating	Clear	1	Vibratory	Level B	
11/15/2023	MP	Stern	HASE	956	1	90	140	Stationary	Clear	1	Vibratory	Level B	
11/15/2023	MP	Stern	CASE	1106	1	55	350	Swimming	Clear	2	Vibratory	Level B	
11/15/2023	MP	Stern	HASE	1248	3	100	75-300	Stationary	Clear	1	None		
11/15/2023	MP	Stern	HASE	1302	1	300	N/A	Stationary	Clear	1	Vibratory	Level B	
11/15/2023	MP	Stern	HASE	1456	1	330	120	Swimming	Clear	3	Vibratory	Level B	
11/15/2023	MP	Stern	HASE	1523	1	150	80	Stationary	Clear	2	Vibratory	Level B	
11/15/2023	CC	Bow	HASE	1019	1	75	88	Floating	Clear	2	None		
11/15/2023	CC	Bow	HASE	1023	1	90	79	Dive	Clear	2	Vibratory	Level B	
11/15/2023	CC	Bow	HASE	1123	1	90	81	Dive	Clear	2	None		
11/15/2023	CC	Bow	HASE	1248	1	90	105	Dive	Clear	2	None		
11/15/2023	CC	Bow	HASE	1253	1	110	64	Swimming	Clear	2	Vibratory	Level B	
11/15/2023	CC	Bow	HASE	1257	1	100	79	Floating	Clear	2	None		
11/16/2023	MP	Stern	HASE	827	1	70	50	Swimming	Clear	2	Vibratory	Level B	
11/16/2023	MP	Stern	HASE	1010	1	75	180	Stationary	Clear	2	Vibratory	Level B	
11/16/2023	MP	Stern	HASE	1129	1	50	45	Swimming	Clear	3	None		
11/16/2023	MP	Stern	HASE	1153	1	140	70	Swimming	Clear	3	Vibratory	Level B	
11/16/2023	MP	Stern	HASE	1209	1	165	60	Swimming	Clear	3	None		
11/16/2023	CC	Bow	HASE	1004	1	0	58	Swimming	Clear	3	None		
11/16/2023	CC	Bow	HASE	1026	1	0	51	Swimming	Clear	3	None		
11/16/2023	CC	Bow	HASE	1133	1	90	41	Dive	Clear	3	None		

Table A-2: Daily Start and End Times for Marine Mammal Monitoring

Daily Start and End Times		
Date	MMM Start Time	MMM End Time
9/6/2023	13:06	16:30
9/7/2023	12:26	17:25
9/8/2023	9:47	14:00
9/11/2023	11:15	16:30
9/13/2023	8:11	15:30
9/14/2023	8:23	16:45
9/15/2023	7:58	14:45
9/19/2023	7:44	17:08
9/20/2023	7:58	11:45
9/21/2023	8:27	17:30
9/22/2023	7:51	17:50
9/23/2023	7:39	14:45
9/28/2023	9:38	17:00
9/29/2023	8:16	16:45
9/30/2023	7:42	15:15
10/2/2023	8:02	13:30
10/3/2023	7:58	18:15
10/4/2023	8:47	15:45
10/7/2023	8:24	14:45
10/12/2023	8:47	17:15
10/13/2023	9:14	16:45
10/14/2023	7:28	16:45
10/17/2023	7:49	17:49
10/18/2023	8:38	14:00
10/20/2023	8:00	17:30
10/21/2023	8:11	16:45
10/23/2023	8:17	16:30
10/24/2023	8:18	17:51
10/25/2023	8:36	13:00
10/27/2023	9:30	18:10
10/28/2023	8:42	15:30
10/30/2023	8:00	16:15
10/31/2023	8:30	17:00
11/1/2023	7:45	15:00
11/2/2023	10:00	13:15
11/7/2023	8:32	17:00
11/8/2023	7:49	16:30
11/13/2023	9:30	16:30
11/14/2023	9:34	16:15
11/15/2023	8:00	16:15
11/16/2023	7:45	13:30

A-3: Pile Number and Drive Times - Vibratory

Vibratory Hammer Use					
Pile Number	Pile Type	Date	Time Start	Time End	Total Vibratory Time (minutes)
D-1	18" Steel	9/13/2023	13:27	13:42	15.00
D-2	18" Steel	9/13/2023	11:51	12:06	15.00
D-3	18" Steel	9/13/2023	14:05	14:10	5.00
D-4	18" Steel	9/13/2023	14:43	14:47	4.00
D-5	18" Steel	9/14/2023	9:21	9:26	5.00
D-6	18" Steel	9/13/2023	11:08	11:21	13.00
D-7	18" Steel	9/14/2023	8:42	8:45	3.00
D-8	18" Steel	9/13/2023	10:23	10:46	23.00
D-9	18" Steel	9/13/2023	9:28	9:30	2.00
D-10	18" Steel	9/13/2023	8:43	8:46	3.00
D-11	18" Steel	9/11/2023	15:27	15:33	6.00
D-12	18" Steel	9/11/2023	14:30	14:37	7.00
D-13	18" Steel	9/11/2023	13:32	13:38	6.00
D-14	18" Steel	9/11/2023	12:00	12:07	7.00
D-15	24" Steel	9/14/2024	11:34	12:38	64.00
D-16	24" Steel	9/15/2023	11:18	11:35	17.00
D-17	24" Steel	9/14/2024	14:04	14:55	51.00
D-17	24" Steel	10/12/2023	10:42	10:48	6.00
D-17	24" Steel	10/12/2023	11:54	12:45	51.00
D-17	24" Steel	10/12/2023	14:11	15:14	63.00
D-18	24" Steel	9/15/2023	11:38	12:25	47.00
D-19	24" Steel	9/15/2024	9:05	9:48	43.00
D-20	24" Steel	10/12/2023	9:31	9:44	13.00
D-21	24" Steel	10/7/2023	9:15	9:46	31.00
D-22	24" Steel	10/12/2023	10:25	10:38	13.00
D-23	24" Steel	10/7/2023	10:27	10:44	17.00
D-24	24" Steel	10/7/2023	13:16	13:29	13.00
D-25	24" Steel	10/7/2023	10:58	11:19	21.00
D-26	24" Steel	10/7/2023	13:41	13:50	9.00
D-27	24" Steel	10/7/2023	11:36	11:51	15.00
D-28	24" Steel	10/7/2023	14:01	14:08	7.00
D-29	24" Steel	10/13/2023	10:26	10:52	26.00
D-30	24" Steel	10/13/2023	12:59	13:30	31.00
D-31	24" Steel	10/13/2023	11:04	11:30	26.00
D-32	24" Steel	10/13/2023	15:10	15:19	9.00
D-33	24" Steel	10/13/2023	11:43	11:58	15.00
D-34	24" Steel	10/13/2023	15:32	15:40	8.00
D-35	24" Steel	10/13/2023	14:42	15:56	74.00
D-36	24" Steel	10/13/2023	15:58	16:07	9.00
D-37	24" Steel	9/19/2023	9:03	9:47	44.00
D-38	24" Steel	9/20/2023	8:31	9:04	33.00

A-3: Pile Number and Drive Times - Vibratory

Vibratory Hammer Use					
Pile Number	Pile Type	Date	Time Start	Time End	Total Vibratory Time (minutes)
D-39	24" Steel	9/19/2023	13:14	13:25	11.00
D-40	24" Steel	9/20/2023	10:02	10:16	14.00
D-41	24" Steel	9/19/2023	14:53	15:01	8.00
D-42	24" Steel	9/21/2023	9:02	9:21	19.00
D-43	24" Steel	9/19/2023	16:13	16:36	23.00
D-44	24" Steel	9/20/2023	10:46	11:03	17.00
D-46	24" Steel	9/23/2023	13:01	13:51	50.00
D-47	24" Steel	9/22/2023	17:00	17:17	17.00
D-47	24" Steel	9/22/2023	13:00	14:19	79.00
D-47	24" Steel	9/21/2023	10:24	12:50	26.00
D-48	24" Steel	9/23/2023	8:03	8:30	27.00
D-49	24" Steel	9/21/2023	12:54	15:22	28.00
D-50	24" Steel	9/23/2023	9:14	9:47	33.00
D-51	24" Steel	9/21/2023	15:52	16:43	51.00
D-52	24" Steel	9/23/2023	10:46	11:25	39.00
D-53	24" Steel	9/22/2023	8:30	9:11	41.00
D-54	24" Steel	9/23/2023	14:27	14:40	13.00
D-55	24" Steel	9/28/2023	10:32	10:50	18.00
D-56	24" Steel	9/28/2023	15:25	15:36	11.00
D-57	24" Steel	9/28/2023	11:25	11:45	20.00
D-58	24" Steel	9/28/2023	16:04	16:22	18.00
D-59	24" Steel	9/28/2023	12:55	13:58	63.00
D-60	24" Steel	9/29/2023	13:49	14:05	16.00
D-61	24" Steel	9/29/2023	9:05	10:23	78.00
D-62	24" Steel	9/29/2023	14:35	14:53	18.00
D-63	24" Steel	9/29/2023	11:09	11:36	27.00
D-64	24" Steel	9/29/2023	15:17	15:28	11.00
D-65	24" Steel	9/29/2023	12:37	13:17	40.00
D-66	24" Steel	9/29/2023	8:25	8:37	12.00
D-67	24" Steel	9/29/2023	15:47	16:04	17.00
D-68	24" Steel	9/30/2023	11:55	12:19	24.00
D-69	24" Steel	9/30/2023	10:04	10:33	29.00
D-70	24" Steel	9/30/2023	11:50	12:20	30.00
D-71	24" Steel	9/30/2023	11:17	11:40	23.00
D-72	24" Steel	10/2/2023	10:37	10:53	16.00
D-73	24" Steel	9/30/2023	12:42	13:54	72.00
D-74	24" Steel	10/2/2023	11:03	11:19	16.00
D-75	24" Steel	9/30/2023	14:01	14:34	33.00
D-76	24" Steel	10/3/2023	9:17	10:14	57.00
D-77	24" Steel	10/2/2023	11:45	12:29	44.00
D-78	24" Steel	10/18/2023	9:25	9:53	28.00

A-3: Pile Number and Drive Times - Vibratory

Vibratory Hammer Use					
Pile Number	Pile Type	Date	Time Start	Time End	Total Vibratory Time (minutes)
D-78	24" Steel	10/3/2023	9:22	11:22	120.00
D-79	24" Steel	10/4/2023	11:53	12:02	9.00
D-79	24" Steel	10/4/2023	12:46	12:50	4.00
D-79	24" Steel	10/4/2023	14:14	14:27	13.00
D-79	24" Steel	10/3/2023	13:11	13:44	33.00
D-80	24" Steel	10/4/2023	10:45	11:26	41.00
D-80	24" Steel	10/4/2023	14:31	14:52	21.00
D-81	24" Steel	10/18/2023	10:06	10:29	23.00
D-82	24" Steel	10/4/2023	14:44	16:33	109.00
D-83	24" Steel	10/18/2023	11:06	11:25	19.00
D-84	24" Steel	10/4/2023	9:52	10:04	12.00
D-85	24" Steel	10/18/2023	13:09	13:17	8.00
D-85	24" Steel	10/3/2023	14:06	17:24	18.00
D-86	24" Steel	10/4/2023	10:15	10:30	15.00
D-87	24" Steel	10/14/2023	9:24	10:39	75.00
D-88	24" Steel	10/14/2023	15:33	15:43	10.00
D-89	24" Steel	10/14/2023	11:38	11:54	16.00
D-90	24" Steel	10/14/2023	15:55	16:02	7.00
D-91	24" Steel	10/17/2023	9:44	10:24	40.00
D-91	24" Steel	10/14/2023	12:58	13:16	18.00
D-92	24" Steel	10/14/2023	11:13	11:21	8.00
D-93	24" Steel	10/14/2023	13:33	13:58	25.00
D-94	24" Steel	10/17/2023	8:29	9:01	32.00
D-95	24" Steel	10/17/2023	9:05	9:24	19.00
D-96	24" Steel	10/17/2023	16:24	16:33	9.00
D-97	24" Steel	10/14/2023	14:43	15:12	29.00
D-98	24" Steel	10/17/2023	15:46	15:52	6.00
D-99	24" Steel	10/17/2023	14:05	14:40	35.00
D-100	24" Steel	10/20/2023	9:24	9:34	10.00
D-101	24" Steel	10/17/2023	13:35	14:12	37.00
D-102	24" Steel	10/20/2023	10:58	11:12	14.00
D-103	24" Steel	10/17/2023	14:55	15:11	16.00
D-104	24" Steel	10/20/2023	13:56	14:05	9.00
D-105	24" Steel	10/20/2023	8:55	9:13	18.00
D-106	24" Steel	10/20/2023	14:17	14:23	6.00
D-107	24" Steel	10/20/2023	11:40	14:47	187.00
D-108	24" Steel	10/20/2023	16:39	16:50	11.00
D-109	24" Steel	10/20/2023	15:02	15:18	16.00
D-110	24" Steel	10/20/2023	16:13	16:26	13.00
D-111	24" Steel	10/20/2023	15:29	15:41	12.00
D-112	24" Steel	10/21/2023	15:33	15:43	10.00

A-3: Pile Number and Drive Times - Vibratory

Vibratory Hammer Use					
Pile Number	Pile Type	Date	Time Start	Time End	Total Vibratory Time (minutes)
D-113	24" Steel	10/21/2023	8:56	9:33	37.00
D-114	24" Steel	10/21/2023	15:55	16:02	7.00
D-115	24" Steel	10/21/2023	10:26	10:53	27.00
D-116	24" Steel	10/23/2023	9:10	9:20	10.00
D-117	24" Steel	10/21/2023	11:07	11:34	27.00
D-118	24" Steel	10/21/2023	15:10	15:20	10.00
D-119	24" Steel	10/21/2023	11:50	12:10	20.00
D-120	24" Steel	10/23/2023	8:47	8:58	11.00
D-121	24" Steel	10/21/2023	11:45	14:20	155.00
D-122	24" Steel	10/24/2023	11:27	11:35	8.00
D-123	24" Steel	10/23/2023	11:11	11:42	31.00
D-124	24" Steel	10/23/2023	16:19	16:30	11.00
D-125	24" Steel	10/23/2023	12:49	14:12	83.00
D-126	24" Steel	10/23/2023	16:41	16:51	10.00
D-127	24" Steel	10/23/2023	14:31	14:58	27.00
D-128	24" Steel	10/24/2023	8:52	9:00	8.00
D-129	24" Steel	10/23/2023	15:15	15:44	29.00
D-130	24" Steel	10/24/2023	11:00	11:12	12.00
D-131	24" Steel	10/24/2023	9:25	10:07	42.00
D-132	24" Steel	10/25/2023	11:21	12:18	57.00
D-133	24" Steel	10/24/2023	14:20	14:45	25.00
D-134	24" Steel	10/25/2023	10:56	11:06	10.00
D-135	24" Steel	10/24/2023	15:01	15:48	47.00
D-136	24" Steel	10/25/2023	10:37	10:46	9.00
D-137	24" Steel	10/24/2023	16:00	16:31	31.00
D-138	24" Steel	10/25/2023	10:05	10:28	23.00
D-139	24" Steel	10/24/2023	16:45	17:21	36.00
D-140	24" Steel	10/27/2023	16:00	16:23	23.00
D-141	24" Steel	10/27/2023	11:33	11:59	26.00
D-142	24" Steel	10/27/2023	16:40	16:55	15.00
D-143	24" Steel	10/27/2023	12:15	12:35	20.00
D-144	24" Steel	10/27/2023	17:07	17:18	11.00
D-145	24" Steel	10/27/2023	12:49	13:05	16.00
D-146	24" Steel	10/27/2023	17:27	17:33	6.00
D-147	24" Steel	10/27/2023	14:03	14:20	17.00
D-148	24" Steel	10/30/2023	8:49	9:15	26.00
D-149	24" Steel	10/28/2023	13:15	13:35	20.00
D-150	24" Steel	10/28/2023	14:28	14:39	11.00
D-151	24" Steel	10/28/2023	11:07	11:43	36.00
D-152	24" Steel	10/30/2023	8:15	8:35	20.00
D-153	24" Steel	10/28/2023	10:29	10:49	20.00

A-3: Pile Number and Drive Times - Vibratory

Vibratory Hammer Use					
Pile Number	Pile Type	Date	Time Start	Time End	Total Vibratory Time (minutes)
D-154	24" Steel	10/28/2023	14:06	14:18	12.00
D-155	24" Steel	10/28/2023	9:49	10:18	29.00
D-156	24" Steel	10/31/2023	14:07	14:13	6.00
D-157	24" Steel	10/30/2023	14:15	14:34	19.00
D-158	24" Steel	10/31/2023	13:50	14:00	10.00
D-159	24" Steel	10/30/2023	14:47	15:02	15.00
D-160	24" Steel	10/31/2023	13:16	13:36	20.00
D-161	24" Steel	10/30/2023	15:19	15:28	9.00
D-162	24" Steel	10/31/2023	11:42	12:04	22.00
D-163	24" Steel	10/31/2023	10:55	11:12	17.00
D-164	24" Steel	10/31/2023	11:23	11:36	13.00
D-165	24" Steel	10/31/2023	9:24	10:00	36.00
D-166	24" Steel	11/1/2023	14:55	15:13	18.00
D-167	24" Steel	11/1/2023	13:25	13:47	22.00
D-168	24" Steel	11/1/2023	15:27	15:37	10.00
D-169	24" Steel	11/1/2023	14:00	14:38	38.00
D-170	24" Steel	11/16/2023	8:28	8:40	12.00
D-171	24" Steel	11/1/2023	10:55	11:20	25.00
D-172	24" Steel	11/2/2023	11:55	12:10	15.00
D-173	24" Steel	11/1/2023	10:22	10:40	18.00
D-174	24" Steel	11/2/2023	11:36	11:39	3.00
D-175	24" Steel	10/31/2023	15:58	16:11	13.00
D-176	24" Steel	11/2/2023	11:20	11:26	6.00
D-177	24" Steel	11/1/2023	9:30	9:50	20.00
D-178	24" Steel	11/2/2023	10:55	11:05	10.00
D-179	24" Steel	11/1/2023	8:55	9:20	25.00
D-180	24" Steel	11/15/2023	15:17	15:24	7.00
D-181	24" Steel	11/15/2023	10:58	11:33	35.00
D-182	24" Steel	11/15/2023	14:36	14:57	21.00
D-183	24" Steel	11/15/2023	10:23	10:40	17.00
D-184	24" Steel	11/15/2023	14:11	14:20	9.00
D-185	24" Steel	11/15/2023	9:51	10:07	16.00
D-186	24" Steel	11/15/2023	12:52	13:03	11.00
D-187	24" Steel	11/13/2023	13:31	13:46	15.00
D-188	24" Steel	11/14/2023	12:41	12:50	9.00
D-189	24" Steel	11/13/2023	13:03	13:14	11.00
D-190	24" Steel	11/14/2023	11:23	11:29	6.00
D-191	24" Steel	11/13/2023	11:48	11:56	8.00
D-192	24" Steel	11/14/2023	11:01	11:07	6.00
D-193	24" Steel	11/13/2023	11:23	11:33	10.00
D-194	24" Steel	11/14/2023	10:34	10:42	8.00

A-3: Pile Number and Drive Times - Vibratory

Vibratory Hammer Use					
Pile Number	Pile Type	Date	Time Start	Time End	Total Vibratory Time (minutes)
D-195	24" Steel	11/14/2023	15:17	15:23	6.00
D-195	24" Steel	11/8/2023	10:18	10:32	14.00
D-196	24" Steel	11/13/2023	15:19	15:43	24.00
D-197	24" Steel	11/8/2023	9:18	9:34	16.00
D-198	24" Steel	11/14/2023	14:48	15:23	35.00
D-199	24" Steel	11/8/2023	8:53	9:04	11.00
D-200	24" Steel	11/14/2023	14:25	14:35	10.00
D-201	24" Steel	11/8/2023	8:18	8:36	18.00
D-202	24" Steel	11/8/2023	15:27	15:38	11.00
D-203	24" Steel	11/7/2023	16:07	16:15	8.00
D-204	24" Steel	11/8/2023	15:04	15:10	6.00
D-204	24" Steel	11/8/2023	15:25	15:31	6.00
D-205	24" Steel	11/7/2023	11:15	11:24	9.00
D-206	24" Steel	11/8/2023	14:33	14:42	9.00
D-207	24" Steel	11/7/2023	10:39	10:57	18.00
D-208	24" Steel	11/8/2023	13:52	14:09	17.00
D-209	24" Steel	11/7/2023	9:20	9:35	15.00
D-210	24" Steel	11/7/2023	13:13	15:01	108.00
KING	24" Steel	11/7/2023	15:48	15:49	1.00

Table A-4: Impact Pile Times and Strike Counts

Impact Hammer Use					
Pile Number	Pile Type	Date	Time Start	Time End	Total Number of Strikes (approx)
D-17	24" Steel	10/12/2023	13:00	13:18	283
D-17	24" Steel	10/12/2023	16:21	16:26	83
D-47	24" Steel	9/22/2023	15:17	16:45	73
D-73	24" Steel	10/2/2023	9:09	9:42	283
D-79	24" Steel	10/4/2023	13:24	13:34	123
D-80	24" Steel	10/4/2023	13:41	13:45	167
D-87	24" Steel	10/14/2023	11:05	11:20	52
KING	24" Steel	11/7/2023	15:22	15:29	151

Attachment B

Field Notes / Data

Canary Coules

Marine Mammal Observations

Sand Island Dike Repair

2023

Date	Observer	Species	Time	Number of Individuals	Dirction/Bearing	Distance (Meters)	Behavior	Condition	Construction Activity
9/6	CML	(START)	1306	—	—	—	—	Sunny/Clear	—
9/6	CML	HASE	1417	1	265	350	Dive	Clear	none
9/6	CML	END	1630	—	—	—	—	Clear	—
9/7	CML	START	1226	—	—	—	—	Clear	—
9/7	CML	END	1735	—	—	—	—	Clear	—
9/8	CML	START	947	—	—	—	—	Clear	—
9/8	CML	END	1400	—	—	—	—	Clear	—
9/11	CML	START	1115	—	—	—	—	Cloudy	—
9/11	CML	CASE	1330	1	200	211	Swimming	Cloudy	none
9/11	CML	HASE	1203	1	95	212	Swimming	Cloudy	NONE
9/11	CML	CASE	1203	1	75	276	Swimming	Cloudy	none
9/11	CML	HASE	1235	1	90	156	Swimming	Cloudy	none
9/11	CML	END	1630	—	—	—	—	Cloudy	—
9/13	CML	START	811	—	—	—	—	Cloudy	—
9/13	↓	HASE	846	1	45	93	Dive	Cloudy	None
9/13	↓	HASE	1007	1	130	99	Swimming	Cloudy	none
9/13	↓	CASE	1312	1	155	203	Stationary	Cloudy	none
9/13	↓	HASE	1436	1	90	63	Swimming	Cloudy	none
9/13	CML	END	1530	—	—	—	—	Cloudy	—

<div>Caanan Coules</div> <div>Marine Mammal Observations</div> <div>Sand Island Dike Repair</div>									
Date	Observer	Species	Time	Number of Individuals	Direction/Bearing	Distance (Meters)	Behavior	Condition	Construction Activity
9/14	Cmc	START	823	—	—	—	—	Clear	—
		HASE	838	1	110	76	Swim	Clear	none
		HASE	843	1	20	120	Swim		
		HASE	1001	1	45	71	Dive		
		CASE	1146	1	20	151	Swim		
		CASE	1224	1	290	106	Dive		
		CASE	1234	1	290	155	Swim		
		HASE	1347	1	90	313	Dive		
		HASE	1349	1	90	61	Swim		
		CASE	1351	1	0	111	Dive		
		CASE	1413	1	35	98	Porpo		
9/14	Cmc	END	1445	—	—	—	—		
9/15	Cmc	START	758	—	—	—	—	Clear	—
		CASE	856	1	190	128	Swim		none
		HASE	901	1	220	106	Dive		none
		HASE	1039	1	180	91	Dive		none
		CASE	1123	1	135	27	Dive		Vibe (B) *
		HASE	1346	1	90	111	Dive		Vibe (B) *
		CASE	1355	1	45	71	Swim		Vibe (B) *
9/15	Cmc	END	1445	—	—	—	—	Clear	—

2023

* Level B take

<div>Caanan Coules</div> <div>Marine Mammal Observations</div> <div>Sand Island Dike Repair 2023</div>									
Date	Observer	Species	Time	Number of Individuals	Direction/Bearing	Distance (Meters)	Behavior	Condition	Construction Activity
9/19	Cmc	START	744	—	—	—	—	Cloudy	—
↓	↓	HASE	839	1	180	63	Dive	↓	none
↓	↓	CASE	841	1	180	101	Swim	↓	none
↓	↓	HASE	845	1	180	61	Float	↓	none
↓	↓	CASE	918	1	136	296	Porb	↓	Vibe (B) *
↓	↓	CASE	918	1	180	109	Porb	↓	Vibe (B) *
↓	↓	HASE	934	1	180	121	Dive	↓	none
↓	↓	HASE	943	1	180	86	Swim	↓	none
9/19	Cmc	END	1708	—	—	—	—	Cloudy	—
9/20	Cmc	START	758	—	—	—	—	Cloudy	—
9/20	Cmc	END	1145	—	—	—	—	Cloudy	—
9/21	Cmc	START	827	—	—	—	—	Clear	—
↓	↓	CASE	912	1	180	17	Swim	↓	Vibe (B) **
↓	↓	CASE	917	1	120	93	Swim	↓	none
↓	↓	CASE	1606	1	106	98	Dive	↓	none
9/21	Cmc	END	1730	—	—	—	—	Clear	—
9/22	Cmc	START	751	—	—	—	—	Clear	—
↓	↓	CASE	1123	1	180	32	Swim	↓	none
↓	↓	CASE	1128	1	15	77	Dive	↓	↓
↓	↓	HASE	755	1	245	28	Dive	↓	↓
↓	↓	HASE	816	1	105	55	Swim	↓	↓
9/22	Cmc	END	1750	—	—	—	—	Clear	—

* Level B take
 ** Shut down / no start

<div>Caanan Cowles</div> <div>Marine Mammal Observations Sand Island Dike Repair 2023</div>									
Date	Observer	Species	Time	Number of Individuals	Direction/Bearing	Distance (Meters)	Behavior	Condition	Construction Activity
9/23	CML	START	739	—	—	—	—	Clear	—
9/23	CML	END	1445	—	—	—	—	Clear	—
9/28	CML	START	938	—	—	—	—	Rain	—
↓	↓	HASE	1343	1	180	195	Swim	Rain	none
↓	↓	HASE	1603	1	90	77	Swim	Rain	none
↓	↓	HASE	1613	1	90	44	Swim	Rain	none
9/29	CML	END	1700	—	—	—	—	Rain	—
9/29	CML	START	816	—	—	—	—	Cloudy	—
↓	↓	HASE	940	1	35	225	Dive	↓	none
↓	↓	HASE	1234	1	90	79	Dive	↓	none
9/29	CML	END	1645	—	—	—	—	Cloudy	—
9/30	CML	START	742	—	—	—	—	Clear	—
		HASE	1002	1	180	115	Float	↓	none
		HASE	1016	1	25	108	Swim	↓	none
		HASE	1023	1	140	72	Dive	↓	Vibe (B) *
9/30	CML	END	1515	—	—	—	—	Clear	—
10/2	CML	START	809	—	—	—	—	Rain	—
10/2	CML	HASE	1152	1	15	89	Swim	Rain	Vibe (B) *
10/2	CML	END	1330	—	—	—	—	Rain	—

* Level B take

<div>Caanan Cawles</div> <div>Marine Mammal Observations</div> <div>Sand Island Dike Repair 2023</div>									
Date	Observer	Species	Time	Number of Individuals	Direction/Bearing	Distance (Meters)	Behavior	Condition	Construction Activity
10/3	Cmc	START	758	—	—	—	—	Cloudy	—
↓	↓	HASE	1402	1	180	81	Dive	Cloudy	none
↓	↓	CASE	1409	1	15	129	Dive	Cloudy	VIBE (B) *
10/3	Cmc	END	1815	—	—	—	—	Cloudy	—
10/4	Cmc	START	847	—	—	—	—	Rain	—
10/4	Cmc	END	1545	—	—	—	—	Rain	—
10/7	Cmc	START	824	—	—	—	—	Rain	—
10/7	Cmc	END	1445	—	—	—	—	Rain	—
10/12	Cmc	START	847	—	—	—	—	Cloudy	—
10/12	Cmc	END	1715	—	—	—	—	Cloudy	—
10/13	Cmc	START	914	—	—	—	—	Cloudy	—
↓	↓	HASE	1057	1	90	79	Dive	Cloudy	Vibe (B)
↓	↓	HASE	1107	1	10	276	Dive	Cloudy	Vibe (B)
10/13	Cmc	END	1645	—	—	—	—	Cloudy	—
10/14	Cmc	START	728	—	—	—	—	Cloudy	—
10/14	Cmc	END	1645	—	—	—	—	Cloudy	—
10/17	Cmc	START	749	—	—	—	—	Cloudy	—
10/17	Cmc	END	1749	—	—	—	—	Cloudy	—

* Level B take

<div> <div>Guaman Cawles</div> <div>Marine Mammal Observations</div> </div>									
Date	Observer	Species	Time	Number of Individuals	Dirction/Bearing	Distance (Meters)	Behavior	Condition	Construction Activity
10/16	Cmc	START	838	—	—	—	—	Cloudy	—
10/16	Cmc	END	1400	—	—	—	—	Cloudy	—
10/20	Cmc	START	800	—	—	—	—	Clear	—
10/20	Cmc	CAGE	1204	1	75	335	Swim	Clear	Vibe (B) *
10/20	Cmc	END	—	—	—	—	—	Clear	—
10/21	Cmc	START	811	—	—	—	—	Clear	—
10/21	Cmc	END	1645	—	—	—	—	Clear	—
10/23	Cmc	START	817	—	—	—	—	Clear	—
10/23	Cmc	END	1630	—	—	—	—	Clear	—
10/24	Cmc	START	818	—	—	—	—	Cloudy	—
10/24	Cmc	END	1757	—	—	—	—	Clear	—
10/25	Cmc	Start	836	—	—	—	—	Clear	—
10/25	Cmc	END	1300	—	—	—	—	Cloudy	—
10/27	Cmc	START	930	—	—	—	—	Clear	—
↓	↓	HASE	1413	1	75	213	Swim	↓	Vibe (B) *
↓	↓	HASE	1545	1	0	55	Swim	↓	none
10/27	Cmc	END	—	—	—	—	—	Clear	—

* Level B Take

<div>Caanan Cowles</div> <div>Marine Mammal Observations Sand Island Dike Repair - 2023</div>									
Date	Observer	Species	Time	Number of Individuals	Direction/Bearing	Distance (Meters)	Behavior	Condition	Construction Activity
10/28	Cmc	START	842	—	—	—	—	Clear	—
↓	↓	HASE	1040	1	90	115	Swim	↓	Vibe (B) *
↓	↓	HASE	1329	1	90	90	Swim	↓	None
10/28	Cmc	END	1530	—	—	—	—	Clear	—
10/30	Cmc	START	800	—	—	—	—	Clear	—
10/30	Cmc	END	1615	—	—	—	—	Clear	—
10/31	Cmc	START	830	—	—	—	—	Cloudy	—
10/31	Cmc	END	1700	—	—	—	—	Cloudy	—
11/1	Cmc	START	745	—	—	—	—	Rain	—
11/1	Cmc	CASE	1357	1	0	83	Swim	Rain	None
11/1	Cmc	END	1500	—	—	—	—	Rain	—
11/2	Cmc	Start	1000	—	—	—	—	Rain	—
11/2	Cmc	End	1315	—	—	—	—	Rain	—
11/7	Cmc	Start	832	—	—	—	—	Cloudy	—
11/7	Cmc	End	1200	—	—	—	—	Cloudy	—
11/8	Cmc	Start	749	—	—	—	—	Clear	—
11/8	Cmc	HASE	1027	1	90	63	Dive	Clear	None
11/8	Cmc	End	1630	—	—	—	—	Clear	—

* Level B Take

<div>Caaman Bowles</div> <div>Marine Mammal Observations</div> <div>Sand Island Dike Repair - 2023</div>									
Date	Observer	Species	Time	Number of Individuals	Dirction/Bearing	Distance (Meters)	Behavior	Condition	Construction Activity
11/13	Cmc	START	930	—	—	—	—	Clear	—
↓	↓	HASE	1148	1	70	86	Swim	↓	Vibe(B) *
↓	↓	HASE	1148	1	85	99	Swim	↓	Vibe(B) *
↓	↓	HASE	1529	1	65	49	Dive	↓	Vibe(B) *
↓	↓	HASE	1531	3	96	100	Swim	↓	none
↓	↓	HASE	1541	1	180	115	Swim	↓	none
11/13	Cmc	END	1630	—	—	—	—	Clear	—
11/14	Cmc	START	934	—	—	—	—	Clear	—
↓	↓	HASE	1031	1	180	100	Swim	↓	none
↓	↓	HASE	1035	1	75	114	Dive	↓	Vibe(B) *
↓	↓	HASE	1036	1	90	225	Dive	↓	Vibe(B) *
↓	↓	HASE	1101	1	45	76	Float	↓	Vibe(B) *
↓	↓	HASE	1120	2	200	81	Swim	↓	none
↓	↓	HASE	1121	1	45	68	Dive	↓	none
↓	↓	HASE	1124	2	45	68	Swim	↓	Vibe(B) *
↓	↓	HASE	1243	1	90	91	Float	↓	Vibe(B) *
11/14	Cmc	End	165	—	—	—	—	Clear	—
11/15	Cmc	START	800	—	—	—	—	Clear	—
↓	↓	HASE	1019	1	75	88	Float	↓	none
↓	↓	HASE	1023	1	90	79	Dive	↓	Vibe(B) *
↓	↓	HASE	1123	1	90	81	Dive	↓	none
↓	↓	HASE	1248	1	90	105	Dive	↓	none

11/15 Continue on new Data Sheet

* Level B take

Sand Island Dike Repair 2023

Continue

* Level B Take

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