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2 **PROTECTED MARINE SPECIES MONITORING PLAN FOR**  
3 **THE NAVY'S FLOATING DRY DOCK PROJECT**  
4 **AT NAVAL BASE SAN DIEGO, CALIFORNIA**

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10 Submitted to:

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12 **Office of Protected Resources,**  
13 **National Marine Fisheries Service,**  
14 **National Oceanic and Atmospheric Administration**

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## ACRONYMS AND ABBREVIATIONS

1		
2	μPa	microPascal
3	dB	decibel(s)
4	ESA	Endangered Species Act
5	FDD	Floating Dry Dock
6	ft	foot/feet
7	IHA	Incidental Harassment Authorization
8	m	meter(s)
9	MMPA	Marine Mammal Protection Act
10	Navy	U.S. Department of the Navy
11	NBSD	Naval Base San Diego
12	NMFS	National Marine Fisheries Service
13	OPR	Office of Protected Resources
14	Plan	Protected Marine Species Monitoring Plan
15	POC	point of contact
16	Project	Floating Dry Dock Project
17	PSL	Practical Spreading Loss
18	PSO	protected species observer
19	re 1 μPa	referenced to one microPascal
20	RMS	root mean square
21	SEL	sound exposure level
22	TPP	Temporary Pile Program
23	U.S.	United States
24	USS	U.S. Ship
25	ZOI	zone of influence
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27		
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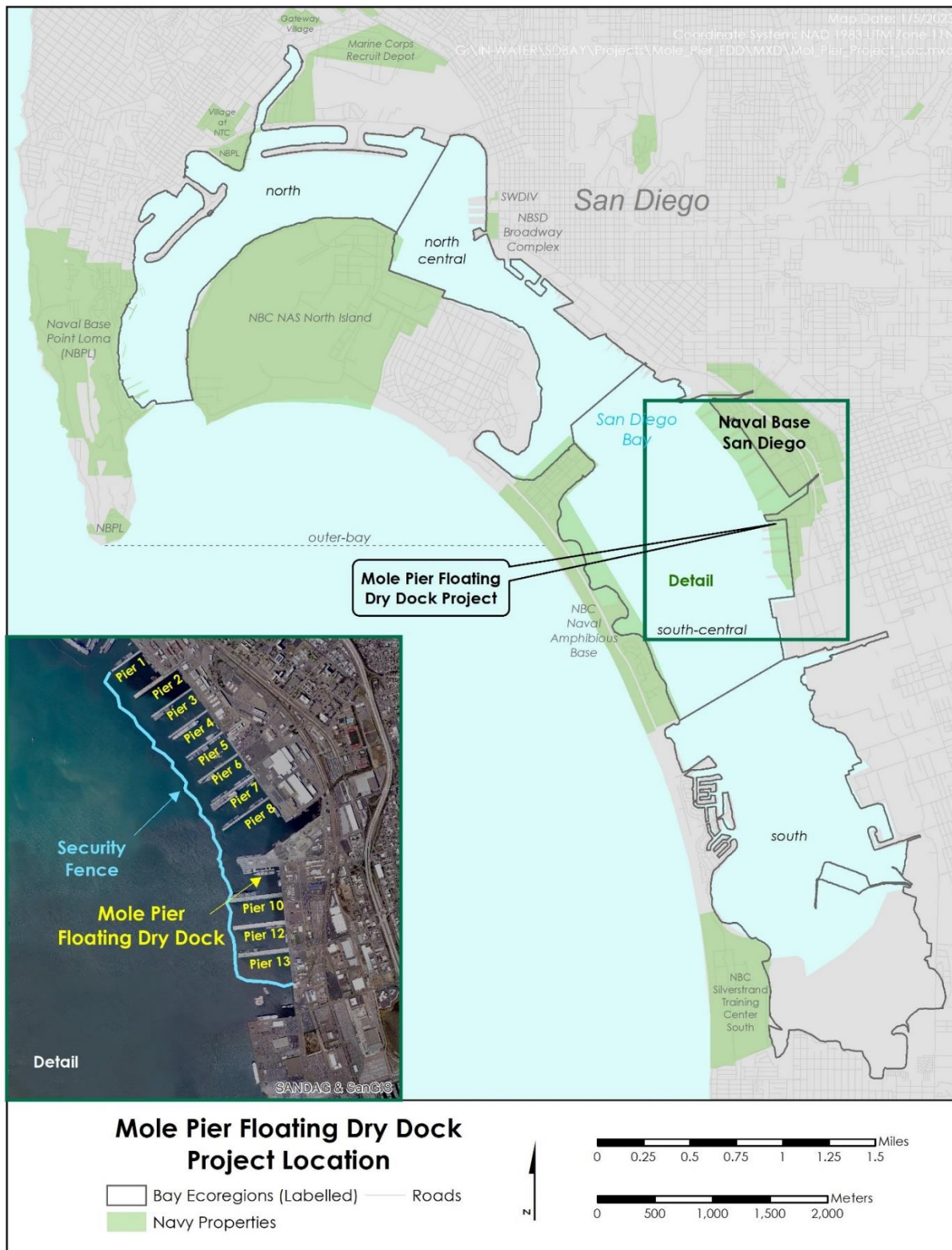
# 1 INTRODUCTION

## 1.1 Purpose of the Monitoring Plan

The purpose of this Protected Marine Species Monitoring Plan (Plan) is to provide protocols for marine mammal monitoring during pile extraction/installation activities in accordance with the Incidental Harassment Authorization (IHA), issued on **Date TBD**, by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS). The IHA addresses the incidental take of California sea lions (*Zalophus californianus*), harbor seals (*Phoca vitulina*), and coastal bottlenose dolphins (*Tursiops truncatus*). Incidental take is expected as a result of the United States (U.S.) Department of the Navy's (Navy's) South Berth Mole Pier Floating Dry Dock (FDD) Project (hereafter referred to as "Project") associated with the Naval Base San Diego (NBSD) in San Diego, California. No other marine mammal species are expected to occur in the Project area.

The Mole Pier has three berthing areas: north, west, and south. The south berth of the Mole Pier, which was originally constructed in the early 1980s, is comprised of a mooring wharf, mechanical pier, electrical pier, and access pier. A Ramp Pier that was used for a previous FDD is located to the southeast of the mooring wharf and will also be replaced as part of the Proposed Action (Figure 1-1). The pile-supported concrete mooring wharf is approximately 16 by 179 meters (m; 53 by 588 feet [ft]). The mechanical pier (approximately 16 by 23 m [53 by 75 ft]), electrical pier (approximately 6.4 by 16 m [21 by 53 ft]), and access pier (approximately 13 by 16 m [42 by 53 ft]) were constructed north of the mooring wharf to provide mechanical and electrical servicing, as well as access to the wharf. The Ramp Pier (approximately 7 by 32 m [23 by 105 ft]) is a finger pier located on the quay wall just to the southeast of the wharf between the Mole Pier and Pier 10. A sump was originally dredged at the time of construction to accommodate the Auxiliary Floating Drydock-Medium-14 "Steadfast," which was previously berthed at the south berth of the Mole Pier and later relocated in 1998. The south berth of the Mole Pier was modified in 2002 to accommodate berthing and mooring of the U.S. Ship (USS) *Curtiss*, which is currently stationed at the wharf. Modifications to the mooring wharf involved construction of two pile-supported mooring points for the USS *Curtiss*, including a dolphin at the forward portion of the vessel, and an extension of the mooring wharf at the aft location (Navy 2018).

To address current and projected shortfall of dry dock space required for maintenance of the Pacific Fleet, the placement and operation of a FDD (including all required dredging and sediment disposal, as well as all required demolition and construction activities) has been proposed at the south berth of the Mole Pier at NBSD. The FDD would not be self-powered or capable of maneuvering without assistance from support vessels; therefore, it would be permanently moored along the south berth of the Mole Pier. Consequently, the USS *Curtiss* would be relocated to another location within NBSD prior to initiating any dredging activities or modifications necessary to accommodate the proposed FDD. Similarly, the existing hoteling facilities along the south berth of the Mole Pier would also be temporarily relocated to another location within NBSD during construction. When the specific locations for the USS *Curtiss* and the hoteling facilities are identified, associated potential impacts will be analyzed under the National Environmental Protection Act and an appropriate level of subsequent environmental documentation would be prepared.



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Figure 1-1. Regional Location of NBSD and Project Area.



1 The proposed activities during the demolition phase of the Project with the potential to result in harassment  
2 under the Marine Mammal Protection Act (MMPA) are the extraction of piles by use of a vibratory pile  
3 extractor to loosen and pull piles out of the mud or via pile installation using impact hammers. Other pile  
4 extraction methods, including removing piles via a hydraulic pile clipper, wire saw, underwater chainsaw,  
5 high-pressure water jet, or dead-pull, may also occur, but no Level B harassment is expected via these  
6 methods. During the construction phase, piles are expected to be installed using an impact hammer with  
7 potential aid from a water jet. While vibratory pile installation is not expected, if it is required to install piles,  
8 then monitoring protocols identified for vibratory pile extraction will be implemented.

9 There are no known pinniped haulout locations in the immediate vicinity of the Project; therefore,  
10 airborne noise is not expected to result in incidental take and will not be addressed as part of the  
11 monitoring efforts. The purpose of monitoring described herein is twofold:

- 12 1) To minimize the potential for Level A (injury) harassment of marine mammals by implementing a  
13 shutdown of activities when a marine mammal is observed within a designated shutdown zone of  
14 influence (ZOI). With this mitigation measure in place, the proposed activities are not anticipated  
15 to result in any Level A harassment; therefore, no Level A take is being requested for this Project.
- 16 2) To enumerate the numbers and species of marine mammals that occur within established Level  
17 A (injury) and Level B (behavioral disturbance) ZOIs, and to document any differences in species,  
18 numbers, or behavioral effects associated with Project-related in-water activities.

19 The Plan is a requirement of the IHA issued under the MMPA. Once approved by NMFS, the Plan cannot  
20 be modified without NMFS approval. The IHA and this corresponding Plan is valid for take incidental to  
21 the specified waterfront demolition and construction activities at NBSD during the IHA time-period.

22 While no Level A harassment is anticipated, and only Level B harassment is authorized under the IHA, the  
23 mitigation measures and monitoring protocols described herein will serve to protect marine mammals in  
24 the Project area, provide for practical implementation of this Plan, reduce the risk of unauthorized take,  
25 and allow maintenance of demolition and construction schedules.

## 26 **1.2 Summary of Activities to be Monitored**

27 All relevant in-water demolition and construction activities that have the potential to result in Level A or  
28 Level B harassment of marine mammals will be monitored, including extraction and installation of piles  
29 via a vibratory pile extractor or hammer, as well during the installation of piles using an impact hammer.  
30 While other methods of pile extraction are possible, vibratory extraction is the most likely method that  
31 will be used to extract piles. No Level A/B take analysis was conducted on the other pile extraction  
32 methods, such as clipping piles at the mudline using hydraulic pile cutters and/or underwater chain saw,  
33 because noise levels for these activities are not expected to generate Level A/B harassment.

34 In-water demolition and construction activities under the IHA must comply with the following General  
35 Conditions of the IHA:

- 36 1) The IHA permit must be in the possession of the Navy, its designees, and work crew personnel  
37 operating under the authority of the IHA;
- 38 2) Only incidental take of marine mammals by Level B harassment, as specified in the IHA is  
39 authorized; and

1           3) Taking of species that exceeds the numbers and/or intensity indicated in the IHA, or any taking of  
2           other species of marine mammal is prohibited and may result in modification, suspension, or  
3           revocation of the IHA.

4 Marine mammal and other protected species monitoring will be conducted before, during, and after all  
5 pile extraction/installation activities. The proposed monitoring will document the number of marine  
6 mammal species exposed to underwater sound levels that would constitute “take” under the MMPA. All  
7 measures identified in the applicable Endangered Species Act (ESA) consultation documents for green sea  
8 turtles (*Chelonia mydas*) will also be incorporated into monitoring protocols.

9 The proposed demolition and construction activities at the FDD Project are summarized in Table 1-1.  
10 Demolition and installation activities are expected to occur over a 12-month period from 15 March 2024 to  
11 14 March 2025, with approximately 59 days of activities that would require monitoring (Table 1-1).  
12 Demolition and/or installation activities are not expected to occur at the same time. Pile extraction would  
13 begin and progress at a rate of five piles per day, for an expected 19 days of pile extraction. Pile installation  
14 is anticipated to begin after pile removal is complete at a rate of three piles per day for an expected 40 days  
15 of pile installation. Temporary piles will be driven and extracted through a Temporary Pile Program (TPP).  
16 These piles would be installed using an impact hammer, re-struck using the same hammer approximately  
17 one week later to provide data for production piles, and then removed prior to production pile installation.  
18 The TPP piles would be installed and then removed over the course of six days per activity. Detailed analysis  
19 of ZOIs and estimated numbers of species takes are contained in the Navy’s IHA application (Navy 2023). No  
20 Level A takes are anticipated. The number of requested Level B takes are summarized in Table 1-2.

### 21 **1.3 Monitoring Zones**

22 The Level A and Level B monitoring and shutdown zones, as well as representative protected species  
23 observer (PSO) monitoring locations, are described for the Project in the subsections below.

24 The two models used to assess the potential distances to regulatory thresholds (Dall’Osto and Dahl 2019;  
25 NMFS 2018, 2020) use Practical Spreading Loss (PSL) to evaluate the potential for Level A/B harassment.  
26 Dall’Osto and Dahl (2019) developed acoustic models using point sources at three locations (Pier 1, Pier 6  
27 and Pier 13) along the eastern extent of the south-central San Diego Bay on NBSD. Due do the similar  
28 bathymetry and location with respect to the channel, the Navy believes that the Pier 13 modeling location,  
29 which is roughly 725 m (2,379 ft) to the south of the Project location, represents the best location to  
30 approximate the sound propagation profile from a notional source at the Mole Pier mooring wharf FFD  
31 location. Key to this profile is the dampening effect of sound due to the western slope of the dredged  
32 navigation channel, as well as channelization of sound to the north and south within the channel. While  
33 the Pier 13 point is not in the exact Project location, we have used the site-specific model to identify sound  
34 propagation in the general Project area rather than a generic PSL model, which would not account for  
35 environmental variables. We believe that this is the most realistic approach and is based the best available  
36 science for the area.

1 **Table 1-1. Proposed Pile Extraction/Installation Activities at the Floating Dry Dock Project.**

<i>Pile Location</i>	<i>Pile Size/Type</i>	<i>Pile Extraction/ Installation Method</i>	<i>Piles/ Day</i>	<i>Number of Piles</i>	<i>Total Estimated Days</i>
<b>Demolition (Pile Extraction)<sup>1</sup></b>					
Mooring Wharf	24-inch Square Concrete	-Vibratory Extraction -High-pressure Water Jetting	5	24	5
	24-inch Octagonal Concrete	-Hydraulic Pile Clipper		7	2
Ramp Pier	24-inch Square Concrete	-Wire Saw -Underwater Chain Saw		28	6
TPP <sup>2</sup>	24-inch Octagonal Concrete	-Dead Pull	1	6	6
<b>Total Piles Removed</b>				<b>65</b>	<b>19</b>
<b>Construction (Pile Installation)<sup>3</sup></b>					
TPP <sup>2</sup>	24-inch Octagonal Concrete	-Impact Hammer -High-pressure Water Jetting	1	6	6
Mooring Wharf			3	80	27
Ramp Pier & Intermediate Support Structure			21	7	
<b>Total Piles Installed</b>				<b>107</b>	<b>40</b>
<b>Total In-Water Pile Extraction/Installation Days</b>					<b>59</b>

2 **Notes:** <sup>1</sup>While other methods of pile extraction are possible, vibratory extraction is the most likely method that will be used to  
3 extract piles. No Level A/B take analysis conducted on the other pile extraction methods; <sup>2</sup>The TPP piles will be installed via an  
4 impact hammer prior to the production piles, re-struck for testing approximately one week later, and then extracted prior to the  
5 start of production pile installation. Piles will likely be extracted via a vibratory pile remover or dead-pulled; <sup>3</sup>Impact pile  
6 installation is the most likely method that will be used to install piles. High-pressure water jetting may be used either separately  
7 from, or at the same time as, impact pile installation. **Abbreviations:** TPP = Temporary Pile Program.

8 **Table 1-2. Number of Level B Takes of California Sea Lion Requested for the Floating Dry Dock**  
9 **Project.**

<i>Species</i>	<i>Expected Average Individuals Per Day<sup>2</sup></i>	<i>Requested Level B Take<sup>1</sup></i>
California sea lion	2	118
Harbor seal	1	59
Coastal bottlenose dolphin	1	59
<b>TOTAL</b>		<b>236</b>

10 **Note:** <sup>1</sup>If the number of takes may be exceeded in any year, NMFS will be notified as early as possible of a potential need to modify  
11 the authorized takes; <sup>2</sup>Individuals per day based on observations during Pier 6 Replacement Project Monitoring interim report  
12 (Naval Facilities Engineering Command Southwest 2022).

1 Harbor seals and coastal bottlenose dolphins were not included in the site-specific modeling effort for  
2 Level A distance calculations. As a result, the NMFS user spreadsheet (NMFS 2020) was used to determine  
3 Level A zones for these species (Table 1-3). To determine zones for potential Level B harassment, the site-  
4 specific model was used for all species because the threshold criteria for Level B impacts are based solely  
5 on continuous or impulsive noise sources and are not hearing frequency dependent.

6 **1.3.1 Level A and Level B Harassment Monitoring and Shutdown Zones**

7 Maximum potential distances to Level A and Level B acoustic harassment associated with the proposed  
8 pile extraction/installation activities at the Project are provided in Table 1-3 and Table 1-4 and shown on  
9 Figure 1-2 for impact and vibratory extraction/installation of concrete piles. A majority of the distances to  
10 Level A thresholds were less than 10 m (33 ft), with distances exceeding 10 m (33 ft) for harbor seals  
11 during impact pile installation (Table 1-3). Because the Navy is not requesting Level A take for the Project,  
12 for those Level A ZOIs that are less than 10 m (33 ft), a shutdown zone of 10 m (33 ft) will be implemented  
13 to reduce the likelihood of any animal coming into contact with equipment (Table 1-4). For the Level A  
14 ZOIs that are greater than 10 m (33 ft), the shutdown zones were rounded up to 30 m (66 ft) and 60 m  
15 (197 ft) to reduce the potential for exposure to Project-related injurious sound (Table 1-4). All Level A/B  
16 ZOIs are identified on Figure 1-2.

17 **Table 1-3. Calculated Distance(s) to Underwater Noise Thresholds from Pile**  
18 **Extraction/Installation at the Project Site.**

Activity Description	Pile Size/Type & Source Levels <sup>1</sup>	Level A ZOIs <sup>2</sup> (m [ft])			Level B ZOIs <sup>2</sup> (m [ft])
		California sea lions	Harbor seals	Coastal bottlenose dolphins	All Species
Vibratory Extraction <sup>3</sup>	24-inch octagonal/square concrete (Production) (162 RMS)	0.0 (0.0)	6.8 (22.3)	1.0 (3.3)	3,525 x 1,055 (11,565 x 3,353) <sup>5</sup>
	24-inch octagonal concrete (TPP) <sup>4</sup> (162 RMS)	0.0 (0.0)	2.3 (7.5)	0.3 (1.0)	
Impact Driving <sup>6</sup>	24-inch octagonal concrete (TPP) <sup>4</sup> (188 Peak, 176 RMS, 166 SEL)	0.0 (0.0)	28.0 (91.9)	1.9 (6.2)	375 (1,230)
	24-inch octagonal concrete (Production) (188 Peak, 176 RMS, 166 SEL)	0.0 (0.0)	58.2 (190.9)	3.9 (12.8)	

19 **Notes:** <sup>1</sup>Sound source levels at 10 m (33 ft) distance. Units for Peak and RMS are dB re 1 μPa. The unit for SEL is dB 1 μPa<sup>2</sup>-sec;  
20 <sup>2</sup>Level A distances are based on a site-specific model for California sea lions (Dall’Osto and Dahl 2019) and a generic PSL model  
21 (NMFS 2018, 2020) for harbor seals and coastal bottlenose dolphins. No Level A thresholds are crossed for California sea lions  
22 based on the site-specific model (Dall’Osto and Dahl 2019). Level B distances are based on the site-specific model (Dall’Osto and  
23 Dahl 2019). No Level A take is requested; <sup>3</sup>Assumes 20 minutes of vibratory pile extraction, Weighting Factor Adjustment of 2.5  
24 kilohertz, with 5 piles/day for Production, and 1 pile/day for the TPP. While vibratory pile installation is not expected, if it is  
25 required to install piles, then monitoring protocols identified for vibratory pile extraction will be implemented; <sup>4</sup>The TPP piles will  
26 be installed via an impact hammer prior to the production piles, re-struck for testing approximately one week later, and then  
27 removed prior to the start of production pile driving; <sup>5</sup>The distances represent the maximum north/south and east/west distance  
28 from the pile being driven. These distances are represented by the green line in Figure 1-2; <sup>6</sup>Assumes 600 strikes per pile, 0.01  
29 second single-strike duration, Weighting Factor Adjustment of 2.0 kilohertz, with 3 piles/day for Production, and 1 pile/day for  
30 the TPP. **Abbreviations:** ft = feet; m = meters; RMS = root mean square; SEL = sound exposure level; TPP = Temporary Pile Program.

1 **Table 1-4. Distance(s) to Underwater Shutdown Zones for Pile Extraction/Installation at the**  
 2 **Project Site.**

Activity Description	Pile Size/Type & Source Levels	Shutdown ZOIs (m [ft])		
		California sea lions	Harbor seals	Coastal bottlenose dolphins
Vibratory Extraction	24-inch octagonal/square concrete (Production) (162 RMS)	10 (33)	10 (33)	10 (33)
	24-inch octagonal concrete (TPP) (162 RMS)	10 (33)	10 (33)	10 (33)
Impact Driving	24-inch octagonal concrete (TPP) (188 Peak, 176 RMS, 166 SEL)	10 (33)	30 (98)	10 (33)
	24-inch octagonal concrete (Production) (188 Peak, 176 RMS, 166 SEL)	10 (33)	60 (197)	10 (33)

3 **Abbreviations:** ft = feet; m = meters; RMS = root mean square; SEL = sound exposure level; TPP = Temporary Pile Program.

4 **1.3.1 Potential Protected Species Observer Monitoring Locations**

5 For all monitoring efforts, PSOs will be positioned at the best practicable vantage points, taking into  
 6 consideration security, safety, and space limitations. The final positioning of the PSOs would be  
 7 determined on the day of the work.

8 Vibratory Pile Extraction/Installation

9 Three PSOs will be utilized to monitor the Level A/B Harassment Zones (Figure 1-2). One PSO (in the  
 10 “Command” position nearest the activity) will be located with clear view of the shutdown zone or smaller  
 11 Level B ZOIs and will be responsible for halting in-water activities, as required. The "Command" PSO will  
 12 coordinate all PSO and Project-related activities and will act as the liaison between the construction crew  
 13 and the PSO team. The other two PSOs would potentially be located at the tips of Pier 10 and Pier 13, in  
 14 positions that would allow surveillance of the water to the north and south of the Project area.

15 Impact Pile Driving

16 Two PSOs will be utilized to monitor the Level A/B Harassment Zones (Figure 1-2). Similar to vibratory pile  
 17 extraction/installation, one PSO (in the “Command” position) will be located with clear view of the  
 18 shutdown zone or smaller Level B ZOIs and will be responsible for halting in-water activities, as required.  
 19 The other PSO would potentially be located at the tip of Pier 10, in a position that would allow surveillance  
 20 of the water to the north and south of the Project area.



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**Figure 1-2. Monitoring/Shutdown Zones and Potential Monitor Locations for Proposed Impact and Vibratory Extraction/Installation of Concrete Piles.**

## 1 1.4 Mitigation Measures

2 The following mitigation measures, as specified in the NMFS IHA, shall be implemented during pile  
3 extraction/installation activities to avoid and minimize marine mammal exposure to Level A injury and to  
4 reduce, to the lowest extent practicable, exposure to Level B noise levels. Any mitigation measures  
5 identified in the finalized IHA, beyond those identified below, will also be adhered to. The contractor is  
6 responsible for complying with all the mitigation measures listed below, whereas on-site Navy  
7 representatives will monitor the contractor's performance and require corrective action or stop work, if  
8 necessary, to ensure that requirements are met.

### 9 1) Time Restriction:

- 10 • In-water pile extraction/installation activities will only be conducted when sufficient ambient  
11 light is available for visual observations (generally 30 minutes after sunrise and up to 45  
12 minutes before sunset); However, the Lead PSO will make a final determination as to when  
13 to start or stop activities based on ambient lighting conditions.

### 14 2) General Vessel and Machinery Stoppage

- 15 • For in-water activities, including heavy machinery activities other than pile  
16 extraction/installation (e.g., barge movements) or when using vessels, if a marine mammal  
17 comes within 10 m (33 ft), the activity must cease operations and/or reduce vessel speed to  
18 the minimum level required to maintain steerage and safe working conditions.

### 19 3) Pre-Construction Briefing

- 20 • Prior to the start of all in-water pile installation or extraction activities, briefings will be  
21 conducted for construction supervisors and crews, the monitoring team and when new  
22 personnel join the work. The briefing will explain responsibilities, communication procedures,  
23 the marine mammal protocols, and operational procedures for stopping/delaying in-water  
24 activities.

### 25 4) Protected Marine Species Visual Monitoring

- 26 • Marine Species Visual Monitoring will be required to assess the potential impacts of the  
27 Project on marine mammals. See Section 2.6 for a detailed description of the visual  
28 monitoring protocols;
- 29 • Monitoring will involve visually observing the surrounding waters for marine mammal  
30 presence and assessing potential Level B Take. No Level A Take is being requested, and  
31 shutdown zones will be implemented to minimize the potential for Level A Take (see Table  
32 1-4); and
- 33 • Project-related activity data will be recorded to assess the duration of pile  
34 extraction/installation, and the potential for exposure to noise levels that exceed regulatory  
35 thresholds.

### 36 5) Soft Start

- 37 • The use of soft-start procedures for impact pile driving are believed to provide additional  
38 protection to marine mammals by providing a warning and/or giving marine mammals a  
39 chance to leave the area prior to the hammer operating at full capacity. No soft start

- 1 procedures are required for vibratory pile extraction/installation. The soft start procedure is  
2 described below:
- 3 ○ Soft start requires contractors to provide an initial set of strikes at reduced energy,  
4 followed by a thirty-second waiting period, then two subsequent reduced energy strike  
5 sets. A soft start must be implemented at the start of each day's impact pile driving and  
6 at any time following cessation of impact pile driving for a period of 30 minutes or longer.
- 7



## 2 MARINE PROTECTED SPECIES MONITORING PROTOCOLS

### 2.1 Objectives

The primary objective of the visual monitoring is to detect and document impacts from Project- related activities on protected marine species. Monitoring will be conducted at all times during in- water demolition and/or construction to assess marine mammal use patterns and behavioral responses relative to Level A and Level B harassment ZOIs. Monitoring for green sea turtles will co-occur with the marine mammal monitoring and protocols identified during the ESA consultation will be addressed as part of pre- Project training.

### 2.2 Overview

The visual monitoring component of this Plan takes into consideration the logistical, environmental, and security requirements for working in the Project area. For the in-water demolition and construction activities, distances to regulatory thresholds (see Section 1.0, Table 1-3) were estimated based on acoustic data for similar pile types and sizes (California Department of Transportation 2015; Naval Facilities Engineering Command Southwest 2020) using the latest acoustic threshold guidance from NMFS (2018, 2020), as well as site-specific analysis presented in Dall'Osto and Dahl (2019). The estimated distances to the ZOI boundaries were used to determine monitoring locations identified in this Plan.

The Level A/B harassment ZOIs will be monitored throughout the time required to extract or drive a pile. If a marine mammal is observed entering the Level B ZOI during activities covered under the IHA, an exposure would be recorded and behaviors documented. Work would continue without cessation, unless the animal approaches or enters the applicable shutdown zone, at which point pile extraction/installation will be halted.

### 2.3 Protected Species Observer Qualifications

The PSOs must be independent PSOs (i.e., not construction personnel), who are trained biologists with the ability to correctly identify the marine mammal species and accurately describe the relevant species-specific behaviors that may occur in proximity to in-water demolition and construction activities. Additional qualifications for PSOs include the following<sup>1</sup>:

- Visual acuity in both eyes (correction is permissible) sufficient to discern moving targets at the water's surface with ability to estimate target size and distance. Use of binoculars or spotting scope may be necessary to correctly identify the target.
- Advanced education in biological science, wildlife management, mammalogy or related fields (Bachelor's degree or higher is preferred), or equivalent Alaska Native traditional knowledge.
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
- Experience or training in the field identification of marine mammals (cetaceans and pinnipeds).

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<sup>1</sup> PSOs qualifications from: <https://www.fisheries.noaa.gov/alaska/endangered-species-conservation/guidance-developing-marine-mammal-monitoring-plan>

- 1 • Sufficient training, orientation or experience with vessel operation and pile driving operations to  
2 provide for personal safety during observations.
- 3 • Writing skills sufficient to prepare a report of observations. Reports should include such  
4 information as the number, type, and location of marine mammals observed; the behavior of  
5 marine mammals in the area of potential sound effects during construction; dates and times when  
6 observations and in-water construction activities were conducted; dates and times when in-water  
7 construction activities were suspended because of marine mammals, etc.
- 8 • Ability to communicate orally, by radio or in person, with project personnel to provide real time  
9 information on marine mammals observed in the area, as needed.

## 10 **2.4 Marine Species Data Collection**

11 NMFS requires that, at a minimum, the following information be collected by PSOs:

- 12 • Date and time that pile extraction/installation begins or ends;
- 13 • Construction activities occurring during each observation period;
- 14 • Weather parameters (e.g., wind, temperature, percent cloud cover, and visibility);
- 15 • Tide stage and sea state (The Beaufort Sea State Scale will be used to determine sea-state);
- 16 • Species, numbers, and, if possible, sex and age class of marine mammals;
- 17 • Marine mammal behavior patterns observed, including bearing and direction of travel, and if  
18 possible, the correlation to Sound Pressure Levels;
- 19 • Distance from pile installation activities to marine mammals and distance from the marine  
20 mammal to the observation point;
- 21 • Locations of all PSOs; and
- 22 • Other human activity in the area.

23 If other data is required as part of the IHA, then the data will be included as part of the data collection  
24 protocols. The required fields will be incorporated into an electronic tablet form or hardcopy datasheets  
25 that will be used by the PSOs (example of a hard copy datasheet provided in Appendix A).

26 To the extent practicable, the PSOs will also record behavioral observations that may make it possible to  
27 determine if the same or different individuals are being “taken” as a result of Project activities over the  
28 course of a day.

29 In addition, the PSOs will document any occurrences of green sea turtles within the designated monitoring  
30 zones. Sighting information for green sea turtles will include all data that was collected for marine  
31 mammals (e.g., distance, bearing, and number of individuals). All measures identified in the applicable  
32 ESA consultation documents will be incorporated into monitoring protocols. The PSOs will monitor the  
33 applicable ZOIs before, during, and after all pile extraction/installation activities.

## 34 **2.5 Monitoring Equipment**

35 PSOs will be stationed at land/pier-based observation locations. The following equipment would be used  
36 to conduct marine species monitoring:

- 1 • Hearing protection for all personnel working near heavy construction equipment;
- 2 • Portable marine radios for the PSOs to communicate with the Lead PSO, construction contractor,
- 3 and other PSOs;
- 4 • Cellular phones (one per observing location), and the contact information for all other PSOs;
- 5 • Flags (one green, one red per observing location) as back-up for radio communication;
- 6 • Daily tide tables for the Project area within San Diego Bay;
- 7 • Watch or Chronometer;
- 8 • Binoculars with built-in compass (quality of 7x50 or better);
- 9 • Laser rangefinder;
- 10 • Plan, IHA permit, and/or other relevant permit requirement specifications in sealed transparent
- 11 plastic cover;
- 12 • Notebook and/or electronic tablets with pre-standardized Marine Mammal Observation Record
- 13 forms to record field monitoring data electronically or on waterproof paper (e.g., Rite-in-the
- 14 Rain);
- 15 • Marine mammal identification guides on waterproof paper;
- 16 • Clipboard; and
- 17 • Pen / Pencil.

## 18 **2.6 Monitoring Methods**

19 The Navy will conduct briefings between construction supervisors/crews and the PSO team prior to the  
20 start of all pile extraction/installation activities. The same training will be provided for all new personnel  
21 who join the Project. These briefings will explain responsibilities, communication procedures, visual  
22 monitoring protocols, and operational procedures for stopping/delaying in-water activities.

23 The PSOs will collect marine mammal sightings data, including behaviors, for the pre-, during, and post-  
24 pile extraction/installation periods. To eliminate the potential for bias, all observations will be logged,  
25 regardless of proximity to the Level A or Level B ZOIs. An assessment of take will occur only if an individual,  
26 or group, enters the ZOIs during Project-related activities that may generate noise levels that meet, or  
27 exceed, the values identified in the application for the IHA (Navy 2023). The efficacy of visual detection  
28 depends on several factors including the PSOs ability to detect the animal, the environmental conditions  
29 (visibility and sea state), and monitoring platforms.

30 Based on NMFS requirements, this Plan includes the following procedures to address the potential for  
31 Take, as defined by the MMPA:

### 32 **2.6.1 General Visual Monitoring Protocols**

- 33 • Trained PSOs will be placed at the best vantage point(s) practicable (e.g., the crane barge, on
- 34 shore, or any other suitable location) to monitor for marine mammals and implement
- 35 shutdown/delay procedures, when applicable, by notifying the construction operator of a need
- 36 for a work stoppage.

- 1 • Monitoring will take place from 30 minutes prior to initiation through 30 minutes post-completion  
2 of pile extraction/installation activities;
- 3 • During all observation periods, the PSOs will use binoculars and/or the naked eye to search  
4 continuously for protected marine species;
- 5 • Monitoring will be conducted during daylight hours. If lighting conditions do not allow PSOs to  
6 effectively observe the established shutdown zone(s) (see Table 1-4), in-water construction or  
7 demolition activities will not be allowed to start (or continue) until conditions improve;
- 8 • Observation data will be recorded for any marine species within visual range of the PSO,  
9 regardless of proximity to the monitoring zones;
- 10 • Up to three PSOs at up to three locations will conduct the protected marine species monitoring  
11 depending on the activity and size of monitoring zones (see Figure 1-2). All PSOs will communicate  
12 with each other to enhance tracking of marine mammals that may be moving through the area  
13 and to minimize duplicate observation records of the same animal by different PSOs (i.e., a re-  
14 sighting);
- 15 • Results of all protected marine species observations will be recorded on electronic tablet or  
16 hardcopy datasheets (see Appendix A for an example of a hard-copy datasheet).
- 17 • If an injured, sick, or dead marine mammal is observed, procedures outlined in Section 3.0 will be  
18 followed;
- 19 • If the take of a marine mammal species approaches the take limits specified in the IHA, NMFS will  
20 be notified and appropriate steps will be discussed;
- 21 • Based on the activity and species observed (see Table 1-4), shutdown zones will be established  
22 around in-water pile extraction/installation activities to avoid the potential for physical or Level A  
23 acoustic injury of protected marine species.
- 24 • One Pier-based PSO will be stationed with clear view of the shutdown zone(s) and will be  
25 responsible for initiating shutdowns/delays of Project activities, monitoring for animals in close  
26 proximity to the Project site, and the collection of Project-related activity data (i.e., pile  
27 extraction/installation start and stop times, shutdowns/delays);
- 28 • If a marine mammal covered in the IHA enters the applicable shutdown zone, all pile  
29 extraction/installation activities at that location shall be halted. The animal(s) must be allowed to  
30 remain in the shutdown zone (i.e., must leave of their own volition) and their behavior must be  
31 monitored and documented. Work will be allowed to restart once the animal has been observed  
32 either leaving the shutdown area, or 15 minutes has elapsed since the last observation without  
33 re-detection of the animal;
- 34 • If a marine mammal not covered in the IHA enters the applicable Level B harassment ZOI, all pile  
35 extraction/installation activities shall be halted. The animal(s) must be allowed to remain in the  
36 Level B harassment ZOI (i.e., must leave of their own volition) and their behavior must be  
37 monitored and documented. Work will be allowed to restart once the animal has been observed  
38 either leaving the Level B harassment ZOI, or 60 minutes has elapsed since the last observation  
39 without re-detection of the animal; and

- 1       • In the unlikely event that environmental conditions, such as heavy fog, prevent the visual  
2       detection of marine mammals within the shutdown zone (see Table 1-4), in-water demolition or  
3       construction activities will not be initiated. If in-water demolition or construction activities have  
4       been initiated, and conditions deteriorate so that the shutdown zone is not completely visible,  
5       then activities will be delayed until the zone is fully visible.

### 6   **2.6.2 Pre-Activity Monitoring**

- 7       • Visual surveys will occur for at least 30 minutes prior to the start of pile extraction/installation;
- 8       • If marine mammals covered under the IHA are present within the Level B harassment ZOI, in-  
9       water construction or demolition will be allowed to start without delay.
- 10      • If a marine mammal covered in the IHA enters the applicable shutdown zone, all pile  
11      extraction/installation activities at that location shall be delayed. The animal(s) must be allowed  
12      to remain in the shutdown zone (i.e., must leave of their own volition) and their behavior must  
13      be monitored and documented. Work will be allowed to start once the animal has been observed  
14      either leaving the shutdown area, or 15 minutes has elapsed since the last observation without  
15      re-detection of the animal;
- 16      • If a marine mammal not covered in the IHA enters the applicable Level B harassment ZOI, all pile  
17      extraction/installation activities shall be delayed. The animal(s) must be allowed to remain in the  
18      Level B harassment ZOI (i.e., must leave of their own volition) and their behavior must be  
19      monitored and documented. Work will be allowed to start once the animal has been observed  
20      either leaving the Level B harassment ZOI, or 60 minutes has elapsed since the last observation  
21      without re-detection of the animal; and
- 22      • The shutdown zone(s) may only be declared clear, and pile extraction/installation started, when  
23      the entire shutdown zone is visible (i.e., when not obscured by a poor light, rain, fog, etc.; see  
24      Table 1-4). If the applicable shutdown zone is obscured by fog or poor lighting conditions, activity  
25      at the location will not be initiated until the shutdown zone is visible.

### 26   **2.6.3 During Activity Monitoring**

- 27      • If a protected marine species approaches, or appears to be approaching, the shutdown zone(s),  
28      the PSO who first observed the animal will alert the "Command" PSO, who will notify the  
29      construction crew of the animal's current status. In-water activities addressed in the IHA will be  
30      allowed to continue while the animal remains outside the shutdown zone;
- 31      • If a marine mammal species covered in the IHA enters the applicable shutdown zone, all pile  
32      extraction/installation activities at that location shall be halted. The animal(s) must be allowed to  
33      remain in the shutdown zone (i.e., must leave of their own volition) and their behavior must be  
34      monitored and documented. Work will be allowed to restart once the animal has been observed  
35      either leaving the shutdown area, or 15 minutes has elapsed since the last observation without  
36      re-detection of the animal;
- 37      • If a marine mammal species not covered in the IHA enters the applicable Level B harassment ZOI,  
38      all pile extraction/installation activities shall be halted. The animal(s) must be allowed to remain  
39      in the Level B harassment ZOI (i.e., must leave of their own volition) and their behavior must be  
40      monitored and documented. Work will be allowed to restart once the animal has been observed

- 1 either leaving the Level B harassment ZOI, or 60 minutes has elapsed since the last observation  
2 without re-detection of the animal;
- 3 • If shutdown and/or clearance procedures would result in an imminent concern for human safety,  
4 then the activity will be allowed to continue until the safety concern is addressed. During that  
5 timeframe, the animal(s) will be continuously monitored, and the Navy point of contact (POC) will  
6 be notified and consulted prior to re-initiation of Project-related activities; and
  - 7 • Regardless of location within the Level B monitoring zone, an initial behavior and the location of  
8 the animal(s) will be logged. Behaviors will be continually logged until the animal is either passed  
9 off to another PSO, the animal is no longer visible, or it has left the Level B monitoring zone.

10 **2.6.4 Post-Activity Monitoring**

- 11 • Monitoring of all zones will continue for 30 minutes following completion of pile  
12 extraction/installation and drilling activities. These surveys will record all marine mammal  
13 observations following the same procedures as identified for the pre-construction monitoring  
14 time-period, and will focus on observing and reporting unusual or abnormal behaviors.

15

### 3 INTERAGENCY NOTIFICATION FOR INJURED OR DEAD MARINE MAMMALS

In the event that personnel involved in the Project-related activities discover an injured or dead marine mammal, the Navy POC<sup>2</sup> for the IHA shall report the incident to the Office of Protected Resources (OPR), NMFS, and the Regional Stranding Coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, the IHA-holder must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHA. The IHA-holder must not resume their activities until notified by NMFS.

- NBSD Base Biologist (Michelle Maley): 619-532-2868.
- NMFS OPR: 301-427-8401.
- West Coast Region Marine Mammal Stranding Network(s);
  - Live animals – Sea World of California: 800-541-7325
  - Dead animals – NMFS Southwest Fisheries Science Center: 858-546-7162.

The report will include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behavior of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and,
- General circumstances under which the animal was discovered.

In the event that an injured or dead marine mammal is discovered, and the Lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), the PSO will report to the Navy POC. Within 24 hours, the Navy POC will report the incident to the NBSD Base Biologist, the NMFS OPR, and the appropriate West Coast Region Marine Mammal Network Stranding Coordinators as noted above. The report will include the same information identified above. Pursuant to NMFS instruction and approval, activities may continue while the circumstances of the incident are under review. NMFS will work with the Navy to determine whether modification in the activities are appropriate.

In the event that an injured or dead marine mammal is discovered, and the Lead PSO determines that the injury or death is not associated with, or related to, Project-related activities authorized in the IHA (i.e., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Lead PSO will report the incident to the Navy POC, who will report the animal(s) to the NBSD base

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<sup>2</sup> The Navy POC will be determined prior the start of the Project and contact information will be provided to the monitoring crew.

1 biologist. The appropriate West Coast Region Marine Mammal Network Stranding Coordinators, as noted  
2 above, will be notified within 24 hours of the discovery. The Navy POC will not be required to contact the  
3 NMFS OPR for these cases. The PSOs will provide photographs or video footage (if available) or other  
4 documentation of the stranded animal sighting to the Navy POC under such a case. At no time should the  
5 PSO handle, or attempt to handle, a dead marine mammal.

6



## 4 REPORTING

A draft report would be submitted to NMFS within 90 calendar days of the completion of marine mammal monitoring or 60 days prior to the issuance of an IHA renewal for this Project. A final report would be prepared and submitted to the NMFS within 30 days following resolution of comments on the draft report from NMFS.

The marine mammal report shall contain informational elements including, but not limited to:

- Dates and times (begin and end of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including how many and what type of piles were driven or removed and by what method (i.e., impact or vibratory);
- Weather parameters and water conditions during each monitoring period (e.g., wind speed, percent cover, visibility, sea state);
- The number of marine mammals observed, by species, relative to the pile location and if pile extraction/installation was occurring at time of sighting;
- Age and sex class, if possible, of all marine mammals observed;
- PSO locations during marine mammal monitoring;
- Distances and bearings of each marine mammal observed to the pile being driven or removed for each sighting (if pile extraction/installation is occurring at time of sighting);
- Description of any marine mammal behavior patterns during observation, including direction of travel and estimated speed time spent within the Level A and Level B harassment zones while the source was active;
- Number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zone, and estimates of number of marine mammals taken, by species (a correction factor may be applied to total take numbers, as appropriate);
- In the event that the Level B ZOI is not fully visible, an adjustment will be made for animals that were not actually observed during pile extraction/installation but were assumed to have been inside of the Level B ZOI. These unobserved animals will be considered as “estimated” takes, as opposed to “observed” takes reported by the PSOs. For any regular or final reporting, the “estimated” and “observed” take will be added together to generate a total take for the reporting period
- Detailed information about any implementation of any mitigation triggered (e.g., shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any;
- Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals; and
- Submit all PSO datasheets and/or raw sighting data (in a separate file from the Final Report referenced immediately above).

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## 5 REFERENCES

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20 Replacement Project at Naval Base San Diego, California.
- 21 U.S. Department of the Navy (Navy). 2018. Dry Dock No. 1 Modifications and Mole Pier Floating Dry  
22 Dock Studies. Prepared by GHD COWI Joint Venture for Naval Facilities Engineering Command  
23 Southwest. August.
- 24 \_\_\_\_\_. 2023. Incidental Harassment Authorization Application for the Navy's Floating Dry Dock Project at  
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**Appendix A**  
**EXAMPLE MARINE SPECIES OBSERVATION RECORD FORM**

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**Marine Species Monitoring Log**

Date: \_\_\_\_\_ Observer(s): \_\_\_\_\_  
 General Weather: AM \_\_\_\_\_ Daily Start Time: \_\_\_\_\_  
 PM \_\_\_\_\_ Daily End Time: \_\_\_\_\_

Time	Species	# Indiv Water	# Indiv HO	Dist (m)	Bear (deg)	Sex	Age Class	Dir of Travel	1° Beh	2° Beh	2° Beh Time	Activity Type	Resight (Y/N)	Notes/Other Human Activity
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
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20														

**Species Abbreviations:**

CSL	CA sea lion	CSL DD	Dead CSL	OTH	Other Species	ULWH	Unknown Large Whale
CBD	Coastal Bottlenose Dolphin	PGW	Pacific Grey Whale	Mixed	Multiple Species	GST	Green Sea Turtle
PHS	Harbor Seal	CLT	CA Least Tern	UPIN	Unknown Pinniped		
PWS	Pacific White-sided Dolphin	CMD	Common Dolphin	UDOL	Unknown Dolphin		

Marine Species Monitoring Log

	Station	Buoy #	Obs Lat	Obs Long	Sky Cover	Vis.	BSS	Photo (Y/N)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
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19								
20								

Activity Type

<b>IPD</b>	Impact	<b>Post</b>	Post-con Monitoring
<b>VPD</b>	Vibratory	<b>OTH</b>	Other
<b>Pre</b>	Pre-con Monitoring		
<b>ND</b>	Non Driving Monitoring		

Sex

<b>F</b>	Female	<b>Mixed</b>	Mixed Group
<b>M</b>	Male	<b>U</b>	Unknown

Age Class

<b>P</b>	Pup	<b>A</b>	Adult
<b>C</b>	Calf	<b>U</b>	Unknown
<b>J</b>	Juvenile	<b>M</b>	Mixed
<b>SA</b>	Subadult	<b>N/A</b>	N/A

Primary Behavior

<b>DV</b>	Dive	<b>PP</b>	Porpoising
<b>O</b>	Other	<b>SW</b>	Swimming
<b>SF</b>	Suc Forage	<b>JH</b>	Jug Handling
<b>UF</b>	Unsuc Forage	<b>RF</b>	Rafting
<b>LG</b>	Logging	<b>EN</b>	Enter Water
<b>BR</b>	Bow Riding	<b>EX</b>	Exit Water
<b>TS</b>	Tail Slap	<b>HO</b>	Hauled Out
<b>SH</b>	Spyhop	<b>LO</b>	Look
<b>ML</b>	Milling		

Secondary Behavior

<b>AD</b>	Ab Change Dir	<b>BC</b>	Breach
<b>IB</b>	Inc Breath Rate	<b>FL</b>	Flush
<b>IS</b>	Inc Swim Rate		

Sky Cover

<b>C</b>	Clear	<b>F</b>	Fog
<b>PC</b>	Partly Cloudy	<b>HZ</b>	Hazy
<b>CD</b>	Cloudy	<b>LR</b>	Light Rain
<b>O</b>	Overcast	<b>HR</b>	Heavy Rain

Visibility

<b>BD</b>	bad (<0.5 km)	<b>GD</b>	good (10-20 km)
<b>PR</b>	poor (0.5-1.5 km)	<b>EX</b>	excellent (>20 km)
<b>MD</b>	moderate (1.5-10 km)		