

**MARINE PROTECTED SPECIES MONITORING PLAN FOR THE
OCEANSIDE HARBOR FISHING PIER AND NON-MOTORIZED VESSEL
LAUNCH IMPROVEMENT PROJECT**

Submitted to:
**Office of Protected Resources,
National Marine Fisheries Service,
National Oceanic and Atmospheric Administration**

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TABLE OF CONTENTS

1.0 INTRODUCTION 1

 1.1 Purpose of this Project 1

 1.2 Summary of Activities to be Monitored 3

 1.3 Monitoring Zones 5

 1.3.1 Level A and Level B Harassment Monitoring and Buffered Shutdown Zone 5

 1.3.2 Biological Monitoring Locations 7

 1.4 Mitigation Measures 11

2.0 MARINE PROTECTED SPECIES MONITORING PROTOCOLS 13

 2.1 Objectives 13

 2.2 Overview 13

 2.3 Biological Monitor Qualifications 14

 2.4 Marine Species Data Collection 14

 2.5 Monitoring Equipment 15

 2.5.1 Marine Species Observation Equipment 15

 2.6 Monitoring Methods 16

 2.6.1 Pre-Activity Monitoring 17

 2.6.2 During Activity Monitoring 17

 2.6.3 Post-Activity Monitoring 18

3.0 AGENCY NOTIFICATION FOR INJURED OR DEAD MARINE MAMMALS 19

4.0 REPORTING 20

5.0 REFERENCES 21

LIST OF FIGURES

Figure 1-1. Project Location 2

Figure 1-2. Level B ZOIs for Pile Removal Activities using Practical Spreading Loss 9

Figure 1-3. Level A and B ZOIs for Pile Installation Activities using Practical Spreading Loss 10

LIST OF TABLES

Table 1-1. Oceanside Fishing Pier Piles to be Removed and Installed During this IHA Period 4

Table 1-2. Pier 302 Number of Requested Level B Takes 4

Table 1-3. Summary of Species Likely to Occur in Project Area and Assigned Marine Mammal Hearing Groups 5

Table 1-4. Projected Distances to Underwater Level A Thresholds by Marine Mammal Hearing Group 6

Table 1-5. Distances to Level B Underwater Thresholds from Pile Removal and Installation 7

Table 1-6. Monitored Distances to Level A and B ZOIs 7

LIST OF APPENDICES

Appendix A. Example Marine Species Observation Record Form

Acronyms and Abbreviations

dB	decibel(s)
ft	foot/feet
IHA	Incidental Harassment Authorization
kHz	kilohertz
LF	Low-Frequency cetaceans
m	meter(s)
M&A	Merkel and Associates, Inc.
MF	Mid-Frequency cetaceans
MMPA	Marine Mammal Protection Act
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service
Plan	Marine Protected Species Monitoring Plan
POC	point of contact
Project	Oceanside Harbor Fishing Pier and Non-Motorized Vessel Launch Improvement Project
PW	Phocid pinnipeds
RMS	root mean square
SPL	sound pressure level
ZOI	zone(s) of influence

1.0 INTRODUCTION

1.1 PURPOSE OF THIS PROJECT

The purpose of this Marine Protected Species Monitoring Plan (Plan) is to provide protocols for marine mammal monitoring during pile removal and installation activities associated with Oceanside Harbor fishing pier and non-motorized vessel launch improvement project (Project) located in Oceanside Harbor in Oceanside, California. The Plan has been developed in accordance with the Incidental Harassment Authorization (IHA) issued on **Date TBD** by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) for the incidental take of six species:

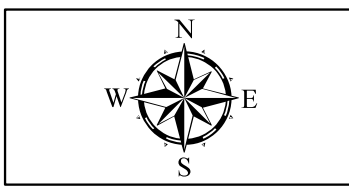
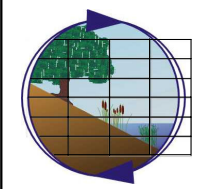
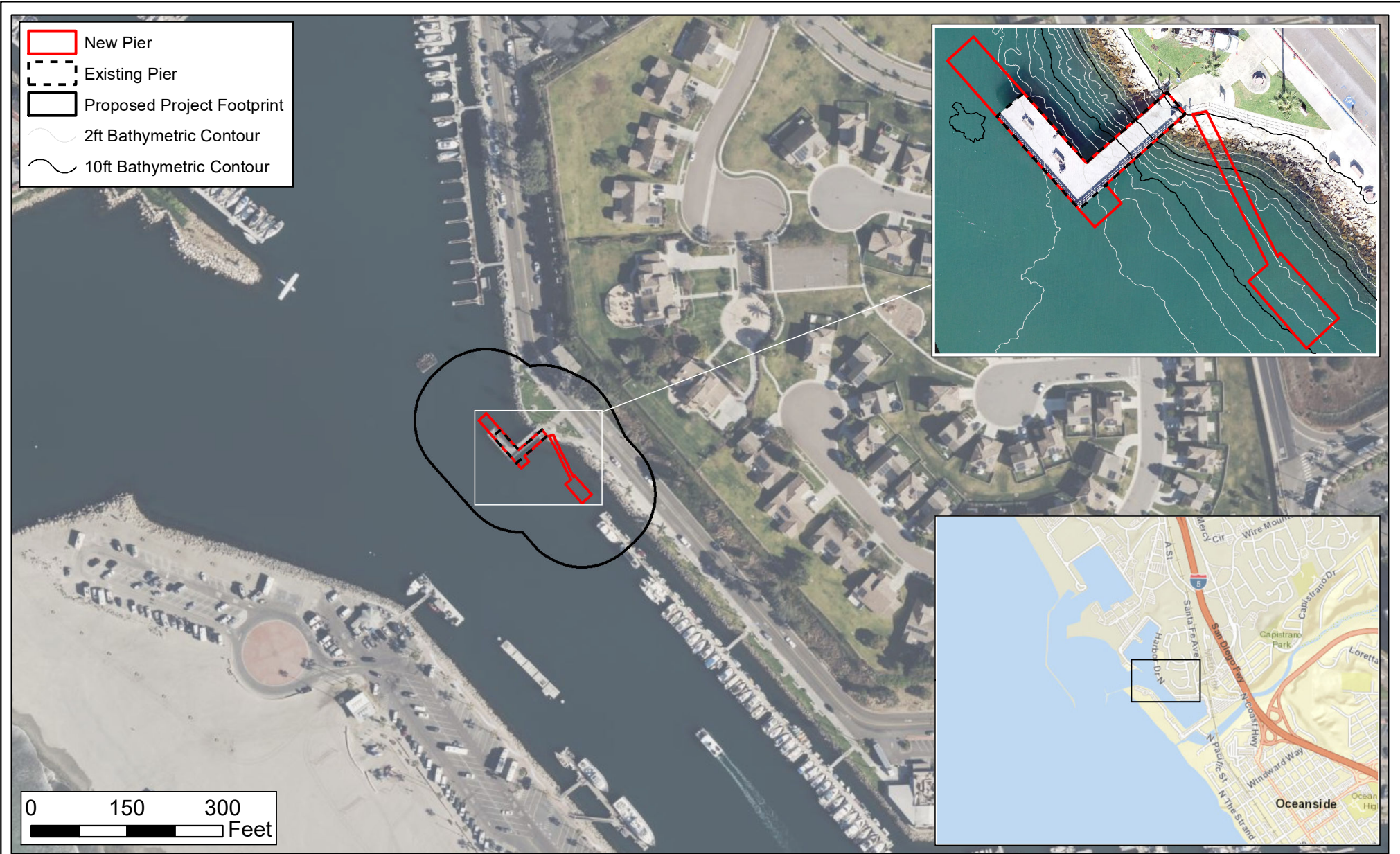
- California sea lion (*Zalophus californianus*);
- Harbor seal (*Phoca vitulina*);
- Northern elephant seal (*Mirounga angustirostris*);
- Bottlenose dolphin (*Tursiops truncatus*);
- Common dolphins including long- and short-beaked (*Delphinus capensis* and *D. delphis*); and
- Pacific white-sided dolphin (*Lagenorhynchus obliquidens*).

The fishing pier in Oceanside Harbor is near the center of the basin, close to the mouth. The Harbor itself is just south of and connected to the Del Mar Boat Basin, part of Marine Corps Base Camp Pendleton. The Project (Figure 1-1) involves demolishing and replacing the existing pier, with the addition of a floating vessel launch, including the removal of 4 piles and installation of up to 36 new piles.

Pile removal activities will include a vibratory pile extractor, with or without high-pressure water jetting. Pile installation activities will include both an impact hammer and vibratory hammer, with or without high-pressure water jetting. The actual equipment used to remove and install piles would be determined by the construction contractor. Pile removal and installation activities that have the potential to result in Marine Mammal Protection Act (MMPA) take by acoustic harassment include vibratory extraction, impact pile driving, and vibratory pile installation. See the IHA for a definition of MMPA take relative to this Project (Merkel and Associates, Inc. [M&A] 2023).

In the event that airborne noise levels reach Level B harassment acoustic threshold levels (100 decibels [dB], or 90 dB), based on the location of the Project and the small size of Oceanside Harbor, it is assumed that any animals that may be hauled out would at some point enter the water and be captured as Level B underwater take as they pass through the various monitoring zones [formerly zones of influence (ZOIs)]. Therefore, airborne noise will not be monitored for Level B incidental take and these activities are not discussed further in this Plan.

The monitoring set out in this plan serves two purposes. First, to minimize the potential for Level A (injury) harassment of marine mammals by implementing a shutdown of activities when a marine mammal is observed within any Project designated buffered Level A shutdown zone for Project-related in-water activity. With this mitigation measure in place, the proposed activities are not anticipated to result in any Level A harassment; therefore, no Level A take is being requested for this project. Second, to enumerate the numbers and species of marine mammals that occur within established Level A shutdown and Level B (behavioral disturbance) monitoring zones, and to document any differences in species, numbers, or behavioral effects associated with Project-related in-water activities.



Project Location
Oceanside Harbor Fishing Pier and Non-motorized Vessel Launch Improvement Project

Figure 1-1

The Plan is a requirement of the IHA issued under the MMPA. Once approved by NMFS, the Plan cannot be modified without NMFS approval. The IHA authorizes Level B take incidental to the specified in-water activities at the Oceanside Harbor Fishing Pier during the IHA time period (M&A 2023).

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

1.2 SUMMARY OF ACTIVITIES TO BE MONITORED

All relevant in-water pile removal and installation activities that have the potential to result in Level A or Level B harassment of marine mammals will be monitored, including pile removal via vibratory hammer with or without high-pressure water jetting to loosen and pull piles, and pile installation via vibratory hammer or impact hammer, with or without high-pressure water jetting.

In-water removal and installation activities under the IHA must comply with the following General Conditions:

- A copy of the IHA permit must be in the possession of the Contractor, its designees, and work crew personnel operating under the authority of the IHA;
- Only incidental take of marine mammals by Level B harassment, as specified in the IHA, is authorized; and
- Taking of species that exceeds the numbers and/or intensity indicated in the IHA, or any taking of species of marine mammal not covered by the document, is prohibited and may result in modification, suspension, or revocation of the IHA.

Marine mammal monitoring will be conducted before, during, and after all pile removal and installation activities, within the specific acoustic monitoring and shutdown zones for each activity, relative to the Level A and B acoustic thresholds. The proposed monitoring will document the number of marine mammal species exposed to underwater sound levels that would constitute “take” under the MMPA.

The proposed removal and installation activities at the Oceanside Fishing Pier are summarized in Table 1-1.

Table 1-1. Oceanside Fishing Pier Piles to be Removed and Installed During this IHA Period

Method	Pile Type	# of Piles	Piles/Day	Total Estimated Days
Pile Removal				
Vibratory Extraction ¹	16-inch Octagonal Concrete	4	4	1
Pile Installation				
Vibratory Hammer; Impact Hammer ^{1,2}	18-inch Round Steel	18	4	5
Vibratory Hammer	10-inch Round Steel	18	4 ³	n/a ³
Total in-water work days				6

¹ With or without high-pressure water jetting, with no Level A/B “take” analysis conducted on this method.

² Final 2 to 5 ft of hammering will use an impact hammer.

³ No additional days expected if guide piles are needed.

It is anticipated that pile removal and installation activities would occur over 6 days and that equipment and methods would be employed to remove or install piles based on the individual pile type and size, as seen in Table 1-1.

Detailed analysis of monitoring and shutdown zones and estimated numbers of species takes are contained in the IHA application (M&A 2023). There would be no Level A takes. The number of requested Level B takes are summarized in Table 1-2.

Table 1-2. Oceanside Fishing Pier Number of Requested Level B Takes

Species	Expected Average Individuals Per Day	Requested Level B Take
California sea lion ¹	100	600
Harbor seal ²	3	18
Bottlenose dolphin ³	12	72
Common dolphin (Long- and Short-beaked) ²	9	54
Pacific white-sided dolphin ²	1	6
Northern elephant seal ²	1	6
Total		756

¹ Reported high estimate of sea lions observed on pinniped float by Oceanside Harbor District staff.

² Average daily counts based on observations during Year 2 of Navy Base Point Loma’s Fuel Pier Replacement Project Monitoring, rounded up to nearest individual count (NAVFAC SW 2015).

³ Average daily counts based on observations during Oceanside Harbor Dredging 2022 Project Monitoring, rounded up to nearest individual count (M&A 2022).

1.3 MONITORING ZONES

The various Project-specific monitoring and shut down zones, as well as representative Biological Monitor monitoring locations, are described in the subsections below.

Following NMFS Technical Guidance, acoustic thresholds and weighting factor adjustments applicable to the relevant marine mammal groups expected to occur in Oceanside Harbor were used (Table 1-3). Distances to marine mammal Level A acoustic thresholds were calculated using NMFS Technical Guidance (NMFS 2018), NMFS User Spreadsheet (NMFS 2020), and the practical spreading loss model.

Table 1-3. Summary of Species Likely to Occur in Project Area and Assigned Marine Mammal Hearing Groups

Marine Mammal Hearing Group	Species
Otariid pinnipeds (OW)	California sea lion (<i>Zalophus californianus</i>)
Phocid pinnipeds (PW)	Harbor seal (<i>Phoca vitulina</i>)
	Northern elephant seal (<i>Mirounga angustirostris</i>)
Mid-frequency cetaceans (MF)	Bottlenose dolphin (<i>Tursiops truncatus</i>)
	Common dolphin (<i>Delphinus capensis</i> and <i>D. delphis</i>)
	Pacific white-sided dolphin (<i>Lagenorhynchus obliquidens</i>)

Weighting Factor Adjustment (2.5 kilohertz [kHz] for non-impulsive sound and 2.0 kHz for impulsive sound) and representative frequency ranges were used for calculations using the NMFS User Spreadsheets. For all in-water pile removal and installation activities, the distances to PTS onset (Level A) are modeled to be less than 11.7 meters (m, 38.4 feet [ft]) from the source pile, except for the distance calculated for harbor seals and northern elephant seals (i.e. PW species) during impact pile driving of 18-inch steel piles (see Table 1-4). In order to ensure no Level A take of PW species during impact pile driving of 18-inch round steel piles, the calculated 176.7 m (579.7 ft) ZOI will be buffered to 180 m (591 ft; Tables 1.4 and 1.6). Calculated distances to in-water marine mammal disturbance (Level B) ZOIs are based on the practical spreading loss model.

1.3.1 Level A and Level B Harassment Monitoring and Buffered Shutdown Zone

Maximum potential distances to Level A and Level B acoustic harassment associated with the proposed pile removal and installation activities at the Oceanside Harbor Fishing Pier are provided in Tables 1-4 and 1-5, and Table 1-6 summarizes all Level A shutdown and B monitoring zones to be monitored during construction. Distances to Project-specific Level A and B zones, the 15 m (50 ft) buffered shutdown zone, and proposed Biological Monitoring locations are shown in Figures 1-2 and 1-3, depicting the extent of the monitoring areas associated with noise propagation specific to each of the removal and installation methods.

When Level A ZOIs are small, a 10 m (33 ft) “Physical Interaction Shutdown Zone” is generally used to reduce the risk of physical interaction between marine mammals and in-water equipment. This shutdown zone has been further buffered to 15 m (50 ft) for the Project due to Project-specific Level A shutdown zones all being calculated below 11.7 m (38.4 ft), except for the zone associated with impact pile driving of 18-inch steel piles. One Level A shutdown zone has been created for PW species during impact pile driving activities of 18-inch steel piles. This would further reduce the likelihood of Level A harassment (minor injury due to the onset of a permanent threshold shift [PTS]), which could only occur if an animal were to remain within any buffered Level A shutdown zone for a prolonged period.

Table 1-4. Projected Distances to Underwater Level A Thresholds by Marine Mammal Hearing Group

Method	Pile Type and Size	Source Value (dB RMS @ 10 m for vibratory activities, and SEL for impact driving)	Duration (hours/day)	Projected Distances to Level A Thresholds (m [ft])		
				MF	PW	OW
Pile Removal Activity						
Vibratory Extraction	16-inch Octagonal Concrete Piles	163	1.67	1.2 (3.9)	7.9 (25.9)	0.6 (2.0)
Pile Installation Activity						
Impact Pile Driving	18-inch Round Steel	175	0.13	11.7(38.4)	176.7 (579.7)	12.9 (42.3)
Vibratory Hammer	18-inch Round Steel	158	1.67	0.5 (1.6)	3.7 (12.1)	0.3 (1.0)
Vibratory Hammer	10-inch Round Steel	155	0.67	0.2 (0.7)	1.3 (4.3)	0.1 (0.3)

Note: Bolded values are greater than the buffered shutdown zone of 15 m (50 ft) and will be monitored as shutdown zones to ensure no Level A takes of harbor seals or northern elephant seals occur during impact pile driving of 18-inch round steel piles. Abbreviations: RMS = root mean square, dB re 1 μ Pa = decibels referenced to a pressure of 1 microPascal, m = meters, ft = feet, MF = mid-frequency cetaceans, PW = phocid pinnipeds, OW = otariid pinnipeds

Table 1-5. Distances to Level B Underwater Thresholds from Pile Removal and Installation

Method	Pile Type and Size	Source Value (dB RMS @ 10m)	Projected Distance to Level B Thresholds ^{1,2} m (ft)
Pile Removal Activities			
Vibratory Extraction	16-inch Octagonal Concrete Piles	163	7,356 (24,135)
Pile Installation Activities			
Impact Pile Driving	18-inch Round Steel	175	100 (328)
Vibratory Hammer	18-inch Round Steel	158	3,415 (11,203)
Vibratory Hammer	10-inch Round Steel	155	2,154 (7,068)

¹ The Level B ZOIs for continuous pile removal and installation activities are based on the distance for noise to decay to 120 dB re 1 μ Pa, while 160 dB was used for impulsive sound.

² Assumes Practical Spreading Loss

Abbreviations: dB re 1 μ Pa = decibels referenced to a pressure of 1 microPascal, m = meters, ft = feet, RMS = root mean square

Table 1-6. Monitored Distances to Level A and B ZOIs

Method	Pile Type and Size	Source Value (dB RMS @ 10m)	Duration ² (hours/day)	Monitored Level A ZOIs			Monitored Level B ZOIs [m (ft)]
				MF	PW	OW	
Pile Removal Activity							
Vibratory Extraction	16-inch Octagonal Concrete Piles	163	1.67	15 (50)	15 (50)	15 (50)	7,356 (24,135)
Pile Installation Activity							
Impact Pile Driving	18-inch Round Steel	185 (175) ³	0.13	15 (50)	180 ¹ (591)	15 (50)	100 (328)
Vibratory Hammer	18-inch Round Steel	158	1.67	15 (50)	15 (50)	15 (50)	3,415 (11,203)
Vibratory Hammer	10-inch Round Steel	155	0.67	15 (50)	15 (50)	15 (50)	2,154 (7,068)

¹ Level A ZOI buffered from 24176.7m to 180 m.

² Duration of total hours for all piles in a single day.

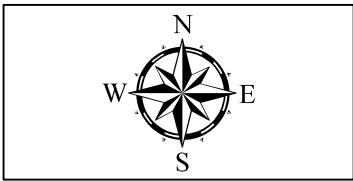
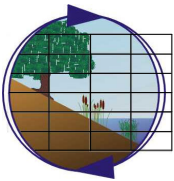
³ For impact pile driving, the single strike SEL was used to calculate distances to Level A thresholds.

Abbreviations: dB re 1 μ Pa = decibels referenced to a pressure of 1 microPascal, m = meters, ft = feet, RMS = root mean square

1.3.2 Biological Monitoring Locations

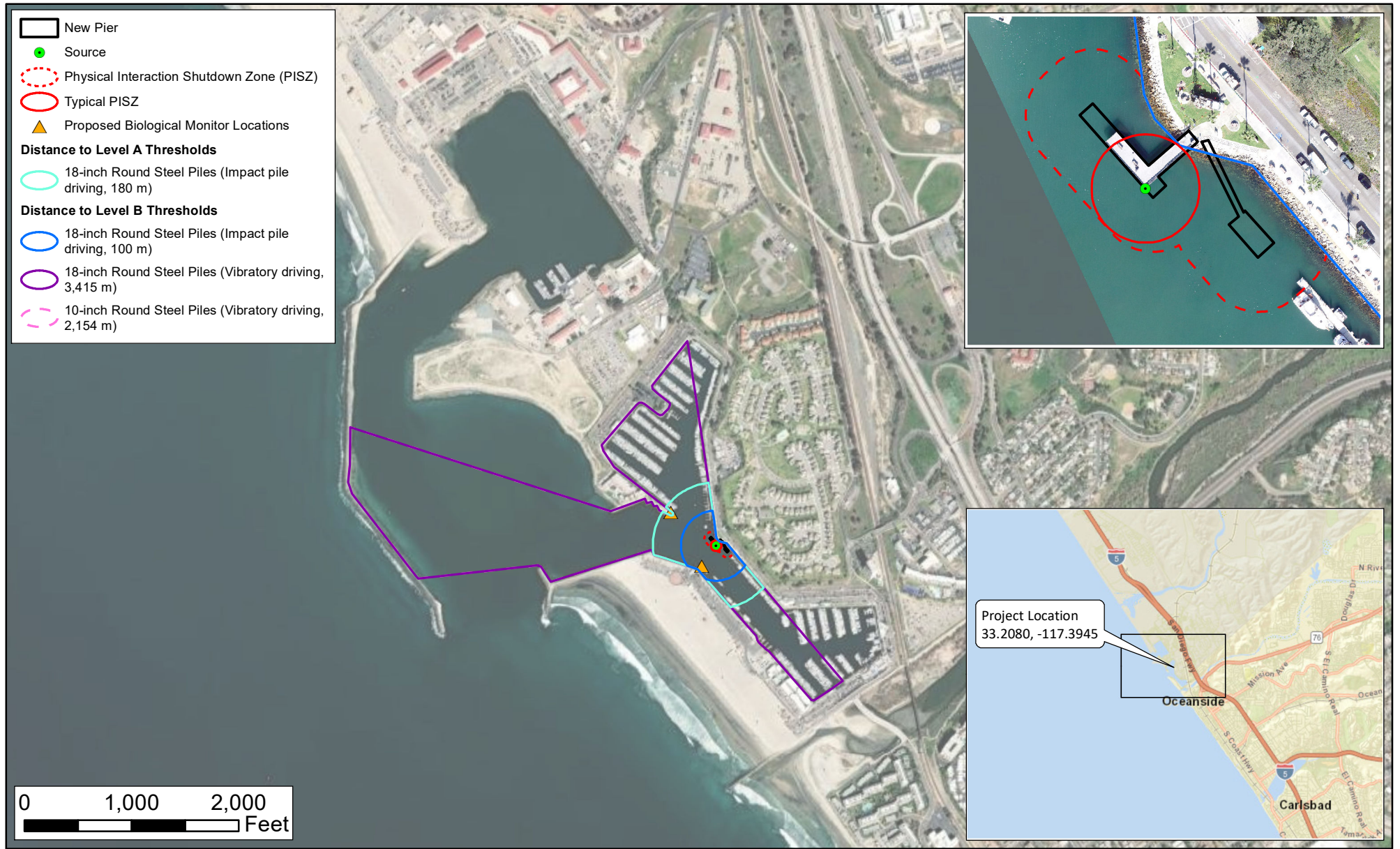
In order to effectively monitor the Level A and Level B shutdown and monitoring zones, two Biological Monitors will be positioned at the best practicable vantage point(s) taking into consideration safety and space limitations, such as one on the dock near the Harbor Pelican Deli Mart, providing a good

overview of the full construction area, and one near the Oceanside Marina Suites on a rock groin extending into the harbor (see Figures 1-2 and 1-3). The Biological Monitors shall serve as protected species observers (PSOs). The Lead PSO will be positioned with a clear view of all Level A buffered shutdown zones and will be responsible for halting in-water activities, as required. Data will be collected on any marine protected species observed within the monitoring zones in accordance with monitoring and data collection procedures (Section 2.0). Biological Monitors will also provide additional monitoring data for all animals observed within the visual range of the Project area, regardless of the in-water activity being conducted.



**Level B Harassment Zone for the Oceanside Fishing Pier
Pile Removal Activities using Practical Spreading Loss**
Oceanside Harbor Fishing Pier and Non-motorized Vessel Launch Improvement Project

Figure 1-2



Level A Shutdown and Level B Harassment Zones for the Oceanside Fishing Pier Pile Installation Activities using Practical Spreading Loss
 Oceanside Harbor Fishing Pier and Non-motorized Vessel Launch Improvement Project

Figure 1-3

1.4 MITIGATION MEASURES

The following mitigation measures shall be implemented during pile removal and installation activities to avoid and minimize marine mammal exposure to Level A injury and to reduce to the greatest extent practicable exposure to Level B noise levels. Any mitigation measures identified in the IHA, beyond those identified below, will also be adhered to (M&A 2023). The contractor is responsible for complying with all the mitigation measures listed below, whereas onsite Biological Monitors will monitor the contractor's performance and require corrective action or stop work, if necessary, to ensure the requirements are met.

1. Time Restriction:

- In-water pile removal and installation activities will only be conducted when sufficient light is available for visual observations (generally 45 minutes after sunrise and up to 45 minutes before sunset).

2. General Vessel & Machinery Stoppage

- Should a marine mammal come within 15 m (50 ft) during any in-water work using heavy machinery other than pile removal or installation (e.g., vessel movement) the activity must cease operations and vessel speeds reduced to the minimum level required to maintain steerage and safe working conditions.

3. Pre-Construction Briefing

- Prior to the start of all in-water removal and installation activities, a training will be conducted for construction supervisors, crews, monitoring teams to explain responsibilities, communication procedures, marine mammal protocols, and operational procedures. Training will also be provided for any new personnel who join the Project.

4. Soft Start Procedures

- Prior to the start of impact pile driving each day, the contractor will implement soft start procedures for impact pile driving. Soft start requires contractors to provide an initial set of strikes at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy strike sets followed by thirty seconds between each set. A soft start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of thirty minutes or longer.

5. Marine Protected Species Visual Monitoring

- Monitoring will be conducted by qualified protected species observers. All observers would be trained in marine mammal identification and behaviors and have experience conducting marine mammal monitoring or surveys. Trained observers will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures, when applicable, by notifying the construction operator of a need for a shutdown.
- Two Biological Monitors will be deployed with a clear view of all Level A buffered shutdown zones and Level B monitoring zones. See Figures 1-2 and 1-3 for proposed monitoring locations.
- Prior to the start of pile removal or installation, all buffered Level A shutdown zones will be monitored for 30 minutes to ensure that it is clear of marine protected species. During vibratory extraction, or the use of vibratory hammer or impact hammer, activities will only commence once observers have declared the applicable shutdown zones clear of marine

protected species. Animals will be allowed to remain in the Level B monitoring zone and their behavior will be monitored and documented.

- Monitoring will be conducted for any buffered Level A shutdown zone, and within the Level B monitoring zones, before, during, and after pile removal and installation activities. Monitoring will take place from at least 30 minutes prior to initiation through 30 minutes post-completion of pile removal or installation activities.
- Of the activities identified in Table 1-4, distance to a Level A threshold exceeds the 15 m (50 ft) buffered shutdown zone for the impact pile driving of 18-inch steel piles. A buffered Level A shutdown zone for this activity will be implemented to reduce the likelihood of exposing a PW to potentially harmful noise. If any PW is seen within the buffered monitoring zone, the activity would be stopped until the individual(s) has left the zone of its own volition, or not been sighted for 15 minutes. All other Level A shutdown zones are smaller than the 15 m (50 ft) buffered shutdown zone and all work would be stopped prior to an animal being exposed to potentially harmful sound.
- If a marine mammal is observed entering the Level B monitoring zone, behaviors would be documented to assess for any potential behavioral changes due to exposure to project-related noise. Work would continue without cessation, unless the animal enters any buffered shutdown zone, at which point pile driving or extraction shall be halted.
- If an activity is halted, a determination that the shutdown zone is clear must be made during a period of good visibility (i.e., the entire shutdown zone and surrounding waters must be visible to the naked eye).
- In the unlikely event that environmental conditions, such as heavy fog, prevent the visual detection of marine mammals within the any buffered shutdown zone, in-water pile removal and installation activities will not be initiated. If in water activities have been initiated, and conditions deteriorate so that the applicable buffered shutdown zone is not completely visible, then activities will be delayed until the full zone is visible.
- In the event that the Level B monitoring is not fully visible, an adjustment will be made for animals that were not actually observed during pile removal or installation but were assumed to have been inside of the Level B monitoring zone.
- If a marine mammal species not covered in the IHA enters the Level B harassment zone, all pile removal and installation activities shall be halted until the animal(s) has been observed to have left the Level B monitoring zone or has not been observed for at least one hour. Pile removal or installation will be allowed to proceed if the above measures are fulfilled for non-IHA species.
- If the take of a marine mammal species approaches the take limits specified in the IHA, NMFS will be notified, and appropriate steps will be discussed.

2.0 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 marine protected species. Monitoring will be conducted at all times during in-water pile removal and installation activities to assess marine mammal use patterns and behavioral responses relative to Level A and Level B monitoring areas. While monitoring for marine mammals, PSOs will concurrently monitor for green sea turtles (*Chelonia mydas*) applying the same protocols. While not expected within the project area, should a turtle be detected, the same shutdown distances applied to California sea lion will be applied for turtles.

2.2 OVERVIEW

The visual monitoring component of this Plan takes into consideration the logistical, environmental, and safety requirements for working in the Project area. For the in-water pile removal and installation activities, distances to regulatory thresholds (see Section 1.0, Tables 1-4 and 1-5) were determined based on acoustic data for similar pile types and sizes (Denes et al. 2016; NAVFAC SW 2022; Caltrans 2020) using the latest acoustic threshold guidance from NMFS Technical Guidance (NMFS 2018) and NMFS User Spreadsheet (NMFS 2020). The distances to the monitoring area boundaries were used to determine monitoring locations identified in this Plan.

During all pile removal and installation activities, regardless of predicted sound pressure levels (SPLs), a 15 m (50 ft) buffered shutdown one will be applied. The shutdown zone also will avoid and minimize the potential for Level A acoustic harassment since all Level A shutdown zone distances are less than 11.7 m (38.4 ft), with the exception for the Level A shutdown zones set for impact pile driving of steel piles (see Section 1.3). A buffered Project Level A shutdown zone has been established for PW species during impact pile driving of 18-inch steel piles at 180 m (591 ft). If any animal enters any level A shutdown zones during in-water activity, pile removal or installation would be stopped until the individual(s) has left the zone of its own volition, or not been sighted for 15 minutes after its last observed time.

The Level A/B monitoring zones will be monitored throughout the time required to remove or install a pile. If a marine mammal is observed entering the Level B harassment zone, an exposure would be recorded and behaviors documented. Work would continue without cessation, unless the animal approaches or enters any buffered Level A shutdown zone, at which point pile removal or installation activities will be halted.

If a marine mammal species not covered in the IHA approaches the applicable Level B harassment zone, all pile removal or installation activities shall be halted until the animal(s) has been observed to have left the area or has not been observed for at least one hour from its last observation time.

If the take of a marine mammal species approaches the take limits specified in the IHA, NMFS will be notified, and appropriate steps will be discussed.

During any monitored activity, the Biological Monitor with the clearest view of the buffered shutdown zones will be designated as the Lead PSO and will initiate shutdown procedures, if warranted, by notifying the construction crew via either verbal or visual communication procedures (e.g., signal flag). Other Biological Monitors can initiate shutdown procedures by calling the Lead PSO who will

then stop the monitored activities by notifying the construction crew. However, if the Lead PSO does not hear the call for a shutdown, then the other Biological Monitor can initiate a shutdown of the activity.

2.3 BIOLOGICAL MONITOR QUALIFICATIONS

The Biological Monitors must be independent observers (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 construction and demolition activities. Additional qualifications and protocols of Biological Monitors include the following:

- Will have the ability to conduct field observations and collect data according to the assigned protocol.
- Where a team of two or more Biological Monitors are required, one will be designated as Lead PSO and will coordinate monitoring efforts. This Lead PSO will have prior experience working as an observer.
- Will have experience or training in the field identification of marine mammals, including the identification of behaviors.
- Will have a minimum of a bachelor's degree in biological science, wildlife management, mammalogy or related fields.
- Will have visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface, with the ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target.
- Will have sufficient training, orientation, or experience with pile removal and installation operations to provide for personal safety during observations.
- Will have writing skills sufficient to prepare a report of observations including dates and times when monitoring was conducted; the number and species of marine mammals observed; observed marine mammal behavior during monitoring relative to Project-related in-water activities; and dates and times when in-water activities were suspended to avoid potential incidental injury from sound or physical interaction with operating equipment.
- Ability to communicate orally, by radio or in person, with Project personnel to provide real-time information on marine mammals observed in the area, as necessary.

2.4 MARINE SPECIES DATA COLLECTION

At a minimum, the following information shall be collected by Biological Monitors:

- Date and time that pile installation or removal begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (e.g., wind, temperature, percent cloud cover, and visibility);
- Tide stage and sea state (The Beaufort Sea State Scale will be used to determine sea state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Marine mammal behavior patterns observed, including bearing and direction of travel, and if possible, the correlation to SPLs;
- Distance from pile removal or installation activities to marine mammals and distance from the marine mammal to the observation point;

- Locations of all Biological Monitors; and
- Other human activities in the area.

The required fields will be incorporated into an electronic tablet form or hardcopy datasheets that will be used by the Biological Monitors (example provided in Appendix A). Data collection forms shall be submitted to the Project point of contact (POC) for review within a mutually agreeable timeframe prior to the start of activities.

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

In addition, the Biological Monitors will document any occurrences of green sea turtles within the designated monitoring zones. Sighting information for green sea turtles will include all data that was collected for marine mammals (e.g., distance, behavior, and number of individuals).

2.5 MONITORING EQUIPMENT

Trained Biological Monitors will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures, when applicable, by notifying the equipment operator of a need for shutdown of construction. Each monitor shall be adequately equipped to fulfill the obligations of siting and identifying protected species and marine mammals at a distances, estimating position of animals relative to monitoring zones and construction, recording information, and reporting data in a timely manner to the contractor in order to take appropriate actions.

2.5.1 Marine Species Observation Equipment

The following equipment would be used while conducting marine species monitoring:

- Hearing protection for all personnel working near heavy construction equipment;
- Portable marine radios for the observers to communicate with the Lead PSO, construction contractor, and other observers;
- Cellular phones (one per observing location), and the contact information for the other observers, and Lead PSO;
- Flags (one green, one red per observing location) as back-up for radio communication;
- Daily tide tables for the Project area within Oceanside Harbor;
- Watch;
- Binoculars with built-in compass (quality of 7x50 or better) and spotting scope;
- Laser rangefinder;
- Copies of this Plan, IHA permit, and/or other relevant permit requirement specifications in sealed transparent plastic cover;
- Datasheets and/or electronic tablets to record field monitoring data electronically or on waterproof paper;
- Marine mammal identification guides on waterproof paper;
- Personal protection equipment appropriate to the observer’s operational environment.

2.6 MONITORING METHODS

The Project point of contact (POC) will conduct briefings between construction supervisors, crews, and the Biological Monitoring team prior to the start of all pile removal and installation activities, and when new personnel join the Project. These briefings will explain responsibilities, communication procedures, visual monitoring protocols, and operational procedures.

The Biological Monitors will collect marine mammal sightings data, including behaviors, for the pre-, during, and post-pile removal and installation periods, and log all observations, regardless of proximity to the Level A or Level B ZOIs, to eliminate potential for bias. An assessment of take will occur only if the animal or group enters the ZOIs during project-related activities that may generate noise levels that meet or exceed the values identified in the IHA (M&A 2023). The efficacy of visual detection depends on several factors including the Biological Monitors ability to detect the animal, the environmental conditions (visibility and sea state), and monitoring platforms.

Based on NMFS requirements, below is a summary of monitoring procedures discussed in this Plan:

- Monitoring will be conducted during daylight hours. If lighting conditions do not allow Biological Monitors to observe the shutdown zones effectively, in-water construction or demolition activities will not be allowed to start (or continue) until conditions improve.
- For each type of pile removal or installation activity discussed above, Biological Monitors will be placed at the best vantage point(s) practicable.
- Two Biological Monitors will be deployed at locations with a clear view of the shutdown zones and level B ZOIs (e.g., one on the dock near the Harbor Pelican Deli Mart, providing a good overview of the full construction area, and one near the Oceanside Marina Suites on a rock groin extending into the harbor). The actual monitoring location(s) will be based on providing the greatest visibility of the monitoring zone specific to each activity.
- Biological Monitors will be in radio communication with each other to enhance tracking of marine mammals that may be moving through the area and to minimize duplicate observation records of the same animal by different Biological Monitors (i.e., a re-sighting);
- During all monitoring activities, at least one Biological Monitor will be stationed with clear view of the physical interaction and Level A buffered shutdown zones and will be responsible for the collection of pile removal and installation start and stop times, identification of all marine protected species in the vicinity of the pile being installed or removed, and notifying the contractor if in water activities must be delayed or stopped due to the presence of a marine protected species within the shutdown zone(s).
- Monitoring will be conducted before, during, and after pile removal and installation activities.
- During all observation periods, the Biological Monitors will use binoculars and/or the naked eye to search continuously for marine protected species.
- A 15 m (50 ft) shutdown zone will be established around all in-water pile removal and installation activities to avoid the potential for physical or Level A acoustic injury of marine protected species.
- An additional 180 m (591 ft) shutdown zone for PW species during impact pile driving of 18-inch steel piles will be established to avoid the potential for physical or Level A acoustic injury of harbor seals and northern elephant seals, respectively.

- If a marine protected species enters any of the shutdown zones, all removal and installation activities at that location shall be halted. The animal(s) must be allowed to remain in the shutdown zone (i.e., must leave of their own volition) and their behavior must be monitored and documented. Work will be allowed to restart once the animal has been observed either leaving the shutdown area, or 15 minutes has elapsed since the last observation without re-detection of the animal.
- Results of all marine protected species observations during pre-activity, during activity, and post-activity monitoring will be recorded on an electronic tablet form or hardcopy datasheets.
- If an injured, sick, or dead marine mammal is observed, procedures outlined in Section 3.0 will be followed.

Pre-, during, and post-pile removal and installation visual survey protocols are further described below.

2.6.1 Pre-Activity Monitoring

The following survey protocols will be implemented prior to the start of in-water pile removal and installation activities:

- Visual surveys will occur for at least 30 minutes prior to the start of pile removal and installation activities.
- If a marine mammal is present within any Project-specific shutdown zone, in-water activities will be delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone, or 15 minutes has elapsed since the last observation time without a re-detection of the animal.
- The shutdown zone(s) may only be declared clear, and in-water activities started, when the entire shutdown zone is visible (i.e., when not obscured by a poor light, rain, fog, etc.). If any shutdown zone is obscured by fog or poor lighting conditions, activity at the location will not be initiated until the shutdown zone is visible.
- If marine mammals are present within the Level B Behavioral Harassment Monitoring Zone, in-water activities will not need to be delayed.

2.6.2 During Activity Monitoring

The Monitoring Zones will be monitored throughout pile driving and removal. Distances and activity monitoring protocols for these zones are described below:

- If a marine protected species approaches, or appears to be approaching, any buffered Level A shutdown zone, the Biological Monitor who first observed the animal will alert the Lead PSO who will notify the construction crew of the animal's status; in-water activities will be allowed to continue while the animal remains outside the buffered shutdown zone.
- If the marine protected species enters any buffered Level A shutdown zone, a shutdown will be called by the Lead PSO as the animal enters the zone, and all in-water activities will be stopped and the animal(s) will be continually tracked. Once a shutdown has been initiated, all in-water activities that generate potentially impactful noise will be delayed until the animal has voluntarily left the zone and has been visually confirmed beyond the boundary, or 15 minutes have passed without re-detection of the animal (i.e., the zone is deemed clear of

marine protected species). The Lead PSO will inform the construction contractor that activities can re-commence.

- If shutdown and/or clearance procedures would result in an imminent concern for human safety, then the activity will be allowed to continue until the safety concern is addressed. During that timeframe the animal will be continuously monitored, and the Project POC will be notified and consulted prior to re-initiation of Project-related activities.
- If a marine mammal species not covered in this IHA enters any Level B harassment zone, all pile removal activities shall be halted until the animal(s) has been observed to have left the Level B zone or has not been observed for at least one hour.
- If a marine mammal is observed entering the Level B monitoring zones (see Table 1-5, Figures 1-2 and 1-3), the pile segment being worked on will be completed without cessation, unless the animal enters or approaches any buffered Level A shutdown zone. Regardless of location within the Level B monitoring zone, an initial behavior and the location of the animal(s) will be logged. Behaviors will be continually logged until the animal is either passed off to another Biological Monitor, the animal is no longer visible, or it has left the Level B monitoring zone.
- For instances where visual obstructions prevent Biological Monitors from observing the full monitoring zone, based on the location, shape, and size of the Project area, it is assumed that any animal obscured from view will be seen by the Biological Monitor coming or leaving the area, and will not be missed in the take analysis.

2.6.3 Post-Activity Monitoring

Monitoring of all zones will continue for 30 minutes following completion of removal and installation activities. These surveys will record all marine mammal observations following the same procedures as identified for the pre-construction monitoring period and will focus on observing and reporting unusual or abnormal behaviors.

3.0 AGENCY NOTIFICATION FOR INJURED OR DEAD MARINE MAMMALS

In the unanticipated event that the construction or demolition activities clearly cause the take of a marine mammal in a prohibited manner, such as an injury, serious injury, or mortality, the Lead PSO will stop all active pile driving or extraction and immediately notify the Project POC. The Project POC will immediately report the incident to the following agencies:

- NMFS Office of Protected Resources (OPR): 301-427-8401.
- West Coast Region Marine Mammal Stranding Network(s);
 - NMFS Stranding Coordinator: 562-506-4315
 - 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;
- Description of marine mammal observations in the 24 hours preceding the incident;
- 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 directly related to the Project, the Lead PSO will stop or redirect all in-water work and report to the Project POC. The Project POC will report the incident to 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. NMFS will work with the Project POC 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 cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition), the Lead PSO will report to the Project POC. Within 24 hours, the Project POC will report the incident to 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, activities may continue while the circumstances of the incident are under review. NMFS will work with the Project POC to determine whether modification to 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 Project POC, who will report the animal(s) to the appropriate West Coast Region Marine Mammal Network Stranding Coordinators, as noted above, within 24 hours of the discovery. The Project POC will not be required to contact the NMFS OPR for these cases. The Biological Monitors will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to the Project POC under such a case. At no time should the Biological Monitor handle, or attempt to handle, a dead marine mammal.

4.0 REPORTING

A draft report will be submitted to NMFS within 90 calendar days of the completion of marine mammal monitoring. The results will be summarized in text supported by tables and graphics, and include summary metrics as applicable. A final report will be prepared and re-submitted within 30 days following receipt of comments on the draft report from the NMFS.

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

- Beginning and end dates and times 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.
- 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 driving or removal was occurring at time of sighting.
- Age and sex class, if possible, of all marine mammals observed.
- Biological Monitor locations during marine mammal monitoring.
- Distances of each marine mammal observed to the pile being driven or removed for each sighting, if pile driving or removal is occurring at the time of sighting.
- Description of any marine mammal behavior patterns during observation, including direction of travel and estimated speed, and time spent within the Level A and Level B harassment zones while the source was active.
- Number of individuals of each species by month detected within the monitoring zone.
- Detailed information about 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.
- Submit all Biological Monitors datasheets and/or raw sighting data in a separate file from the Final Report.

5.0 REFERENCES

- Caltrans. 2020. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Available online at: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/hydroacoustic-manual.pdf>
- Denes, S. L., G.J. Warner, M.E. Austin, and A.O. MacGillivray. 2016. Hydroacoustic Pile Driving Noise Study – Comprehensive Report. Document 001285, Version 2.0. Technical report by JASCO Applied Sciences for Alaska Department of Transportation & Public Facilities.
- Illingworth & Rodkin, Inc. 2007. Compendium of Pile Driving Sound Data. Prepared for Caltrans. 129 pp.
- National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS). 2018. Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.1): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Department of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-59, 167 pp.
- _____. 2020. Companion User Spreadsheet to: Technical Guidance for Assessing the Effects of Anthropogenic Noise on Marine Mammal Hearing: Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts (Version 2.0). U.S. Department of Commerce, NOAA. NOAA Technical Memorandum NMFS-OPR-59, 167 pp.
- Merkel and Associates, Inc. (M&A). 2023. Incidental Harassment Authorization Application for Oceanside Harbor Fishing Pier and Non-motorized Vessel Launch Improvement Project in Oceanside, California. Submitted to Office of Protected Resources, National Marine Fisheries Service, National Oceanic and Atmospheric Administration.

APPENDIX A: EXAMPLE MARINE SPECIES OBSERVATION RECORD FORM

Start Time/Stop Time = Times of marine mammal observations.

MM=Marine Mammal (specify species), **O**=Other(describe).

#: number of MM observed in project area.

Behavior & Location: behavior (swimming, diving, foraging (successful or not), milling, porpoising, logging, etc.) and location (in relation to work).

Sea State: Swell height and/or Beaufort Scale at time of siting.

Sensitive Species Behaviors: Note if MM or GST are reacting or modifying their behavior due to turbidity plumes or pile removal/driving activities.

START TIME	STOP TIME	MM	#	MM LOCATION AND DIRECTION (LAT/LONG)	MM BEHAVIOR IN RELATION TO PILE REMOVAL/DRIVING	SEA STATE	WORK HALTED? (IF YES STATE STOP AND RESTART TIMES)	NOTES (INCLUDING TYPE OF WORK OCCURRING AT TIME OF OBSERVATION)