

# **MARINE PROTECTED SPECIES MONITORING PLAN FOR THE PIER 302 REPLACEMENT PROJECT AT NAVAL INFORMATION WARFARE CENTER PACIFIC BAYSIDE COMPLEX ON NAVAL BASE POINT LOMA**

***Submitted to:***

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

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**Acronyms and Abbreviations**

μPa	microPascal
dB	decibel(s)
ESA	Endangered Species Act
ft	foot/feet
GPS	Global Positioning System
IHA	Incidental Harassment Authorization
kHz	kilohertz
km	kilometer
km <sup>2</sup>	square kilometer
LF	Low-Frequency cetaceans
m	meter(s)
MF	Mid-Frequency cetaceans
MLLW	mean lower low water
MMPA	Marine Mammal Protection Act
Navy	U.S. Department of the Navy
NBPL	Naval Base Point Loma
NIWC	Navy Information Warfare Center
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service
OW	Otariid pinnipeds
PAM	Passive Acoustic Monitoring
Plan	Marine Mammal Monitoring Plan
Project	Pier 302 Replacement Project
PSO	Protected Species Observer
PW	Phocid pinnipeds
re 1 μPa	referenced to one microPascal
RMS	root mean square
SEL	sound exposure level
SPL	sound pressure level
ZOI	zone 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 Pier 302 replacement project (Project) at the Navy Information Warfare Center (NIWC) Pacific Bayside Complex on Naval Base Point Loma (NBPL) in San Diego, 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*)
- Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)

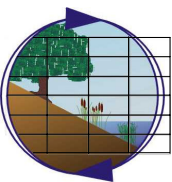
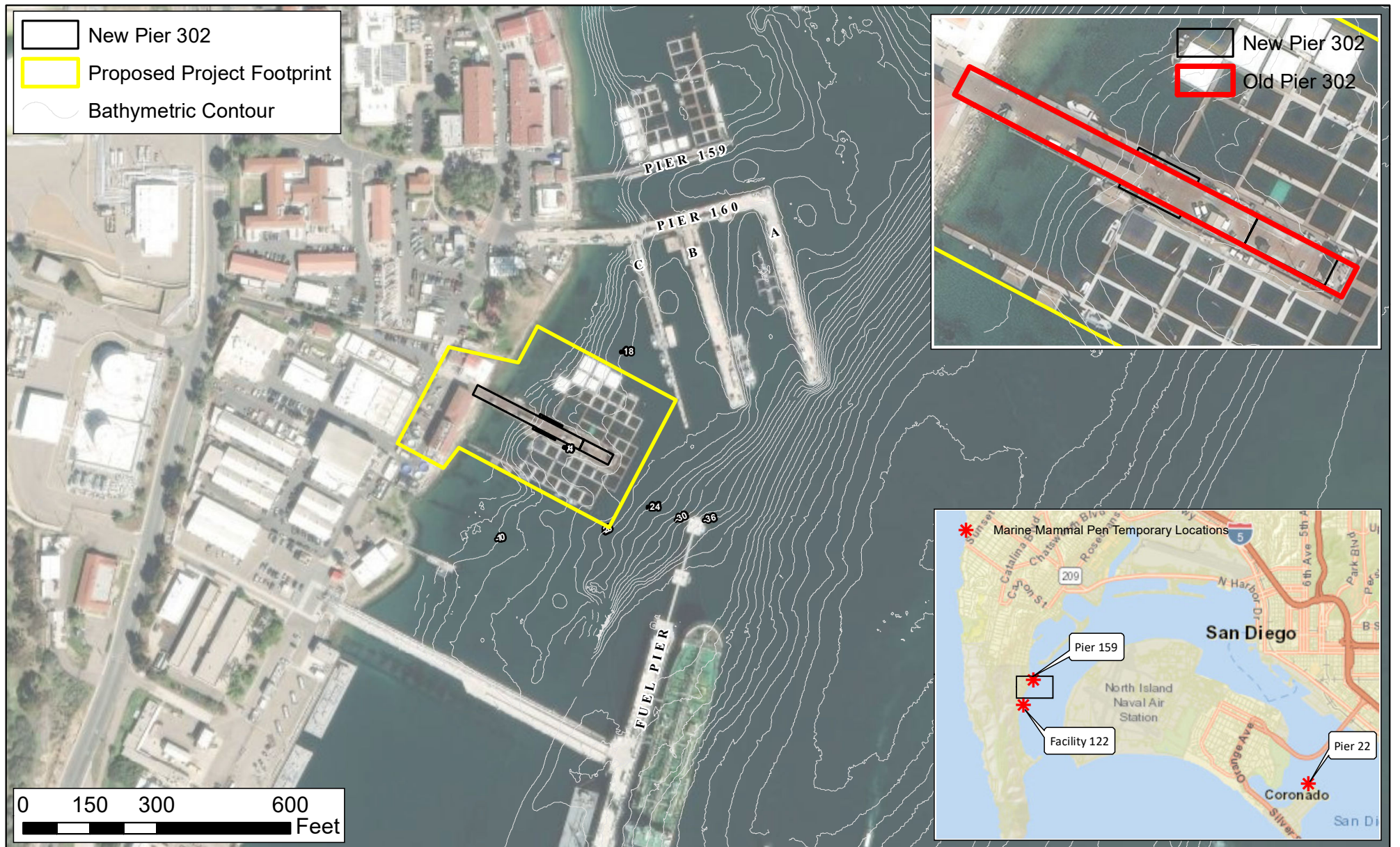
NBPL is located on the peninsula of Point Loma near the mouth and along the northern edge of San Diego Bay. NBPL provides berthing and support services to Navy submarines and other fleet assets. The Project (Figure 1-1) involves demolishing and replacing Pier 302, including the removal of up to 35 piles and installation of 49 new piles.

Pile removal activities will include multiple methods and equipment including vibratory pile extractor, hydraulic pile clipper, wire saw, underwater chainsaw, high-pressure water jet, or removal via dead-pull. Pile installation activities will also include multiple methods and equipment, including impact hammer, vibratory hammer, and 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. If piles are removed via pile clipping, an underwater chainsaw, a wire saw, or via dead-pull, then no acoustic Level A or B "take" would occur. See the IHA for a definition of MMPA take relative to this Project (Navy 2022).

In the event that airborne noise levels reach Level B harassment acoustic threshold levels (100 dB, or 90 dB), based on the location of the Project, 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 ZOIs. Therefore, airborne noise will not be monitored for Level B incidental take and these activities are not discussed further in this Plan.

The purpose of monitoring described in this Plan is twofold:

1. 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



### Project Location

Pier 302 Replacement Naval Information Center (NIWC) Pacific, Bayside Complex

**Figure 1-1**

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.

2. To enumerate the numbers and species of marine mammals that occur within established Level A and Level B (behavioral disturbance) ZOIs, and to document any differences in species, numbers, or behavioral effects associated with Project-related in-water activities.

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 Pier 302 during the IHA time period (Navy 2022).

While no Level A harassment is anticipated, and only Level B harassment is authorized under the IHA, the mitigation measures and monitoring protocols described herein will 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 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 Navy, 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 ZOIs 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 Pier 302 are summarized in Table 1-1.

**Table 1-1. Pier 302 Piles to be Removed and Installed During this IHA Period**

Method	Pile Type	# of Piles	Piles/Day	Total Estimated Days
<b>Pile Removal Activities</b>				
Vibratory Extraction	18-inch Octagonal Concrete	22	5	5
Hydraulic pile clipper, wire saw, underwater chainsaw, high-pressure water jet <sup>1</sup>				
Vibratory Extraction	18-inch Round Steel	3	1	3
Dead-pull <sup>1</sup>	14-inch Round Timber	up to 10	1	10
<b>Pile Installation Activities</b>				
Impact Hammer	24-inch Octagonal Concrete	30	4	8
	14-inch Square Concrete	2	1	2
Vibratory Hammer	6-inch Round Steel	17	5	4
<b>Total in-water workdays</b>				<b>32</b>

<sup>1</sup>No Level A/B “take” analysis conducted on these methods.

It is anticipated that pile removal and installation activities would occur over 32 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 ZOIs and estimated numbers of species takes are contained in the Navy’s IHA application (Navy 2022). There would be no Level A takes. The number of requested Level B takes are summarized in Table 1-2.

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

Species	Expected Average Individuals Per Day	Requested Level B Take
California sea lion	15	480
Harbor seal	1	32
Bottlenose dolphin	1	32
Common dolphin (Long- and Short-beaked)	9	288
Pacific white-sided dolphin	1	32
Northern elephant seal	<sup>-1</sup>	7
<b>Total</b>		<b>871</b>

<sup>1</sup>Expected potential of two northern elephant seals over the duration of project activity with a +5 buffer for Level B take.

### **1.3 MONITORING ZONES**

The various Project-specific monitoring and shut down zones, as well as representative protected species observer (PSO) 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 San Diego Bay 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 5.6 m (18.4 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 24-inch concrete piles only (see Table 1-4). In order to ensure no Level A take of PW species during impact pile driving of 24-inch octagonal concrete piles, the calculated 62.4 m ZOI will be buffered to 70 m (Tables 1.4 and 1.6).

Calculated distances to in-water marine mammal disturbance (Level B) and corresponding areas within the ZOIs are based on the average ambient underwater noise level (129.6 decibels [dB]) within the project area (NAVFAC SW 2020). ZOIs for pile removal and installation 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 Pier 302 are provided in Tables 1-4 and 1-5 and Table 1-6 summarizes all Level A and B ZOIs to be monitored during construction. Distances to Project-specific Level A and B ZOIs, the 20 m (66 ft) buffered shutdown zone, and PSO locations are shown in Figures 1-2 and 1-3, depicting the extent of the ZOIs 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 20 m (66 ft) for the Project. Project-specific Level A ZOIs were all calculated below 5.6 m, except for a zone associated with impact pile driving of 24-inch concrete piles. One Level A shutdown zone has been created for PW species during impact pile driving activities of 24-inch octagonal concrete piles only. 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 well inside of 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	Maximum RMS SPL (dB re 1 µPa)	Duration (hours/day)	Projected Distances to Level A Thresholds (m [ft])		
				MF	PW	OW
Pile Removal Activity						
Vibratory Extraction	18-inch Octagonal Concrete	162	1.25	0.8 (2.6)	5.6 (18.4)	0.4 (1.3)
	18-inch Round Steel	156	0.25	0.1 (1.6)	0.8 (11.5)	0.1 (0.7)
Pile Installation Activity						
Impact Pile Driving	24-inch Octagonal Concrete	176	1.33	4.1 (13.4)	62.4 (204.7)	4.5 (14.8)
	14-inch Square Concrete	166	0.25	0.2 (3.3)	2.5 (8.2)	0.2 (3.6)
Vibratory Hammer	6-inch Round Steel	155	0.07	0.0 (0.0)	0.3 (1.0)	0.0 (0.0)

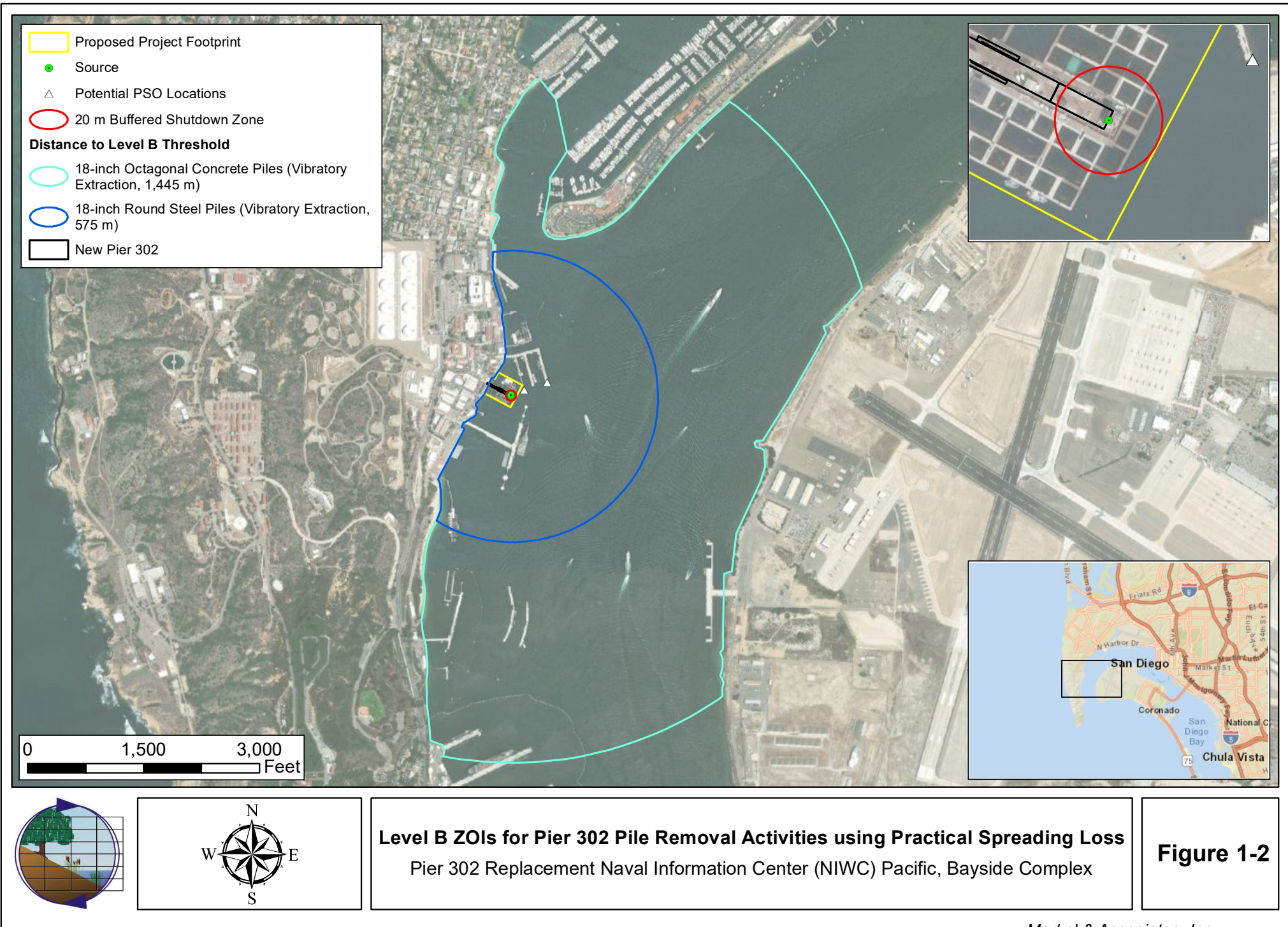
**Table 1-5. Distances to Level B Underwater Thresholds and ZOI Areas within the Thresholds from Pile Removal**

Method	Pile Type and Size	Maximum RMS SPL (dB re 1 μPa)	Projected Distance to and Area of Level B Thresholds <sup>1,2</sup>	
			Distance (m [ft])	Area (km²[sq. miles])
Pile Removal Activities				
Vibratory Extraction	18-inch Octagonal Concrete	162	1,445 (4,742)	3.13 (1.21)
	18-inch Round Steel	156	575 (1,888)	0.68 (0.26)
Pile Installation Activities				
Impact Pile Driving <sup>3</sup>	24-inch Octagonal Concrete	176	117 (383)	0.041 (0.016)
	14-inch Square Concrete	166	25 (82)	<0.01 (<0.01)
Vibratory Hammer	6-inch Round Steel	155	494 (1,619)	0.45 (0.18)

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

Method	Pile Type and Size	Monitored Level A ZOIs [m (ft)]			Monitored Level B ZOIs [m (ft)]
		MF	PW	OW	
Pile Removal Activities					
Vibratory Extraction	18-inch Octagonal Concrete Piles	20 (66)	20 (66)	20 (66)	1,445 (4,742)
	18-inch Round Steel Piles	20 (66)	20 (66)	20 (66)	575 (1,888)
Pile Installation Activities					
Impact Pile Driving	24-inch Octagonal Concrete Piles	20 (66)	70 <sup>1</sup> (230)	20 (66)	117 (383)
	14-inch Square Concrete Piles	20 (66)	20 (66)	20 (66)	25 (82)
Vibratory Hammer	6-inch Round Steel Piles	20 (66)	20 (66)	20 (66)	494 (1,619)

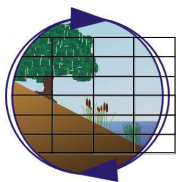
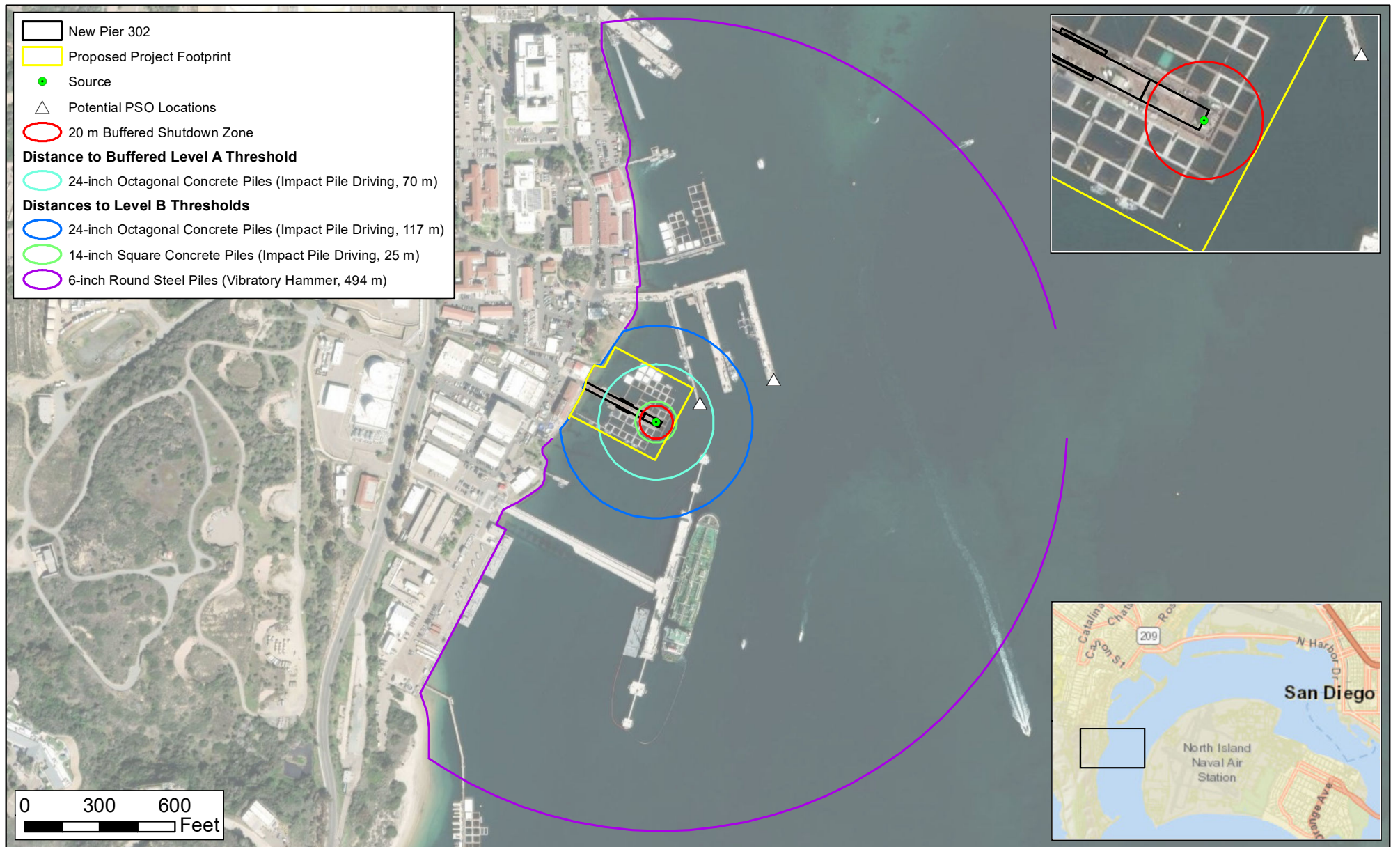
<sup>1</sup> Level A ZOI buffered from 62.4 m up to 70 m.



**Level B ZOIs for Pier 302 Pile Removal Activities using Practical Spreading Loss**  
Pier 302 Replacement Naval Information Center (NIWC) Pacific, Bayside Complex

**Figure 1-2**





**Level A and B ZOIs for Pier 302 Pile Installation Activities using Practical Spreading Loss**  
Pier 302 Replacement Naval Information Center (NIWC) Pacific, Bayside Complex

**Figure 1-3**

### **1.3.2 Observer Monitoring Locations**

In order to effectively monitor the Level A and Level B ZOIs, two PSOs will be positioned at the best practicable vantage point(s) taking into consideration security, safety, and space limitations (see Figures 1-2 and 1-3). One PSO ("Command") 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). PSOs will also provide additional monitoring data for all animals observed within the visual range of the Project area, regardless of the in-water activity is being conducted.

### **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 (Navy 2022). The contractor is responsible for complying with all the mitigation measures listed below, whereas onsite Navy representatives 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 20 m (66 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, briefings 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 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 (e.g., best vantage points from the adjacent Pier 160) to monitor for marine mammals and implement shutdown/delay procedures, when applicable, by notifying the construction operator of a need for a shutdown.

- Two PSOs will be deployed with a clear view of all Level A buffered shutdown zones and Level B ZOIs (see Figures 1-2 and 1-3).
- 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 ZOI and their behavior will be monitored and documented.
- Monitoring will be conducted for any buffered Level A shutdown zone, and within the Level B ZOIs 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, distances to Level A thresholds exceed the 20 m (66 ft) buffered shutdown zone for the impact pile driving of 24-inch concrete 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 zones, 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 20 m (66 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 ZOI, 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 ZOI 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 ZOI.
- 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 ZOI or has not been observed for at least one hour. NMFS will be notified immediately with the species, and precautions made during the encounter. 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 harassment ZOIs. Monitoring for green sea turtles will co-occur with the marine mammal monitoring.

### **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 pile removal and installation activities, distances to regulatory thresholds (see Section 1.0, Tables 1-4 and 1-5) were estimated based on acoustic data for similar pile types and sizes (Denes et al. 2016; NAVFAC SW 2022; Caltrans 2020; Illingworth & Rodkin 2007) using the latest acoustic threshold guidance from NMFS Technical Guidance (NMFS 2018) and NMFS User Spreadsheet (NMFS 2020). The estimated distances to the ZOI 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 20 m (66 ft) buffered shutdown monitoring zone will be monitored for marine mammals. The shutdown zone also will avoid and minimize the potential for Level A acoustic harassment since all Level A ZOI distances are less than 5 m (17.5 ft), with the exception for the Level A shutdown zones set for impact pile driving of concrete piles (see Section 1.3). A buffered Project Level A shutdown zone has been established for PW species during impact pile driving of 24-inch concrete piles at 70 m (230 ft). If any animal enters any level A shut down 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 harassment ZOIs will be monitored throughout the time required to remove or install a pile. If a marine mammal is observed entering the Level B ZOI, 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 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. NMFS will be notified as soon as possible to discuss the occurrence of the non-covered species, pertinent observations of the behavior and condition of the animal, and precautions that were, and would be, taken to avoid unauthorized take. 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.

During any monitored activity, the PSO with the clearest view of the buffered shutdown zones will be designated as the monitoring coordinator (“Command” position) and will initiate shutdown procedures, if warranted, by notifying the construction crew via either verbal or visual communication procedures (e.g., signal flag). Other PSOs can initiate shutdown procedures by calling the “Command” PSO who will then stop the monitored activities by notifying the construction crew. However, if the “Command” PSO does not hear the call for a shutdown, then the other PSO can initiate a shutdown of the activity.

### **2.3 OBSERVER QUALIFICATIONS**

The PSOs 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 PSOs 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 observers are required, one observer will be designated as “Command” and will coordinate monitoring efforts. The “Command” 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**

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

- Date and time that pile or installation removal or driving 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 PSOs; and
- Other human activity in the area.

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

To the extent practicable, the PSOs 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 PSOs 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, bearing, and number of individuals).

## **2.5 MONITORING EQUIPMENT**

Trained PSOs will be placed at the best vantage point(s) practicable (e.g., Pier 160 A or C, or any other suitable location) to monitor for marine mammals and implement shutdown/delay procedures, when applicable, by notifying the equipment operator of a need for shutdown of construction.

### ***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 monitoring coordinator, construction contractor, and other observers;
- Cellular phones (one per observing location), and the contact information for the other observers, and monitoring coordinator;
- Flags (one green, one red per observing location) as back-up for radio communication;
- Daily tide tables for the Project area within San Diego Bay;
- Watch or chronometer;
- Binoculars with built-in compass (quality of 7x50 or better);
- Laser rangefinder;
- Copies of this Plan, IHA permit, and/or other relevant permit requirement specifications in sealed transparent plastic cover;
- Notebook and/or electronic tablets with pre-standardized Marine Mammal Observation Record forms to record field monitoring data electronically or on waterproof paper;
- Marine mammal identification guides on waterproof paper;
- Clipboard, pen and pencil.

## **2.6 MONITORING METHODS**

The Navy will conduct briefings between construction supervisors, crews, and the PSO 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 PSOs 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 (Navy 2022). The efficacy of visual detection depends on several factors including the PSOs 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 PSOs 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, PSOs will be placed at the best vantage point(s) practicable.
- Two PSOs will be deployed at locations (i.e., Pier 160 A or C) with a clear view of the shutdown zones and level B ZOIs. The actual monitoring location(s) will be based on providing the greatest visibility of the monitoring zone specific to each activity.
- PSOs 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 PSOs (i.e., a re-sighting);
- During all monitoring activities, at least one PSO 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).
- For activities with monitoring zones beyond the visual range of the “Command” PSO position, an additional monitoring location will be employed. Data will be collected on any marine protected species observed within the monitoring zones in accordance with monitoring and data collection procedures described in this Plan.
- Monitoring will be conducted before, during, and after pile removal and installation activities.
- During all observation periods, the PSOs will use binoculars and/or the naked eye to search continuously for marine protected species.
- A 20 m (66 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 70 m (230 ft) shutdown zone for PW species will be established during impact pile driving of 24-inch concrete piles, 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 PSO who first observed the animal will alert the "Command" PSO who will notify the construction crew of the animal's current 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 "Command" 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 it, or 15 minutes have passed without re-detection of the animal (i.e., the zone is deemed clear of marine protected species). The “Command” 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 Navy point of contact will be notified and consulted prior to re-initiation of project-related activities.
- Shutdown shall occur if a species, for which authorization has not been granted, or for which the authorized numbers of takes have been met, approaches or is observed within the Level B ZOI. The monitoring coordinator or “Command” PSO shall notify the Navy point of contact, who will then contact NMFS immediately.
- For non-IHA species, pile removal and installation will be allowed to proceed if the animal(s) is observed to leave the Level B ZOI, or if one hour has lapsed since the last observation.
- 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 PSO, the animal is no longer visible, or it has left the Level B monitoring zone.
- For instances where visual obstructions prevent PSOs from observing the full monitoring zone, based on the location and shape of the Project area, it is assumed that any animal obscured from view will be seen by the PSO coming or leaving the area, and will not be missed in the take analysis. Animals in the Project vicinity must move north to south, or south to north to enter and exit the area and would be accounted for by a PSO at some point during this movement.

### **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.

### **2.6.4 Concurrent Action**

There is a possibility that an overlap of in-water activities could occur. If separate pile removal or installation activities were to occur simultaneously, then two “Command” PSO positions would be in place if a single PSO is unable to observe the concurrent actions. These positions would act independently and would have the ability to shutdown proximate in-water activities if a marine protected species entered any buffered Level A shutdown zone under their observation. Sightings of marine protected species at one location that are moving towards the other location will be communicated among the PSOs, to increase the awareness of an incoming potential sighting.

### 3.0 INTERAGENCY 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 “Command” PSO will stop all active pile driving or extraction and immediately notify the Navy POC. The Navy POC will immediately report the incident to the following agencies:

- NBPL Base Biologist (Caroline Jurca): 619-553-7525
- NMFS Office of Protected Resources (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;
- 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 “Command” PSO determines that the cause of the injury or death is directly related to the Project, the “Command” PSO will stop all in-water work and report to the Navy POC. The Navy POC will report the incident to the NBPL 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. 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 “Command” 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 “Command” PSO will report to the Navy POC. Within 24 hours, the Navy POC will report the incident to the NBPL 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, 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 “Command” 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 “Command” PSO will report the incident to the Navy POC, who will report the animal(s) to the NBPL base biologist. The appropriate West Coast Region Marine

Mammal Network Stranding Coordinators, as noted above, will be notified within 24 hours of the discovery. The Navy POC will not be required to contact the NMFS OPR for these cases. The PSOs will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to the Navy POC under such a case. At no time should the PSO 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 textual, graphical, and tabular form and include summary metrics, as applicable. A final report will be prepared and submitted to the NMFS within 30 days following receipt of comments on the draft report from the NMFS.

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 (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 driving or removal 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 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.
- 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.
- Submit all PSO 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.

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.

Naval Facilities Engineering Systems Command Southwest (NAVFAC SW). 2020. Compendium of Underwater and Airborne Sound Data during Pile Installation and In-Water Demolition Activities in San Diego Bay, California. Prepared for NAVFAC SW. Prepared by Tierra Data, Inc. October 2020.

\_\_\_\_\_. 2022. Naval Base San Diego Pier 6 Replacement Project. Unpublished data.

U.S. Department of the Navy (Navy). 2022. Incidental Harassment Authorization Application for U.S. Navy's Pier 302 Replacement Project at the Navy Information Warfare Center (NIWC) on Naval Base Point Loma. Submitted to Office of Protected Resources, National Marine Fisheries Service, National Oceanic and Atmospheric Administration.



**APPENDIX A: EXAMPLE MARINE SPECIES OBSERVATION RECORD FORM**

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