

Marine Mammal Monitoring Plan for Waterfront Repairs at USCG Station Monterey Monterey, California



U.S. Coast Guard
Civil Engineering Unit Oakland



June 2013

**Marine Mammal Monitoring Plan
for
Waterfront Repairs at USCG Station Monterey
Monterey, California**

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Acronyms and Abbreviations

BA	Biological Assessment
dB	decibels
EFH	Essential Fish Habitat
ESA	Federal Endangered Species Act
IHA	Incidental Harassment Authorization
MMO	marine mammal observers
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
μ Pa	microPascal
Pier	USCG Station Monterey patrol boat pier
Plan	Monitoring Plan
RMS	root mean square
SPLs	sound pressure levels
Station	United States Coast Guard Station Monterey
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service

Chapter 1

Introduction

The United States Coast Guard (USCG) proposes to improve and maintain the structural integrity of the patrol boat pier (Pier) and potable water line at USCG Station Monterey (Station) through the replacement of Pier piles and a water line.

The Station's area of responsibility extends 50 miles offshore for approximately 120 nautical miles of coastline, from Point Año Nuevo south to the Monterey-San Luis Obispo County line, encompassing 5,000 square miles. The Station's missions include maritime homeland security, search and rescue, maritime law enforcement, and public affairs. The vessels that are used to support the Station's missions are 21- to 25-foot rigid-hull inflatable boats, a 41-foot utility boat, a 47-foot motor lifeboat, and an 87-foot patrol boat. In addition, a National Oceanic and Atmospheric Administration (NOAA) boat uses the Station's facilities.

Project activities that require monitoring include vibratory extraction of the existing piles and installation of piles using both vibratory and impact-driving methods. Electrical upgrades and waterline replacement would be monitored if these activities would generate elevated underwater or airborne noise or activity under the Pier that could disturb marine mammals. Monitoring would not be conducted during above-deck ancillary repairs (described in Chapter 1.4) that do not result in elevated underwater or airborne noise.

1.1 Regulatory Requirements

The USCG is consulting with the National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS) for an Incidental Harassment Authorization (IHA), pursuant to the Marine Mammal Protection Act (MMPA) of 1972. Under the MMPA, take (harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect) of any marine mammal is prohibited. In 1994, amendments to this act statutorily defined two levels of harassment. Level A harassment is defined as any act of pursuit, torment, or annoyance that has the potential to *injure* a marine mammal in the wild. Level B harassment is defined as harassment having potential to *disturb* marine mammals by causing disruption of behavioral patterns such as breathing, nursing, breeding, feeding, and sheltering.

According to NMFS, sound pressure levels (SPLs) above 190 decibels (dB) root mean square (RMS) could cause injury (Level A harassment) in pinnipeds; and SPLs above 180 dB RMS could cause injury (Level A harassment) in cetaceans and mustelids. In 2005, NMFS established thresholds for behavioral harassment of marine mammals (Level B harassment) at 160 dB RMS for pulsed noise such as that produced by impact pile driving; and at 120 dB RMS for continuous noise such as that produced by vibratory pile driving (Federal Register Notice (Vol. 70 pp. 1871-1875)). NMFS also has criteria for airborne noise that may affect pinnipeds at haul-out locations, and whenever their ears are above water. NMFS does not have a specific criterion for southern sea otters; therefore, the criterion for California sea lions will be used. Table 1-1 summarizes these various criteria.

Table 1-1: Injury and Disturbance Thresholds for Airborne and Underwater Noise¹

Marine Mammals	Airborne Noise Criteria (Impact and Vibratory Pile Driving) (re 20 µPa)	Level A Injury Threshold (re 1 µPa)		Level B Disturbance Threshold (re 1 µPa)	
	Disturbance Guideline Threshold (Haul-out) ²	Underwater Continuous Noise Criteria (e.g., vibratory pile driving)	Underwater Pulsed Noise Criteria (e.g., impact pile driving)	Underwater Continuous Noise Criteria (e.g., vibratory pile driving)	Underwater Pulsed Noise Criteria (e.g., impact pile driving)
Cetaceans (whales, porpoises)	N/A	180 dB RMS	180 dB RMS	120 dB RMS	160 dB RMS
Pinnipeds (California sea lions)	100 dB RMS (unweighted)	190 dB RMS	190 dB RMS	120 dB RMS	160 dB RMS
Pinnipeds (Pacific harbor seals)	90 dB RMS (unweighted)	190 dB RMS	190 dB RMS	120 dB RMS	160 dB RMS
Mustelids (southern sea otter)	100 dB RMS (unweighted)	180 dB RMS	180 dB RMS	120 dB RMS	160 dB RMS
<p>Notes:</p> <p>¹ The underwater noise thresholds for cetaceans and airborne noise thresholds for California sea lions were applied for southern sea otter.</p> <p>² The airborne disturbance guideline applies to hauled-out pinnipeds or surfaced southern sea otters.</p> <p>dB = decibel µPa = microPascal RMS = root mean square</p>					

To comply with the MMPA, the USCG has submitted an IHA application to authorize the potential Level B harassment to the following marine mammal species in Monterey Bay: California sea lion (*Zalophus californianus*), Pacific harbor seal (*Phoca vitulina*), harbor porpoise (*Phocoena phocoena*), gray whales (*Eschrichtius robustus*), and killer whale (*Orcinus orca*) to the NMFS. Southern sea otter (*Enhydra lutris*), federally listed as threatened, may also occur in the area and is under the jurisdiction of the USFWS. The USCG has also submitted an IHA request to USFWS authorize the potential Level B harassment of this species. Section 1.2 describes the construction and monitoring procedures that would avoid Level A injury. The USCG prepared a biological assessment (BA) to initiate informal consultation with NMFS and formal consultation with the USFWS under Section 7 of the Federal Endangered Species Act (ESA), and to address Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act for the project. The BA addressed potential impacts to federally listed species and EFH from project activities.

1.2 Purpose of the Monitoring Plan

The purpose of this Monitoring Plan is to establish procedures to ensure compliance with permit requirements, thereby avoiding serious injury (Level A harassment) of marine mammals and minimizing behavioral disturbance (Level B harassment) to the extent practicable. Lethal take of marine mammals is not expected to occur.

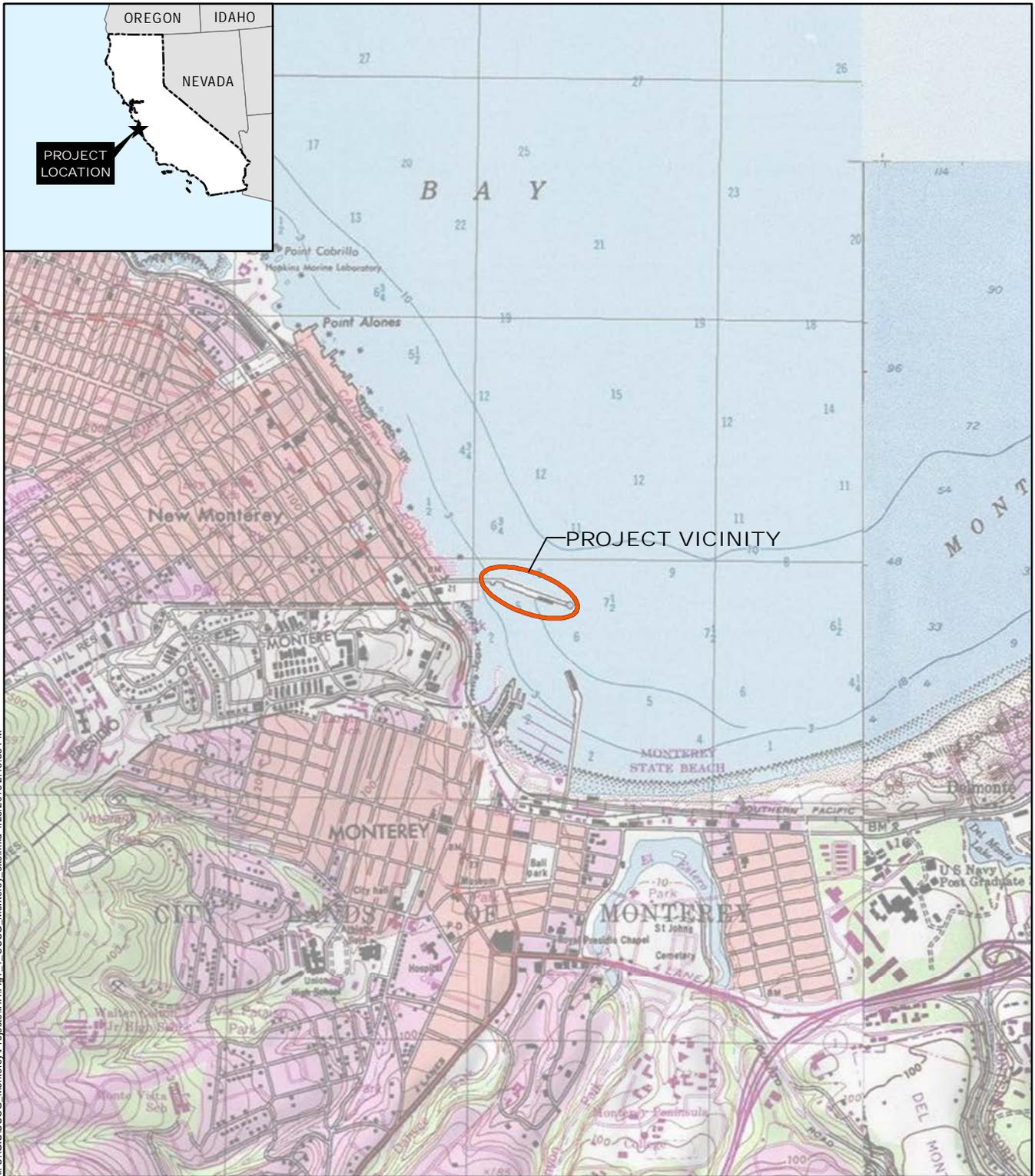
The objectives of the monitoring are to:

- Establish parameters to monitor site locations for the disturbance of marine mammals during the Proposed Action, as described in Section 1.4.
- Avoid injury to marine mammals through visual monitoring of identified zones of influence (e.g., zones where Level A harassment criteria may be exceeded), and provide ancillary observations of marine mammals in adjacent work areas.
- Pile Extraction and Installation Only: Coordinate with the acoustic monitoring team to measure SPLs from vibratory and impact pile driving and removal to establish zones of influence related to noise thresholds for fish and marine mammals. Waterline replacement activities are not expected to exceed underwater or airborne thresholds, because this task does not require the use of an impact or vibratory hammer in the ocean or directly adjacent to the surface of the water. Waterline replacement would not occur at the same time as the pile replacement work. However, construction activities related to waterline replacement may have behavioral effects on marine mammals, and would comply with the Monitoring Plan (Details of acoustic monitoring are provided in *Waterfront Repairs at USCG Station Monterey, California – Acoustical Monitoring Plan* [Illingworth & Rodkin, 2013], under separate cover).
- Conduct field operations to obtain data as follows:
 - Make daily observations and record presence or absence marine mammals.
 - Record marine mammal behavior observations.
 - Establish/confirm threshold distances delineated in the IHA request.

These objectives will be accomplished in accordance with the IHA, NMFS, and USFWS Biological Opinions, and other pertinent permit conditions for the Waterfront Repairs Project at USCG Station Monterey.

1.3 Project Location

The project site is located at the Monterey Harbor, which is situated at the northeastern corner of the Monterey Peninsula (Figure 1-1). The Monterey Peninsula is located 85 miles south of San Francisco, California. The Station is located at 100 Lighthouse Avenue in the City and County of Monterey, California (Figure 1-2). The Station's area of responsibility extends 50 miles offshore for approximately 120 nautical miles of coastline, from Point Año Nuevo south to the Monterey-San Luis Obispo County line, encompassing 5,000 square miles.



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Source: USGS 7.5' Topographic Quadrangles; Monterey (1983), Marina (1983) and Seaside (1983).

 Project Vicinity



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PROJECT LOCATION

Waterfront Repairs at
USCG Station Monterey
Monterey, California

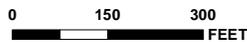
FIGURE 1-1



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Source: ESRI Imagery Service.

 Project Feature/Area of Work



PROJECT FEATURES

Waterfront Repairs at
USCG Station Monterey
Monterey, California

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FIGURE 1-2

The Pier is located on the eastern portion of the Station's waterfront facility, along a jetty that extends approximately 1,300 feet east into Monterey Harbor (Jetty). The Pier and floating docks are on the southern side of the Jetty. A paved 800-foot access road is located on the Jetty. The Pier access road is open to the general public; however, the Station's waterfront facility is not accessible to the general public, and is secured by fencing. The eastern end of the Jetty is not accessible to the public. This area is inhabited throughout most of the year by seabirds, which use the Jetty for nesting during spring and summer; and by California sea lions, which use the Jetty as a haul-out site. Pacific harbor seals also use rocky outcroppings and waters within Monterey Harbor for haul-out and foraging, respectively.

1.4 Project Description

The USCG proposes to replace 17 existing timber piles that structurally support the Pier; replace the existing potable water line; and improve associated structures to maintain the structural integrity of the Pier and potable water line. Figure 1-2 shows the locations of repairs.

The Proposed Action would involve removing the existing timber deck, timber stringers, steel pile caps, steel support beams, and hardware to access the 17 timber piles that need to be replaced. The timber piles, which are approximately 14 to 16 inches in diameter and covered with polyvinyl chloride wraps, would be removed with a vibratory extractor.

Each timber pile would then be replaced with a steel pipe pile that is up to 18 inches in diameter with a ½-inch-thick wall. The new steel pipe pile would be positioned and installed in the footprint of the extracted timber pile. The new steel pipe piles would not be filled with concrete. Other material and hardware removed to conduct the pile replacement would be replaced with in-kind materials. Best management practices would be employed during demolition and construction activities to prevent debris from falling into the water.

Due to dense substrate at the project site, a majority of the steel pipe pile installation may require impact pile driving; however, pile driving would be conducted with a vibratory hammer to the extent feasible, with an impact hammer used for proofing the piles. Pre-drilling would be permitted, and would be discontinued when the pile tip is approximately 5 feet above the required pile-tip elevation. If the steel pipe pile is unable to be driven 30 feet below the mud line with an impact hammer due to the substrate or Jetty armor, the pile would be posted onto the armor stone using 36-inch-diameter concrete pedestals and dowels anchored into the armor stone. Concrete slurry would be used to cement stone within 5 feet of posted steel pipe piles to further secure the piles.

A sound attenuation system (i.e., bubble curtain) would be used during impact hammer pile driving. The bubble curtain creates an underwater wall of air around the pile to dissipate in-water sound waves.

Pile extraction and driving equipment would be located on a barge positioned in a manner that would not impede access to the floating docks; would be at a point along the Pier access road that does not disrupt Pier access; and that is secured from pedestrian movements. Pile extraction and driving equipment would not be located on the existing Pier.

Several proposed ancillary repairs to the Pier deck and floating dock are associated with this project (Figure 1-2). Specifically, under-deck repairs would restore bearings at pedestals and sea walls with nonshrink grout pads, and replace underwater pile struts. Above-deck repairs would include removing abandoned mooring hardware, replacing missing sections of curb, and replacing isolated deck planks that have deteriorated. Repairs to the floating dock would include repairing tie rods, repairing concrete spall, relocating and securing gangway wear plate(s), replacing cleats, replacing missing rubstrips, and replacing underwater pile struts.

Repairs to the potable water line would involve in-kind replacement of approximately 175 feet of 3-inch-diameter galvanized piping. The existing water line is on the outboard beam of the Pier, and is mounted by hangers. The new water line would be supported every 4 feet in the same alignment as the existing configuration. Three top-side water standpipes would be replaced as part of the water line replacement. All work for replacement of the potable water line would occur above Mean High Water.

1.5 Dates of Construction

The project is proposed for construction as early as the 2013 fiscal year. The proposed pile extraction and driving activities are anticipated to occur from June 15 to October 15. No work will begin until all required permits and approvals, and an approved monitoring plan are in place.

1.6 Duration of Construction

The repairs will require a maximum of 60 work days for completion. The duration of the repairs includes the time for extraction of existing timber piles, new pile installation, and time for under-deck and above-deck repairs. A 180-day authorization window is requested to take into account delays that could occur due to the permitting process, material availability, and inclement weather that may delay construction.

An average work day (beginning 2 hours after sunrise, and ending 2 hours before sunset) is approximately 8 to 9 hours, depending on the month. Based on the proposed repairs, it is assumed that two piles per day would be both extracted and installed. Pile driving activities would therefore occur for an estimated maximum of 10 days of the total construction time. It is assumed that driving time would be about 20 to 25 minutes per pile (vibratory or impact). It is assumed that vibratory extraction of the existing piles would take about 10 minutes per pile. This would result in, at most, 60 to 70 minutes of pile driving per day, or 8.5 to 10 hours of underwater and airborne noise generation from pile driving over the course of the project construction.

Chapter 2

Description of Species Covered by the Monitoring Plan

2.1 Species Affected

California sea lions, Pacific harbor seals, harbor porpoises, gray whales, killer whales, and southern sea otters have potential to be affected by project activities. Of these species, California sea lions and Pacific harbor seals are most abundant, and occur on a regular basis in the project area. The eastern end of the Jetty, which is not accessible to the public, is used as a haul-out site primarily by California sea lions. California sea lions also haul-out beneath the Pier, on the Pier's substructure crossbeams, and on portions of the Jetty beneath the Pier. Pacific harbor seals also use rocky outcroppings and waters in Monterey Harbor. Harbor porpoises, gray whales, and killer whales are generally found farther offshore. Although it would be unlikely for these species to enter the confines of Monterey Harbor to the south of the Jetty, they could occur in low numbers offshore in the area potentially subject to Level B harassment from pile replacement work, including vibratory pile extraction and driving.

All marine mammals are protected under the MMPA. The southern sea otter, federally listed as threatened under the ESA, is the only species likely to occur in the project area that is listed under both the MMPA and ESA.

2.2 Overview of Effects of Noise on Marine Mammals

Marine mammals use hearing and sound transmission to perform vital life functions. The introduction of noise (defined as unwanted or harmful sound) into their environment could disrupt these behaviors. Sound (hearing and vocalization/echolocation) serves the following four primary functions for marine mammals: 1) providing information about the environments; 2) communication; 3) prey detection; and 4) predator location. The distances that construction noises in the project are audible depend on source levels, frequency, ambient noise levels, the propagation characteristics of the environment, and the sensitivity of the receptor (Richardson *et al.* 1995).

The effects of underwater noise from pile extraction and driving on marine mammals may include one or more of the following: masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment, or nonauditory physical effects (Richardson *et al.*, 1995). In assessing the potential effects of noise, Richardson *et al.* (1995) suggested the following four criteria to define zones of influences for a given noise:

1. The zone of hearing loss, discomfort, or injury, in which the noise causes temporary or permanent hearing loss, pain, or discomfort. These effects would be considered Level A harassment. Underwater noise levels constituting Level A harassment are 180 dB for cetaceans and 190 dB for pinnipeds. Because USFWS has not established harassment

thresholds for mustelids, the underwater noise thresholds for cetaceans and airborne noise thresholds for sea lions will be applied for southern sea otter.

2. The zone of masking, in which noise interfered with sounds used by the animal for communication, prey detection, and predator avoidance. These effects would be considered Level B harassment. The applicable underwater noise criteria for this zone are 160 dB (e.g., impact pile driving) or 120 dB for continuous noise (e.g., vibratory pile driving), and 100 dB for airborne noise.
3. The zone of responsiveness, in which the noise elicits behavioral or physiological responses but does not cause pain or damage. These effects would be considered Level B harassment. The applicable underwater noise criteria for this zone are 160 dB (e.g., impact pile driving) or 120 dB for continuous noise (e.g., vibratory pile driving), and 100 dB for airborne noise.
4. The zone of audibility, in which the animal hears the noise, but does not show an outward response. There is no regulatory threshold for this zone.

Marine mammals that occur in the project area would also be exposed to airborne noise associated with pile extraction and driving that has the potential to cause changes in behavior, such as flushing from haul-out sites. Behavior modifications would be dependent on the marine mammal's location relative to the pile extraction/installation and construction activities. California sea lions would be impacted more frequently due to their heavy use of the Jetty in the immediate project area as a haul-out site. California sea lions and harbor seals may also be exposed if they surface in proximity to pile extraction/installation activities. Airborne noise would likely cause behavioral responses similar to those discussed above in relation to underwater noise. For instance, project-related noise and disturbance could cause hauled-out pinnipeds to exhibit temporary changes in their normal behavior, such as abandoning the immediate habitat and moving further from the noise source. Airborne noise or construction activities may cause California sea lions to flush from the Jetty or Pier structure into the water.

Noises or disturbances that would typically flush animals in areas of low disturbance may not elicit a response in the Monterey Harbor. In 2004, construction activities on the Pier generated noise from drilling and coring equipment. Disturbance to hauled-out California sea lions was minimal and included small behavioral responses such as barking and head turning. Construction noise did not cause any animals to flush (Phillips and Harvey 2004).

Chapter 3

Methodology

This chapter discusses the measures that will be used to ensure marine mammals are not present in the zone of hearing loss, discomfort, or injury (Level A harassment) when pile extraction and driving activities are occurring. Specific measures include visual monitoring of the exclusion zone (the area where Level A harassment could occur); visual monitoring for changes in the behavior of marine mammals outside this range in the surrounding areas within behavioral disturbance zone (the area where Level B harassment could occur); and acoustic monitoring to measure underwater and airborne noise during extraction of the existing piles and installation of new piles.

3.1 Designated Exclusion Zone

The exclusion zone includes all areas where underwater noise pressure levels are expected to reach or exceed the Level A harassment criteria for marine mammals. These correspond to the 180 dB isopleth for cetaceans and mustelids and 190 dB isopleth for pinnipeds. Modeled distances for attenuated noise are less than 33 feet to the 190 dB isopleths and 75 feet to the 180 dB isopleths. For unattenuated noise, the distances are 75 and 330 feet to the 190 dB and 180 dB isopleths, respectively.

To provide a margin of safety, an initial conservative exclusion zone will be established during initial pile extraction and driving efforts, prior to completing acoustic measurements to establish actual field conditions. A bubble curtain would be employed; however, during initial pile extraction and driving, the exclusion zones will be set at the modeled distances for unattenuated noise. Thus, the initial exclusion zones would be set at 75 feet for pinnipeds and 330 feet for cetaceans and mustelids. These exclusion zones will be adjusted, in consultation with NMFS and the USFWS, once field conditions have been established through acoustic monitoring.

3.2 Visual Marine Mammal Monitoring

Monitoring of the cetacean, mustelids, and pinniped exclusion (Level A harassment) zone, behavioral disturbance (Level B harassment) zone, and of the animals hauled-out on the Jetty east of the construction area, will be conducted by qualified NMFS and USFWS approved marine mammal observers (MMO). During pile extraction or driving, one MMO will be required for the safety zones around each pile-extraction or pile driving location. Other MMOs may be required to monitor more distant portions of the behavioral disturbance zone in Monterey Harbor or to the north of the Jetty.

3.2.1 Baseline Monitoring

The MMO(s) will survey the potential Level A and B harassment zones on 2 separate days – no earlier than 7 days before the first day of construction – to establish baseline observations. Monitoring will be timed to occur during various tides (preferably low and high tides) during

daylight hours. The information collected from baseline monitoring will be used for comparison with results of monitoring during pile extraction and driving activities.

3.2.2 Construction Monitoring

All construction activities that have potential to result in the harassment of marine mammals require an MMO to be present. This includes pile driving as well as construction in areas where animals may be hauled out, such as the Pier's sub-structure.

During pile extraction and driving, the exclusion zone will be monitored for 15 minutes prior to any pile extraction and driving activities to ensure that the area is clear of any marine mammals. If marine mammals are sighted in the exclusion zone, the start of pile extraction and driving activities will be delayed up to 15 minutes to allow them to move out of the area. If a marine mammal is seen above water and then dives below, the contractor will wait 15 minutes; and if no marine mammals are observed in that time, it will be assumed that the animal has moved beyond the exclusion zone.

If a marine mammal enters the exclusion zone during pile extraction and driving, activity will continue and the behavior of the animal will be monitored and documented. If the animal appears disturbed by the pile extraction and driving activity, work may be stopped at the MMO's discretion, in conjunction with the USCG construction manager, until the animal leaves the exclusion zone.

The MMO will observe the exclusion zone from the most practicable vantage point possible (the Pier itself, the Jetty, or adjacent boat docks in Monterey Harbor). Because California sea lions are known to haul-out on the Jetty armor under the Pier, at least one monitor will be located on a dock across from the exclusion zone. To the extent possible, the monitor will observe California sea lions under the Pier and their reactions to pile extraction and driving activities, although due to potential visual obstructions and safety concerns, the monitor may not find a location with a clear sight of the full area beneath the Pier.

Behavioral observations during construction will document take by Level B harassment, if it occurs. Observations will be made of the area potentially exposed to noise levels at or above 160 dB RMS (during impact driving) near the Pier and the area just north of the Jetty (Figure 3-1). Reactions to airborne noise by animals hauled-out on the Jetty will be also observed. Numbers and behaviors of marine mammals in the area of Level B harassment during vibratory driving (down to 120 dB RMS; Figure 3-2) will be observed to the extent possible from the publicly accessible portions of the Jetty, using binoculars.

3.2.3 Post-Construction Monitoring

The MMO will continue to observe the exclusion zone and surrounding areas for a minimum of 15 minutes after pile extraction and driving stops.



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Imagery Source: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

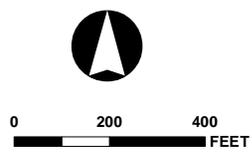
**ATTENUATED UNDERWATER RMS LEVELS
DURING IMPACT PILE DRIVING**

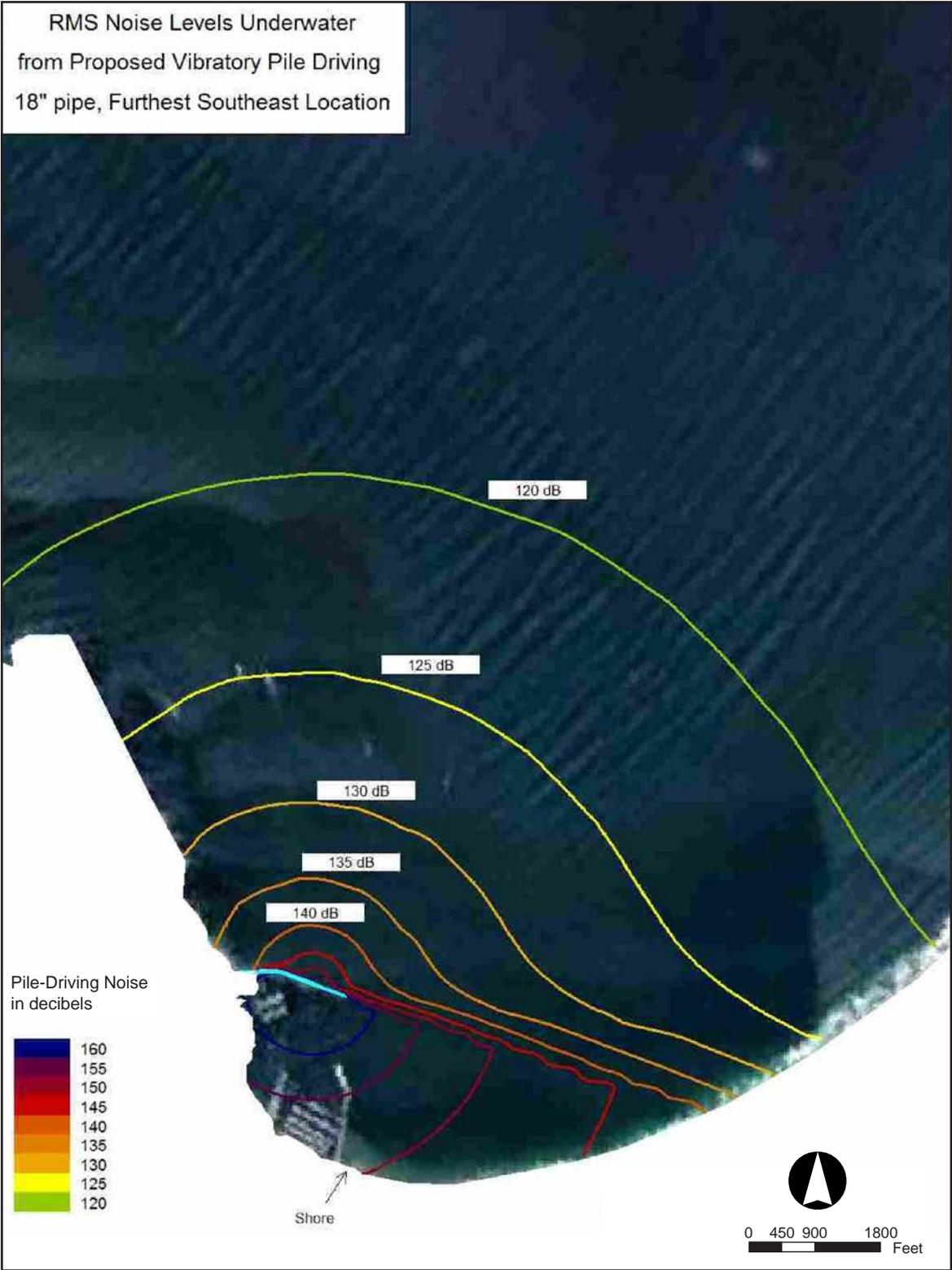
Waterfront Repairs at
USCG Station Monterey
Monterey, California

28068166



FIGURE 3-1





**UNATTENUATED UNDERWATER RMS LEVELS
DURING VIBRATORY PILE DRIVING**

28068166

Waterfront Repairs at
USCG Station Monterey
Monterey, California



FIGURE 3-2

3.2.4 Monitoring Data

Observations will be recorded, and will include the following, to the extent available:

- Species;
- Sex and age class;
- Number of animals;
- Description of behavior, including location and direction of movement;
- Time of observation;
- Construction activity, including time that pile extraction and driving begins and ends; and
- Other acoustic or visual disturbances.

The reactions of marine mammals will be recorded based on the following classifications: 1) no response; 2) head alert (e.g., looks towards the source of disturbance); 3) approaches in water (but does not leave); and 4) retreat or flush (e.g., leaves the area or flushes from the haul-out site). Appendix A provides the Monitoring Data Sheets to be used for recording observations.

If a marine mammal carcass is found in the area, the event would be reported to NMFS within 24 hours. If accessible to the MMO, the carcass would be tagged; and if possible, the MMO would determine and record the species, age, and sex for reporting to NMFS.

3.2.5 Monitoring Equipment

The following equipment will be used by the MMOs:

- A rangefinder capable of achieving an accuracy of ± 5 feet at a range of 100 feet;
- Binoculars;
- Radio or cell phone; and
- Monitoring Data Sheets.

The MMOs will use high-quality binoculars to monitor marine mammals at distant locations or along the Jetty. A radio or cell phone will be used to coordinate with the construction contractor, the acoustics team, and other MMOs. To the extent practicable, digital video or 35-millimeter still cameras will be used to document the behavior and response of marine mammals to construction activities or other disturbances.

3.3 Physical Deterrence

California sea lions frequently haul-out on the understory structure of the Pier, where construction would occur as a result of the Proposed Action. Interactions of construction workers with these animals could result in injury to both workers and/or California sea lions. It may be necessary to deter hauled-out animals to safely gain access to the work site. For the Proposed Action, using noise as a deterrent is not recommended. The California sea lions on the Pier are habituated to human disturbance and noise associated with marina activities. Loud noises may also unnecessarily harass hauled-out California sea lions outside of the work zone. The use of physical, noninjurious, directed deterrence would be used instead. Such methods

include the use of a “super soaker” type water gun to spray seawater onto the rump or chest of animals that must be deterred.

Physical deterrent activities are allowed under Section 109 of the MMPA, which permits federal, state, and local officials to take marine mammals in the course of official duties. The purpose of these activities is to protect the welfare of marine mammals and construction personnel through non-lethal removal methods.

3.4 Acoustic Monitoring

Acoustic monitoring will be conducted by a qualified monitor during pile extraction and driving activities. Acoustic monitoring will be conducted for a minimum of five piles. Piles chosen to be monitored will be representative of mid-channel or typical water depths at the project location. The piles to be monitored and the approximate underwater and airborne noise measurement locations for each pile being monitored will be determined in the field with the approval of the USCG construction manager. Hydrophones will be positioned at one depth with a clear line-of-sight between the pile and the hydrophone. Airborne noise measurements would be made at fixed position with an intended clear view of pile driving operations, and at the haul-out area on the Jetty. The specific details of acoustic monitoring are included in the *Waterfront Repairs at USCG Station Monterey, California, Acoustical Monitoring Plan* (Illingworth & Rodkin 2013), under separate cover.

Chapter 4

Coordination, MMO Qualifications, and Responsibilities

Implementation of the monitoring program will involve close coordination among the USCG, the construction contractor(s), MMOs, acoustic monitors, and other field personnel. The USCG will hire appropriately trained field inspectors and MMOs and will be responsible for the timely review and reporting of monitoring data to pertinent regulatory agencies.

4.1 Coordination Meeting

Prior to the start of any pile driving activity, a coordination meeting will be held between the construction supervisors and crews, the marine mammal monitoring team, acoustical monitoring team (to include acoustic monitors), and USCG staff. The purpose of the briefing will be to establish responsibilities, define the chains of command, discuss communication procedures, and review operational procedures. The USCG construction manager will have the authority to stop or delay any construction activity, if deemed necessary by the MMOs or acoustical monitors. New personnel will be briefed before they join the work in progress.

4.2 MMO Qualifications

To be considered qualified to record observations of marine mammals for the Proposed Action, observers must meet the following criteria:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface, with ability to estimate target size and distance; use of binoculars may be necessary to identify marine mammals.
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
- At least 2 years of field experience as a marine mammal monitor (identification of marine mammal species and behaviors).
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
- Writing skills sufficient to prepare a report of marine mammal observations, including marine mammal species observed within the exclusion and behavioral disturbance zones.
- Ability to communicate orally, by radio, and in person with project personnel to provide real-time information on marine mammals observed in the area, as necessary.

All monitoring personnel will be provided a copy of this monitoring plan and the IHA. Monitoring personnel must read and understand the contents of this plan – as well as the IHA – as they relate to coordination, communication, and identification and reporting of incidental harassment of marine mammals.

4.3 **MMO Responsibilities**

MMO tasks associated with monitoring and reporting requirements for each of the ongoing project activities are summarized below:

- Establish exclusion zone distances from pile to be extracted/installed, in coordination with the acoustic monitors.
- Monitor exclusion zone 15 minutes before pile extraction and driving is initiated to ensure marine mammals are not present.
- Non-injurious physical deterrence, if necessary, to encourage marine mammals to leave areas beneath the Pier or immediately adjacent to the work area.
- Monitor exclusion zone for a minimum of 15 minutes after pile extraction and driving stops.
- Monitor any marine mammal activity in the vicinity of the pile extraction and driving activity.
- Observe marine mammal behavior and record observations, as described in Chapter 3.
- If a marine mammal is observed within the behavioral disturbance zone, record a Level B take and document behaviors.
- Coordinate with the USCG, construction contractor(s), and other monitors on site.
- Prepare Monitoring Data Sheet.
- Prepare post-construction report.

Chapter 5

Reporting

5.1 Reporting

The following sections detail the NMFS reporting requirements pursuant to the IHA.

5.1.1 Monitoring Data Sheets

Monitoring Data Sheets that summarize the monitoring results, construction activities, and environmental conditions would be compiled and submitted to the USCG's Environmental Protection Specialist, Ms. Amanda Velasquez. The Monitoring Data Sheets would provide the following information:

- Date and location;
- Activity being monitored (e.g., vibratory or impact pile driving), including:
 - Pile type and size
 - Type of driving
 - Attenuation device
 - Duration of drive and time that pile driving begins and ends
 - Distances to thresholds;
- Count of all marine mammals observed by species, sex, and age class;
- Marine mammal location in the exclusion zone;
- Marine mammal reaction (if any) to activities, including head alerts, flushing, direction of movement, and type of activity that is occurring;
- Acoustic or visual disturbance;
- Environmental conditions (e.g., tide, wind speed, wind direction, visibility, temperature); and
- Mitigation implemented.

5.1.2 Post-Construction Monitoring Report

A draft report would be submitted to NMFS and USFWS within 90 days after completion of the Proposed Action. The draft report would include a description of the materials and methods used in monitoring, an overall summary of the project results, a discussion of the compliance record over the course of the entire program, and a discussion of the effectiveness of monitoring methods.

A final report would be prepared and submitted to the services within 30 days following receipt of any comments on the draft report. Copies of the final report would be issued to pertinent regulatory agencies by the USCG.

A acoustic data report, including data collected and summarized from all monitoring positions, would be submitted to the services in a similar manner, as described in the *Waterfront Repairs at USCG Station Monterey, California, Acoustical Monitoring Plan* (Illingworth & Rodkin 2013). The marine mammal and acoustic monitoring reports would provide useful information that would allow design of future projects to reduce incidental take of marine mammals. The USCG would share field data and behavioral observations on marine mammals that occur in the project area. This information could be made available to federal, state, and local resource agencies, scientists, and other interested parties upon written request.

Chapter 6

References

Illingworth & Rodkin, 2013. *Waterfront Repairs at USCG Station Monterey, California, Underwater Noise Monitoring Plan.*

Phillips, Elizabeth M. and James T. Harvey, 2004. *Final Report of Biological Monitoring for All Star Services Corporation Activity at Timber Pier, Monterey, California.*

Richardson, W.J., C.R. Greene, Jr., C.I. Malme, and D.H. Thomson, 1995. *Marine mammals and noise.* San Diego: Academic Press. 576 pp.

Appendix A
Daily Marine Mammal Monitoring Logs

Date: _____

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Daily Marine Mammal Monitoring Log Sheet
Waterfront Repairs at USCG Station Monterey

Monitor(s):

Visibility:

Tidal Level:

Human Activity in the Area:

Monitoring Location:

Pile Type:

Pile/Day (1-17): _____ **Equipment:** Impact Vibratory

Minutes of Vibratory Extraction/Driving:

Impact Blows per Pile:

Date: _____

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Daily Marine Mammal Monitoring Data Sheet
Waterfront Repairs at USCG Station Monterey

Comment: Reference Number	Pile Number	Pile Driver (Impact/ Vibratory)	Pile Driving Start/End Time	Observation Start/End Time	Mammal Species		
					Species1	Sex/Age Class	Number

¹ CL = California sea lion
 PH = Pacific harbor seal
 GR = Gray Whale

KW = Killer Whale
 SO = Southern sea otter
 O = Other (include species name)

Date: _____

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**Daily Marine Mammal Monitoring Data Sheet
Waterfront Repairs at USCG Station Monterey**

Diagram

Biological Monitor: _____ **Print Name** _____
Signature