USCG Aids to Navigation Structure Replacement Program
Marine Mammal Monitoring Plan
(rev. February 9, 2023)

Introduction:
The proposed project falls under a federally mandated requirement for the United States Coast Guard (CG) to administer the U.S. Aids to Navigation (ATON) System. This system's primary objective is to mark navigable channels and waterways, mark obstructions and hazards adjacent to waterways and mark obstructions in general navigational areas that may not be anticipated. The ATON system promotes safe navigation by providing mariners with information that helps them navigate waterways safely and to avoid hazards obstructions that can jeopardize mariners' safety and/or potentially adversely affect coastal resources.

Proposed Action:
The average ATON structure consists of one to four 18-inch diameter steel pipe pile(s) that stands approximately 10 to 30 feet (ft) above the mean high water level. The pile supports either a reduced header platform, a 5 ft x 5 ft or a 7 ft x 7 ft aluminum platform with safety railings extending 3 1/2-ft above the platform. The platform is accessible by a 7-ft ladder connected to the supporting 18-inch steel pile. The platform supports a combination of aids (i.e. light, dayboard and foghorn) which are specified within the CG Pacific Light List.

Typical work for the proposed action involves the following:

1. Remove the existing aids mounted on each ATON structure;
2. Remove the existing pile(s) via a vibratory extractor. Install the new 18-inch steel pipe pile(s), approximately 30 ft below the mudline, via a vibratory hammer. It takes approximately 5 to 10 minutes to remove each existing pile and 10 to 20 minutes to drive each pile once positioned;
3. Remount refurbished and/or new aids onto the new supporting structure.

Marine Mammal Protection Act (MMPA):
The MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which:

(i) Has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or

(ii) Has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment](50 CFR, Part 216, Subpart A, Section 216.3 – Definitions).

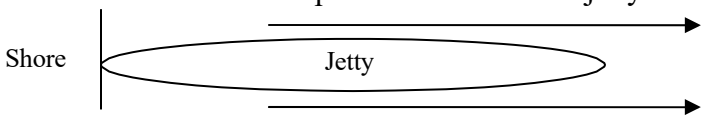
As part of its official duties the CG, under Section 109(h)(1) of the MMPA, could take marine mammals, if such taking is for: A) the protection of the welfare of the mammal, B) the protection and welfare of the public or, C) the nonlethal removal of nuisance animals. The CG ATON program typically invokes both Section 109(h)(1)(A) and Section 109(h)(1)(B) of the MMPA while conducting work/maintenance on ATON structures that are close to or on jetties, jetted rocks, and/or other haul-out areas. The noise generated by the work/maintenance on ATON structures is likely to cause a reaction from mammals hauled-out near the proposed action. A possible type of reaction from a hauled-out mammal may be flushing into the water, Level B harassment, which could potentially lead to injury if more than one mammal is flushing at the same time (stampede type of situation), Level A harassment.

As part of the CG's official duties under Section 109(h)(1)(A) of the MMPA, non-lethal methods of deterrence of marine mammals that are hauled out on or near the proposed action is

mandatory before any work on the ATON structure commences. Section "CG Responsibilities' Under Section 109(h)(1) of the MMPA" of this document contains the non-lethal deterrence methods that are non-injurious to marine mammals and effectively deter marine mammals from hauling-out throughout the day during the duration of the project. In addition to Section 109(h)(1)(A), one of the primary duties of the CG is to "develop, maintain, establish, and operate aids to maritime navigation for promotion of safety on and over the high seas and water subject to the jurisdiction of the United States (14 USC 2)." Thus, Section 109(h)(1)(B) of the MMPA is also applicable to the proposed action.

<u>CG Responsibilities' Under Section 109(h)(1) of the MMPA</u>:

1. Non-lethal Deterrence Methods:
   - Remove marine mammals from haul-out at least 30 minutes prior to work commencing.
     - Boat hazing
     - Use "Super Soaker" water guns (bay water): squirt at the mammal's rear quarters or chest
     - Hazing movement: Move mammals away from structure/shoreline towards the water. Example of direction for a jetty



   - Measures to ensure mammals do not haul-out during the work evolution.
     - Have at least one person as a designated noise maker… pot/pans, cow bell, etc.
     - Have a couple of barricades/shields available incase mammals try to get close to workers… Fending off. (Plywood, 3ft high, with handles)
     - "Super Soaker" with bay water… Aim for rear quarters or chest.
     - Barrier around work area…. Orange construction mesh fencing

   - Start work between 8 and 9 AM; work shall only occur during daylight hours.

2. Avoiding Exceeding Noise Level Thresholds, Harassment/Injury:

   - In 2016, NMFS published comprehensive technical guidance on sound levels likely to cause injury and behavioral disturbance in the context of the ESA and Marine Mammal Protection Act (MMPA). The guidance and thresholds are available at: http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm and are presented in the following table. This guidance was revised in 2018 and elements of it were modified in 2020; however, the thresholds remained unchanged:

Functional Hearing Group	In Air Noise Thresholds	Underwater Noise Thresholds Non-impulsive Sound Vibratory Pile Driving	
	Disturbance Threshold	Auditory Injury Threshold (PTS)	Behavioral Disturbance Threshold
	dB RMS (unweighted)	dB SELcum	dB RMS
Low-frequency Cetaceans	NA	199	120
Mid-frequency Cetaceans	NA	198	120
High-frequency Cetaceans	NA	173	120
Phocid Pinnipeds (seals)	90	201	120
Otariid Pinnipeds (sea lions)	100	219	120
Sea Otters (USFWS)*	100	219	160

*USFWS common protected marine mammals in the west AOR include the sea otter. Thresholds for the Sea Otter were based on USFWS recommendation during 2022 consultations for pile replacement activities at multiple USCG facilities in Alaska.

- Duration of Exposure: The duration of pile extraction (vibratory extractor) will be between 5 to 10 minutes and pile installation (vibratory hammer) will be between 10 to 20 minutes. Therefore, the maximum duration of the existing underwater and airborne sound levels to be potentially increased will be the following:
    - Single Pile Structure = 30 Minutes
    - Three Pile Structure = 90 Minutes
    - Four Pile Structure = 120 Minutes

3. Assessment of Effect and Mitigation:

- The following threshold zone distances and corresponding isopleths were developed using NOAA Fisheries User Spreadsheet (NMFS 218, 2020), simple practical spreading loss models, and acoustic data recorded during previous in-water projects including pile repair, removal, and installation for 20-inch steel pile at other shoreside facilities on the U.S. West Coast (i.e. Caltrans) to identify the Level A (injury) and Level B (behavior) harassment zones that would result from pile removal and installation, as summarized in the below table.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds	USFWS Sea Otter
PTS Isopleth to Level A Threshold (meters)	**8.3**	**0.7**	**12.2**	**5.0**	**0.4**	**0.4**
TTS Isopleth to Level B Threshold (meters)	**5,320**	**5,320**	**5,320**	**5,320**	**5,320**	**100**
Isopleth to In Air Thresholds	**-**	**-**	**-**	**2.2**		**0.5**

- Due to the size of timber/steel pipe pile being extracted and steel pipe pile being installed; the non-lethal deterrence methods to flush marine mammals prior to commencing work; implementation of a shutdown zone to avoid Level A take, and the duration of the existing background noise levels (underwater and ambient) being potentially increased, the CG has determined that the proposed work will not likely injure marine mammals. However, the proposed work has the potential to exceed background levels and result in Level B harassment (behavioral and temporary threshold shift harassment) for 30-120 minutes per ATON structure. To mitigate the potential of reaching Level B harassment noise levels the CG will require the contractor to do the following:

    - Contractor shall be required to have two Biological Monitors on-site during the proposed action. One Biological Monitor shall be located on a stationary vessel where the work is being conducted and able to observe the full width of the Shutdown Zone. The second biological monitor shall be on a mobile vessel and actively patrolling the full width of Harassment Zone. Each Biological Monitor shall be an experienced marine biologist, with a minimum of a Bachelors Degree in Science, who has experience in marine mammal identification and behaviors and have knowledge of marine mammal physiology, behavior, and life-history. These qualifications will assist in being able to determine if observed marine mammals are exhibiting behavioral reactions to the proposed actions. Each Biological Monitor shall have no other construction related tasks while conducting monitoring.

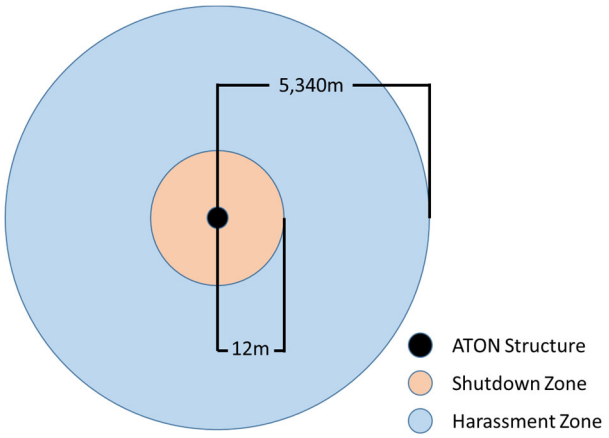
    - Enclosure (1) contains the Contractor and Biological Monitor's Protocols.

CONTRACTOR AND BIOLOGICAL MONITOR PROTOCOLS

1. Zones: The Biological Monitors will ensure that the following shutdown and harassment zone protocols are adhered to by the construction crew in order to avoid injury and reduce harassment of any marine mammal that enters these zones.

   - *Shutdown Zone*: Both during pile removal and installation, the shutdown zone includes the area where it is anticipated that Level A noise level threshold would be reached. To be conservative, a 12-meter radius (from the structure) shutdown zone shall be established and monitored to prevent injury to marine mammals from their physical interaction with construction equipment during in-water activities.

   - *Harassment Zone*: Both during pile removal and installation, the harassment zone includes the area where it is anticipated that the in-water work will generate sound levels that meet the Level B harassment criteria for all marine mammals. As such, a 5,340 meter radius zone will be established during all in-water activities.



   - Both the Shutdown and Harassment zones will be monitored throughout all work activities involved with the extraction and installation of each pile with a vibratory driver. If a marine mammal enters the harassment zone, an exposure would be recorded and behaviors documented by the Biological Monitor. However, the pile would be completed without cessation, unless the animal approaches within 61 meters of the shutdown zone or enters the shutdown zone, at which time all in-water work will be halted. Below, the Section "Visual Monitoring Requirements for Construction Work" contains procedures for construction delays due marine mammals entering these zones.

2. Responsibility: The procedures and responsibilities for implementing this Marine Mammal Monitoring Plan shall be agreed upon between the Construction Foreman/Supervisor and the Biological Monitors prior to mobilizing construction equipment.

3. Data Collection: The Biological Monitors will use the Marine Mammal Sighting Form, enclosure (2), which will be completed each survey day. The following information will be collected on the sighting form:

   - Date and time that the pile extraction and driving begins and ends
   - Construction activities occurring during each observation period

- Weather conditions
- Tidal elevation and direction of change, sea state and water currents;
- Visibility
- Species, numbers, and if possible sex and age class of marine mammals
- Marine mammal behavior patterns observed, including bearing from observer and direction of travel
- Distance from pile work activities to marine mammal and distance from the marine mammal to the observation point
- Other human activity in the area

4. Equipment: The following equipment will be required to conduct the marine mammal monitoring:

   - Survey boat
   - Portable radios to communicate with the Pile Driving Crew Lead and the Biological Monitor
   - Green and Red flags to communicate between the Pile Driving Crew Lead and the Biological Monitor as a back-up to radio communication
   - Nautical charts
   - Tide and current tables
   - Watch or Chronometer
   - Binoculars with built-in range finder
   - Marine Mammal visual guides

5. Obtain Baseline Information in Order to Determine Effect: The Biological Monitors shall be on-site 1 hour prior to the Contractor mobilizing and 1 hour after the Contractor has demobilized construction equipment at each ATON Structure's location. The objective is to gather data on the number of marine mammals that haul-out and/or transit around the proposed action's site. Each observation shall collect number counts of how many potential marine mammals occur within the project vicinity and to determine if the proposed action had any effects on the population. This data will be used in the Monitoring Report.

   - The following information shall be collect at a minimum:
     - Weather conditions;
     - Tidal elevation and direction of change, sea state and water currents;
     - Visibility;
     - Species, numbers, and if possible sex and age class of marine mammals; and
     - Marine mammal behavior patterns observed.

6. Visual Monitoring Requirements for Construction Work: In order to effectively monitor the shutdown and harassment zones the Biological Monitors shall be positioned at the best practicable vantage point.

   - **Prior to any in-water work commencing**, the shutdown and harassment zones shall be monitored for 30 minutes to ensure that there are no marine mammals present.
     - If marine mammals(s) are present within or approaching the shutdown zone prior to pile extraction/installation, the survey will continue and the beginning of the work will be delayed until the mammal leaves the shutdown zone voluntarily and 15 minutes has passed with no mammals within this zone. Only the Biological Monitor can give the approval for work to commence.

   - **During in-water work**, both zones will be monitored throughout the time required to extract the existing pile and install the new pile.

- If a marine mammal is observed entering the harassment zone a "take" would be recorded and behaviors documented. Pile extraction or pile installation work would continue. If the project is in between extraction and installation work, the Biological Monitor shall ensure not marine mammals are within the shutdown zone when the next phase of work starts, see "Prior to Work Commencing" section.

- If the marine mammal approaches or moves into the shutdown zone all work will stop immediately. It is imperative that the Biological Monitor provide the Pile Driving Crew Lead advance notification to prepare for stopping all work if a mammal does enter the shutdown zone.

- Pile extraction/installation activities will be delayed until the marine mammal has voluntarily left the shutdown zone and has been visually confirmed beyond the shutdown zone, or 30 minutes have passed without re-detection of the mammal. The Biological Monitor shall be the only person who can give authorization that construction activities can continue.

- In case of fog or reduced visibility, the Biological Monitor must be able to see the shutdown and harassment zones or pile extraction/installation work will not be initiated until visibility in these zones improve to acceptable levels.

- **Following the completions of all in-water work**, monitor the shutdown and harassment zones for 30 minutes. The focus for this period of time is on observing and reporting unusual or abnormal behavior of marine mammals.

7. Monitoring Report: A draft report, electronic format, will be submitted to the CG within 30 calendar days after completing the proposed action. The CG will review and provide comments with 7 calendar days. The contractor shall revise the draft report with any comments the CG provides within 7 calendar days and resubmit the draft report, electronic format, to the CG. The CG will notify the contractor when the draft report can be finalized and printed. Once the report is finalized the contractor shall submit 1 digital email copy of the Final Monitoring Report and 2 compact discs each containing both Microsoft Word and Adobe Portable Digital File formats versions of the report.

- The report will summarize all of the marine mammal observations and data gathered, including all pictures, graphs, tables, figures and summary statistics.

- At minimum the report shall include:
  - General Data: Date and time of activity; Water conditions; Weather conditions; and Description of Methods used to monitor.
  - Specific Pile Driving Data:
    - Description of the pile extractor/driver
    - Depth of water that the piles where installed in;
    - Physical characteristics of the bottom substrate into which the piles are driven into.
  - Prior, during and completion of all in-water work observations, shutdowns, etc.
  - Data collected the day before work commenced.
  - Data collected three days after work commenced.
  - Provide statistical data on the number of takes, either by the hour and/or based on the density of the population.

MARINE MAMMAL OBSERVATION RECORD FORM

Project Name: _____

Monitoring Location_____
(Pier Location, Vessel based, Land Location, other)

Page _____of _____

Date: _____

Vessel Name: _____

Time Effort Initiated:_____

Time Effort Completed:_____

Sighting Data

Event Code	Sighting Number (1 or 1.1 if resight)	Time/Duration watching sighting (Start/End time if continuous)	WP # (every time a sighting is made)	Observer	Sighting cue	Species	Dist/ Dir to Animal (from Observer)	Dist to Pile (btwn animal & pile)	# of Animals Group Size (min/max/best) # of Calves	Relative Motion/and Behavior Code (see code sheet)	Const Type During Sighting	Miti gation used during sighting ?	Miti gation Type?	Visibility	% Glare	Weath Cond	Sea State and Wave Ht	Swell Dir	Behavior Change/ Response to Activity/Comments
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Sighting #=chronological number of sightings, If resight of same animal, then 1.1, 1.2, etc. WP (Waypoint)=GPS recording of lat/long, time/date stamp. Critical for vessel observers.