National Marine Fisheries Service
Office of Protected Resources

Marine Mammal Monitoring Plan

After May 1, 2025

Piers 39 to 43½ Sediment Remediation Project,
Remedial Response Areas A and B
San Francisco, San Francisco County, California

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ACRONYMS AND ABBREVIATIONS

PG&E	Pacific Gas and Electric Company
IHA	incidental harassment authorization
I&R	Illingworth and Rodkin, Inc.
MMO	marine mammal observer
MMPA	Marine Mammal Protection Act
MMSZ	marine mammal shutdown zones
MZ	monitoring zone
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OPR	Office of Protected Resources
OW	otariids
PAH	polycyclic aromatic hydrocarbon
Project	Piers 39 to 43½ Sediment Remediation Project
PSO	protected species observer
re 1µPa	reference 1 micro-Pascal
RWF	Red and White Fleet

1 DESCRIPTION OF SPECIFIED ACTIVITY

1.1 PROJECT SUMMARY

An incidental harassment authorization (IHA) was issued for Pacific Gas and Electric Company (PG&E) which was valid from May 1, 2024 to April 30, 2025. The IHA was renewed authorizing work to occur between May 1, 2025 to April 30, 2026. Both IHAs authorize incidental take of marine mammals by Level B harassment from activities to be conducted during the Piers 39 to 43½ Sediment Remediation Project (the Project), Remedial Response Areas A and B. No Level A take of marine mammals is anticipated.

Project components generating Level B harassment from hydroacoustic effects will include the following:

- **Hydroacoustic Data Collection Test Piles**: The impact-hammer installation and vibratory removal of up to ten 18-inch composite plastic piles may occur to gather hydroacoustic data to inform future IHA requests for Remedial Response Area E.
- **Turbidity Curtain Pile Installations**: Approximately 20 steel H-piles or steel shell piles, less than 24 inches in diameter, will be installed or removed using vibratory methods.
- **Red and White Fleet (RWF) Temporary Relocation Piles**: The relocation of a temporary berthing facility would require the placement of approximately 20 coated steel pipe piles (10, 30 - 36-inch diameter guide piles and 10, 24-inch diameter fender piles) using primarily the vibratory hammer installation method. Occasionally, an attenuated impact hammer may be required to install 24-inch fender piles.
- **Sediment Pin Installation**: Approximately 120 16-inch wood or composite tapered piles, primarily installed using vibratory hammer methods, will be installed. Occasionally, an unattenuated impact hammer may be required to install sediment pins.

The purpose of the project is to remediate (i.e., clean up) sediments impacted (i.e., contaminated) with polycyclic aromatic hydrocarbons (PAHs), likely attributable to the operations from the former Beach Street Manufactured Gas Plant (MGP), within the Project Area (Figure 1. Project Area and Vicinity Map), to protect human health and the environment. The Project will prevent toxicity to benthic invertebrates, birds, and humans who may be exposed to PAHs by consuming biota with PAH concentrations bioaccumulated in prey tissue via direct contact with sediments and associated pore water or through the aquatic food web. The recommended remedy will include a combination of dredging and capping and/or armoring

of the impacted sediments to minimize or reduce exposure to the impacted sediment and provide erosion protection measures to mitigate scour caused by ferry and boat traffic and other foreseeable hydrodynamic forces, coupled with monitoring and institutional controls. In addition, the project will require slope stabilization to ensure slope integrity during a seismic event.

1.2 PURPOSE OF THE DOCUMENT

This marine mammal monitoring plan (MMMP) has been prepared based on guidance provided by National Oceanic and Atmospheric Administration's (NOAA) Office of Protected Resources (OPR). The MMMP discusses activities associated with sediment remediation within remedial response areas A and B, potential impacts to marine mammals from these activities, and methods for monitoring and reporting the activity of marine mammals near the remediation site. This plan should be implemented for all activities occurring between May 1, 2025 and April 30, 2026.

2 BACKGROUND

2.1 MARINE MAMMAL SPECIES OF CONCERN

Nine species of marine mammals have the potential to occur within or near the Project area, most commonly California sea lions (*Zalophus californianus*), Pacific harbor seals (*Phoca vitulina richardii*), and harbor porpoises (*Phocoena phocoena*). Less frequently, bottlenose dolphins (*Tursiops truncatus*) may be perennially present in small numbers in the greater area of the bay. Northern elephant seals (*Mirounga angustirostris*), northern fur seals (*Callorhinus ursinus*), gray whales (*Eschrichtius robustus*), and humpback whales (*Megaptera novaengliae*) also enter the bay, albeit seasonally and in low numbers. Finally, the Steller sea lion (*Eumetopias jubatus*) has been documented, though rarely, at the Pier 39 K-Dock haul-out.

Authorization for incidental take of seven of marine mammals, by Level B harassment from activities to be conducted during the Project, was authorized in the IHA. In 2024 NMFS established new hearing groups which are summarized in Table 1.

Table 2-1. Marine Mammals with Potential to Occur and Hearing Group Designation

Common Name	Scientific Name	Hearing Group
California sea lions	*Zalophus californianus*	Otariid pinnipeds
Pacific harbor seals	*Phoca vitulina richardii*	Phocid pinnipeds
Harbor porpoise	*Phocoena phocoena*	Very high-frequency cetaceans
Bottlenose dolphins	*Tursiops truncatus*	High-frequency cetaceans
Northern elephant seals	*Mirounga angustirostris*	Phocid pinnipeds
Northern fur seals	*Callorhinus ursinus*	Otariid pinnipeds
Steller sea lion	*Eumetopias jubatus*	Otariid pinnipeds

Only the humpback whale is listed as endangered under the Federal Endangered Species Act (ESA) and depleted under the Marine Mammal Protection Act (MMPA). Given the rarity of occurrence and highly visible nature of both whale species, work in the project area would be shut down if these species were to approach the project area's Level B harassment isopleth.

2.2 MARINE MAMMAL REGULATIONS

Under the MMPA, "take" is defined as to "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect" marine mammals. Under the 1994 amendment to the MMPA, harassment is statutorily defined as "any act of pursuit, torment, or annoyance which has the potential to injure or disturb a marine mammal or marine mammal stock in the wild." Harassment that has the potential to injure a marine mammal is further defined as Level A harassment. Harassment which has the potential to disturb a marine mammal by disrupting behavioral patterns—including, but not limited to migration, breathing, nursing, breeding, feeding, or sheltering—but which lacks the potential for injury is Level B harassment.

2.3 POTENTIAL IMPACTS ON MARINE MAMMALS FROM PILE DRIVING ACTIVITIES

Sound generated during pile driving required for sediment remediation activities have the potential to result in Level B "take by harassment" of marine mammals. Vibratory pile driving produces non- impulsive (continuous) noise that can cause behavioral disturbance to marine mammals and a temporary threshold shift in an animal's hearing; both of these effects are considered to be Level B harassment. Sounds from vibratory pile driving, furthermore, can also cause a slight injury in the form of a permanent threshold shift in an animal's hearing; this is a form of Level A harassment. Impact pile driving produces impulsive noise that can cause a behavioral disturbance and a temporary threshold shift to marine mammals (Level B harassment) as well as a slight injury (i.e., permanent threshold shift) in an animal's hearing (Level A harassment).

2.4 AVOIDANCE AND MINIMIZATION MEASURES

The following measures will be taken to minimize the exposure of marine mammals and their habitat to the effects of sound from Project pile driving:

- Marine mammal monitoring will be conducted during all construction noise-generating activities (pile installations) to ensure that marine mammals do not enter Level A harassment zones and that marine mammal presence in the sound isopleth does not exceed authorized take levels. Construction will be shut down if a marine mammal observer (MMO) observes a humpback or gray whale approaching the Level B isopleth. As it is impractical to monitor the full zones for a project of this extended length, MMOs would be positioned such that at least 20 percent of the Level B zone is covered when

monitoring is required. Efforts will be made to observe the maximum extent of the monitoring zone possible. Should use of an impact hammer be required for steel piles less than 24 inches in diameter, MMOs would be positioned such that 100 percent of the Level A zone is clearly visible.

- No pile driving or sediment sampling investigations will occur at night, when MMOs cannot visibly observe the project shutdown zones.
- Vibratory hammering may be conducted between March 15 and December 1 without attenuation.
- Only vibratory installation may be used to install steel piles, with the exceptions of occasional attenuated impact hammering required to seat RWF relocation piles less than 24 inches in diameter. Permanent timber or composite soil pins may be installed using vibratory or unattenuated impact installation methods.
- Sound attenuation would occur using a bubble curtain, when required. When a bubble curtain is required, the following performance standards will be implemented:
  - The bubble curtain must distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column.
  - The lowest bubble ring will be in contact with the mudline for the full circumference of the ring, and the weights attached to the bottom ring will ensure 100 percent mudline contact. No parts of the ring or other objects will prevent full mudline contact.
  - The contractor will ensure that personnel are trained in the proper balancing of air flow to the bubblers and submit an inspection/performance report for approval by the Port of San Francisco or PG&E within 72 hours following the performance test. Corrections to the attenuation device to meet the performance standards will occur prior to impact driving.
- A soft start will be implemented before operating impact pile driving hammers at full capacity. The soft start will consist of an initial set of strikes at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strikes separated by the waiting period. A soft start will be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for 30 minutes or longer.

These measures will limit the intensity of pile driving sounds in the marine environment. In addition, the use of vibratory hammers to install and remove piles, where feasible, and the employment of a soft start for the impact hammer is expected to encourage marine mammals to move away from disturbance areas so that they are less likely to be present during full-

power pile driving activities. The establishment of marine mammal shutdown zones (MMSZs) and the implementation of this monitoring plan will reduce the likelihood that marine mammals are exposed to Level A sound thresholds. It will also minimize the exposure of any animals to Level B sound thresholds and support its documentation. Therefore, with these measures, the effects of the pile driving will be mitigated to the level of least practical adverse impact on marine mammals.

2.5 NOISE LEVELS FROM CONSTRUCTION ACTIVITIES

The distance to marine mammal threshold criteria corresponding to Level A and Level B harassment for sound generating activities for this Project have been modeled by the acoustic engineering firm Illingworth and Rodkin, Inc. (I&R). Modeling was based on underwater sound and pressure measurements from similar construction activities (Molnar et al. 2020).

For threshold distances that did not change because of the draft 2024 technical guidance, threshold distances were calculated by I&R using the NMFS' User Spreadsheet Tool (Version 2.0) associated with the revision of the Marine Mammal Hearing Technical Guidance (NMFS 2020). NMFS provided revised threshold distances based on 2024 draft technical guidance.

For the calculation of cumulative sound exposure level threshold distances, it was assumed that only one type and size of pile would be installed on the same day. Estimates are based on the number of piles to be driven each day per Table 2-2. Table 2-3 summarizes the resulting estimated distances to the Level A and Level B marine mammal threshold criteria for each pile type. Monitoring zones are prescribed based on distances reported in Table 2-3. Some Level A thresholds have been rounded up for ease of use in the field.

Table 2-2. NMFS User Spreadsheet Source-Level Inputs

Vibratory Pile Driving					
	Duration (minutes)	Piles per Day	Peak[a]	RMS[a]	1-second SEL[a]
Turbidity Curtain Installation or Removal					
Steel H-pile	10	4	NA	143	NA
24-inch-diameter steel shell pile	10	4	NA	153	NA
RWF Temporary Relocation Piles					
24-inch-diameter steel shell pile	10	4	NA	153	NA
36-inch-diameter steel shell pile	20	4	NA	168	NA
Sediment Pin Installation					
14- to 16-inch timber pile	20	20	NA	158	NA
Impact Pile Driving					
	Duration (strikes)	Piles per Day	Peak[a]	RMS[a]	1-second SEL[a]
Hydroacoustic Data Collection Test Piles					
18-inch composite/plastic	400	10	185	160	150
Sediment Pin Installation					
14- to 16-inch timber pile	400	20	184	157	145

Notes:

NA = not applicable

Peak = peak pressure

RMS = root mean square

SEL = sound exposure level

[a] All sound values are expressed in dB re 1 µPa at 10 m from the sound source. See Appendix B (I&R 2023) for documentation of source levels (Enclosure D; Table 6) or provided by NMFS on September 6, 2024.

Table 2-3. Distances to Level B Harassment Threshold Criteria

Pile Type and Method	Piles per Day	Level B Isopleth (m)	Distance (m)	Ensonified Area (km^2)
Hydroacoustic Data Collection Piles				
18-inch composite (impact)	10	5	10	0.0002
18-inch composite (vibratory)	10	1	1,360	3.58
Turbidity Curtain				
steel H-pile (vibratory)	4	<1	341	0.29
steel shell pile 24 inches (vibratory)	4	1	1,585	4.61
RWF Temporary Relocation Piles				
24-inch steel shell pile (vibratory)	4	1	1,585	4.54
24-inch steel shell pile (impact, attenuated)	4	97	736	1.06
36-inch steel shell pile (vibratory)	4	14	3,688	23.46
Sediment Pins				
14- to 16-inch timber pile (vibratory)	20	9	3,415	19.17
14- to 16-inch timber pile (impact)	20	4	6.3	0.002
14- to 16-inch composite pile (vibratory)	10	2	1,360	3.20
14- to 16-inch composite pile (impact)	10	7	3.4	0.0007

Source: Table 7 of the hydroacoustic assessment (Enclosure D of IHA application, revised November 16, 2023)

Note: Distances to Level B harassment threshold criteria for impact-hammer use on a 36-inch steel pile is not included, as this activity is prohibited.

Table 2-4. Distances to Level A Harassment Threshold Criteria for Pile Installation

		Level A/Permanent Threshold Shift Isopleth (m) Hearing Groups				
		Cetaceans			Pinnipeds	
Pile Type and Method	Piles per Day	LF	HF	VHF	Phocids	Otariids
Hydroacoustic Data Collection Piles						
18-inch composite (impact)	10	16	2	25	14	5
18-inch composite (vibratory)	10	2	1	2	3	1
Turbidity Curtain						
steel H-pile (vibratory)	4	<1	<1	<1	<1	<1
steel shell pile 24 inches (vibratory)	4	2	<1	2	3	1
RWF Temporary Relocation Piles						
24-inch steel shell pile (vibratory)	4	2	<1	2	3	1
24-inch steel shell pile (impact, attenuated)	4	293	37	454	261	97
36-inch steel shell pile (vibratory)	4	33	13	27	42	14
Sediment Pins						
14- to 16-inch timber pile (vibratory)	20	21	8	17	27	9
14- to 16-inch timber pile (impact)	20	12	2	18	10	4
14- to 16-inch composite pile (vibratory)	10	5	2	4	7	2
14- to 16-inch composite pile (impact)	10	7	1	11	7	2

Source: NMFS email dated September 6, 2024

Notes:

LF = low frequency

HF = high frequency

VHF = very high frequency

3 TAKE AUTHORIZATION

NMFS authorized the incidental taking of Pacific harbor seals, northern elephant seals, California sea lions, northern fur seals, Steller sea lions, common bottlenose dolphins, and harbor porpoise by Level B harassment for 50 days of construction over the effective period of the IHA. No Level A take was requested, as avoidance and minimization measures will prevent such take.

The numbers of marine mammals by species that may be taken by each type of construction activity were calculated based on the estimated abundance of each species in the Project Area and multiplied by the number of days of vibratory and impact pile driving. The calculations included a 10 percent buffer for the number of construction days, and take estimates were separated by remedial response area. Table 3-1 shows the total take requested over the effective period of the IHA. A single animal can be taken only once per day.

Table 3-1. Requested Level B Take for Remedial Response Areas A and B

Species	Estimated Abundance in Project Area per Day	Estimated Level B Take (50 Days of Pile Driving * Animal Abundance)	Requested Level B Take for Remedial Response Areas A and B (rounded up to whole number/animal)
Pacific Harbor Seal	20	1,000	1,000
Northern Elephant Seal	0.5	25	25
California Sea Lion[a]	191	9,550	9,550
Northern Fur Seal	0.027[b]	1.35	2
Steller Sea Lion	0.1	5	5
Bottlenose Dolphin	0.5	25	25
Harbor Porpoise	2	100	100

Notes:

[a] Assumes multiple repeated takes of some individuals from a small portion of the stock

[b] Equates to 10 per year

4 MARINE MAMMAL MONITORING

This MMMP will be employed to 1) document the number and species of animals potentially exposed to Level B harassment, 2) avoid take of any species in exceedance of what is authorized by NOAA OPR, and 3) avoid taking in a manner not authorized by NOAA OPR under the IHA for Project activities.

4.1 PRECONSTRUCTION BRIEFINGS

Briefings will be conducted for construction supervisors and crews, the marine mammal monitoring team, and PG&E staff prior to the start of all pile driving activity. Briefings will also be held when new personnel join for Project work. The briefings will explain personnel responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.

4.2 SHUTDOWN AND MONITORING ZONES FOR PILE DRIVING ACTIVITIES

Behavioral monitoring zones (Figures 2a-d) and MMSZs (Figures 3 a-d) were established based on consultation with NOAA OPR. Before vibratory or impact pile driving, Level A MMSZs and Level B monitoring zones will be established at the conservatively estimated distances to acoustic threshold criteria shown in Table 2-3.

MMSZs include all areas where underwater sound pressure levels are expected to reach or exceed the Level A harassment criteria for marine mammals. MMSZs were chosen for depiction in maps per the phocid hearing groups, as harbor seals are the most likely marine mammal to occur within the work area.

Monitoring zones include all areas where sound pressure levels are expected to reach or exceed the Level B behavioral disturbance criteria. MMSZs will be fully monitored by MMOs. A representative portion of Level B monitoring zones will be fully monitored to provide an accurate sample size of animals taken by Project activities and to ensure that animals approaching the MMSZs are detected.

After pile driving activity begins, hydroacoustic measurements will be collected by I&R for the specific activity (e.g., the location and size/type of pile). These hydroacoustic monitoring results will be provided to NOAA OPR, and the radius of the Level A and B monitoring zone may

be adjusted based on measured sound pressure levels. A hydroacoustic monitoring plan will be provided 90 days prior to commencement of pile driving for approval.

4.3 MARINE MAMMAL OBSERVERS

Monitoring during pile driving activities will be conducted by qualified, NOAA OPR-approved MMOs. Between one and three MMOs will be on site at all times during pile driving activities in locations depicted in Figure 4. One MMO will be designated as the lead MMO and will receive updates from other MMOs on the presence or absence of marine mammals within the applicable MMSZs and monitoring zones. The lead MMO will be stationed at the active pile driving rig or at the best vantage point practicable to monitor the MMSZs for marine mammals and implement shutdown and delay procedures when applicable through communication with the onsite supervisor. The other MMOs will be stationed at the best vantage points practicable to observe the monitoring zones. Exact locations will be determined in the field based on the pile driving site, field conditions, and coordination with the contractors, but they may include docks, barges, and tower structures. Observations will be made using binoculars (10 × 42 mm or similar) or spotting scopes and the naked eye during daylight hours. Each member of the monitoring team will have a radio (and mobile phone for backup) for contact with the lead MMO and other observers.

4.4 MINIMIZATION OF IMPACTS FROM PILE DRIVING

Pile driving activities have the potential to result in Level B harassment for harbor seals, northern elephant seals, California sea lions, northern fur seals, Steller sea lions, harbor porpoises, and bottlenose dolphins. It can cause negligible short-term effects on marine mammals transiting or foraging in the area. Project activities, however, would not cause long-term effects on individuals and would not result in population-level effects.

The following measures would be taken to minimize the exposure of marine mammals and their habitat to the effects of sound from pile driving:

- Marine mammal monitoring will be conducted during all construction noise-generating activities (pile installations or sediment sampling) to ensure that marine mammals do not enter Level A harassment zones and that marine mammal presence in the sound isopleth does not exceed authorized take levels. Construction will be shut down if a MMO observes a humpback or gray whale approaching the Level B isopleth. As it is not practical to monitor the full zones for a project of this extended length, MMOs would be

positioned such that at least 20 percent of the Level B zone is observed when monitoring is required. Efforts should be made to observe the maximum extent of the monitoring zone as possible. Should the seating of steel piles be required, MMOs would be positioned such that 100 percent of the Level A zone is clearly visible.

- No pile driving will occur at night when MMOs are not able to visibly observe the isopleth.
- Vibratory hammering may be conducted between March 15 to December 1, without attenuation.
- An impact hammer may not be used on a steel pile larger than 24-inches in diameter.
- Only vibratory installation may be used to install steel piles, with the exception of occasional seating of RWF relocation piles less than 24-inches in diameter. Permanent timber or composite sediment pins may be installed using vibratory or unattenuated impact installation methods.
- A soft start will be implemented before operating impact pile driving hammers at full capacity. The soft start will consist of an initial set of strikes at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strikes separated by the waiting period. A soft start will be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for 30 minutes or longer.

These measures will limit the intensity of pile driving sound in the marine environment. In addition, the use of vibratory hammers to install and remove piles where feasible, and employment of a soft start for the impact hammer, is expected to encourage marine mammals to move away from disturbance areas so that they are less likely to be present during full-power pile driving activities. Establishment of MMSZs and the implementation of a monitoring plan will ensure that no marine mammals are exposed to Level A harassment sound thresholds and that exposure of any animals to Level B harassment sound thresholds is minimized and documented. Therefore, with these measures, the effects of the pile driving will be mitigated to the level of least practical adverse impact on marine mammals.

4.5 DATA COLLECTION AND OBSERVATION RECORDING

Standardized data collection sheets will be provided to the MMOs. Each MMO will record the following information:

- Dates and times (beginning and end) of all marine mammal monitoring

- MMO locations during marine mammal monitoring
- Construction activities 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 cloud cover, visibility, Beaufort sea state)
- The number of marine mammals observed, by species, relative to the pile location and if pile driving or removal was occurring at the time of sighting
- Distances and bearings of each marine mammal observed to the pile being driven or removed for each sighting (if pile driving or removal was occurring at time of sighting)
- Marine mammal behavior patterns during observation, including the direction of travel
- Age and sex class, if possible, of all marine mammals observed
- 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, including a full description of the bubble curtain should one be required.

4.6 MARINE MAMMAL MONITORING DURING PILE DRIVING

Predetermined Level A MMSZs and Level B monitoring zones will be monitored during all vibratory and impact pile driving, as defined in Table 2-3 and Table 3-1 and Figures 2a-d through 3a-d.

Pile driving will be conducted only during daylight hours, with enough time for pre- and post-construction monitoring and with full visibility of the MMSZs. If the entire MMSZ is not visible (e.g., due to fog or heavy rain), pile driving and removal will be delayed until the MMOs are confident that marine mammals within the MMSZ can be detected.

The lead MMO will be in contact with other MMOs and the construction foreman. MMOs will begin monitoring at least 30 minutes before pile driving begins and will continue to monitor the area for at least 30 minutes after pile driving has ended for the day.

4.6.1 Impact Pile Driving Soft Starts

Before operating impact pile driving hammers at full capacity, a soft start will be implemented. The soft start will consist of an initial set of strikes at reduced energy, followed by a 30-second

waiting period, then two subsequent reduced-energy strikes separated by the waiting period. A soft start will be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for 30 minutes or longer.

4.6.2 Delay and Shutdown Procedures

If any marine mammal enters a MMSZ within 15 minutes of the beginning of pile driving, pile driving will be delayed until the animal leaves the area or at least 15 minutes have passed since the last observation of the animal. If a marine mammal approaches or enters the MMSZ during pile driving, the activity will be halted. The lead MMO will notify the onsite supervisor that a marine mammal is approaching or within a MMSZ and the pile driving activity needs to be temporarily shut down. The onsite supervisor will direct the equipment operator to temporarily shut down pile driving activity. Pile driving may resume after the animal has moved out and away from the MMSZ or after at least 15 minutes have passed since the last observation of the animal if it is not seen leaving the MMSZ.

If there is an observation of an approach toward or presence in the Level B harassment zone by a species for which authorization has not been granted (i.e., humpback or gray whale) or a species for which authorization has been granted but the authorized takes are met, pile driving and removal activities will shut down immediately. Activities will not resume until the animal has been confirmed to have left the area or the observation period (15 minutes) has elapsed.

For all in-water construction using heavy machinery other than pile driving equipment (e.g., the use of barge-mounted excavators or riprap placement in water), a 10-m shutdown zone will be in effect. If a marine mammal comes within 10 m, PG&E will cease operations and reduce vessel speed to the minimum required to maintain steerage and safe working conditions. Monitoring of this shutdown zone does not require an MMO; the contractor can implement this measure.

4.6.3 Minimum Qualifications for MMOs

MMOs will have the following minimum qualifications:

- Independent MMOs (i.e., not construction personnel) who have no other assigned tasks during monitoring periods will be employed.
- If a team of three or more MMOs is required, a lead observer (i.e., lead MMO) or monitoring coordinator will be designated. The lead MMO will have prior experience working as a marine mammal observer during construction.

- Other MMOs may substitute education (degree in biological science or related field) or training for experience.
- PG&E will submit MMO resumes for approval by NMFS 30 days prior to the onset of pile driving. If NMFS does not respond within 30 days, it will be assumed that MMOs are approved unless otherwise notified.

MMOs will have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols
- Experience or training in the field identification of marine mammals, including the identification of 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 observations, including the number and species of marine mammals observed; dates and times when in- water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior
- 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.

4.7 REPORTING

PG&E will submit a draft report on all monitoring conducted under the IHA within 90 calendar days of the completion of marine mammal and acoustic monitoring or 60 days prior to the issuance of any subsequent IHA for this Project, whichever comes first. A final report will be prepared and submitted within 30 days following resolution of comments on the draft report from NMFS. This report will contain the informational elements described in Section 4.3.2.

In addition, the report will contain the following information:

- Number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zone and estimates of number of marine mammals taken by species
- 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

- In the case where MMOs were not able to observe the entire Level B harassment zone, an extrapolation of the estimated takes by Level B harassment based on the number of observed exposures within the Level B harassment zone and the percentage of the Level B harassment zone that was not visible

PG&E will submit all protected species observer (PSO) datasheets and/or raw sighting data in a separate file from the final report referenced above.

4.7.1 Take of Marine Mammal due to Project Activity

In the unanticipated event that the Project activity clearly causes the take of a marine mammal in a manner prohibited by the MMPA, such as serious injury or mortality, PG&E will immediately cease the specified activities and report the incident to the NMFS OPR and West Coast Region stranding coordinator. The report will include the following information:

- Time and date of the incident
- Description of the incident
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility)
- Description of all marine mammal observations and active sound source use in the 24 hours preceding the incident
- Species identification or description of the animal(s) involved
- Fate of the animal(s)
- Photographs or video footage of the animal(s).

Activities will not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with PG&E to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. PG&E may not resume their activities until notified by NMFS.

4.7.2 Discovery of an Injured or Dead Marine Mammal

In the event PG&E discovers an injured or dead marine mammal—and the lead PSO determines that the cause of the injury or death is unknown and that the death is relatively recent (e.g., in less than a moderate state of decomposition)—PG&E will immediately report the incident to the NMFS OPR and the West Coast Region stranding coordinator. The report will include the same information listed in Section 4.7.1. Activities may continue while NMFS reviews the

circumstances of the incident. NMFS will work with PG&E to determine whether additional mitigation measures or modifications to the activities are appropriate.

In the event that PG&E discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the specified activities (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), PG&E will report the incident to the NMFS OPR and the NMFS West Coast Region stranding coordinator within 24 hours of the discovery.

5 REFERENCES

Molnar, M., D. Buehler, R. Oestman, J. Reyff, K. Pommerenck, and B. Mitchell. California Department of Transportation. 2020. Technical Guidance for the Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Report CTHWANP-RT-20-365.01.04. Final. California Department of Transportation, Division of Environmental Affairs, Sacramento, CA.

National Marine Fisheries Service (NMFS). 2020. 2020 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0): Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. Technical Memorandum NMFS-OPR-59. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, MD. 167 pp.

I&R. 2023. Hydroacoustic Assessment: Estimation of Underwater and Airborne Sound Levels for Marine Mammals-Piers 39 to 43 ½ Sediment Remediation Project, San Francisco, California". Illingworth and Rodkin, dated May 11, 2021; revised October 27, 2023

FIGURES

San Francisco City and County

Piers 39 to 43 ½ Sediment Remediation Project

Figure 1. Project Area Vicinity Map

Project Area

Project Area

integral

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Miles

N

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Figure 2a. Level B Monitoring Zones; Sediment Pin Installation
Piers 39 to 43 1/2 Sediment Remediation Project

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integral consulting inc.

Figure 2b. Level B Monitoring Zones; Turbidity Curtain Pile Installation
Piers 39 to 43 1/2 Sediment Remediation Project

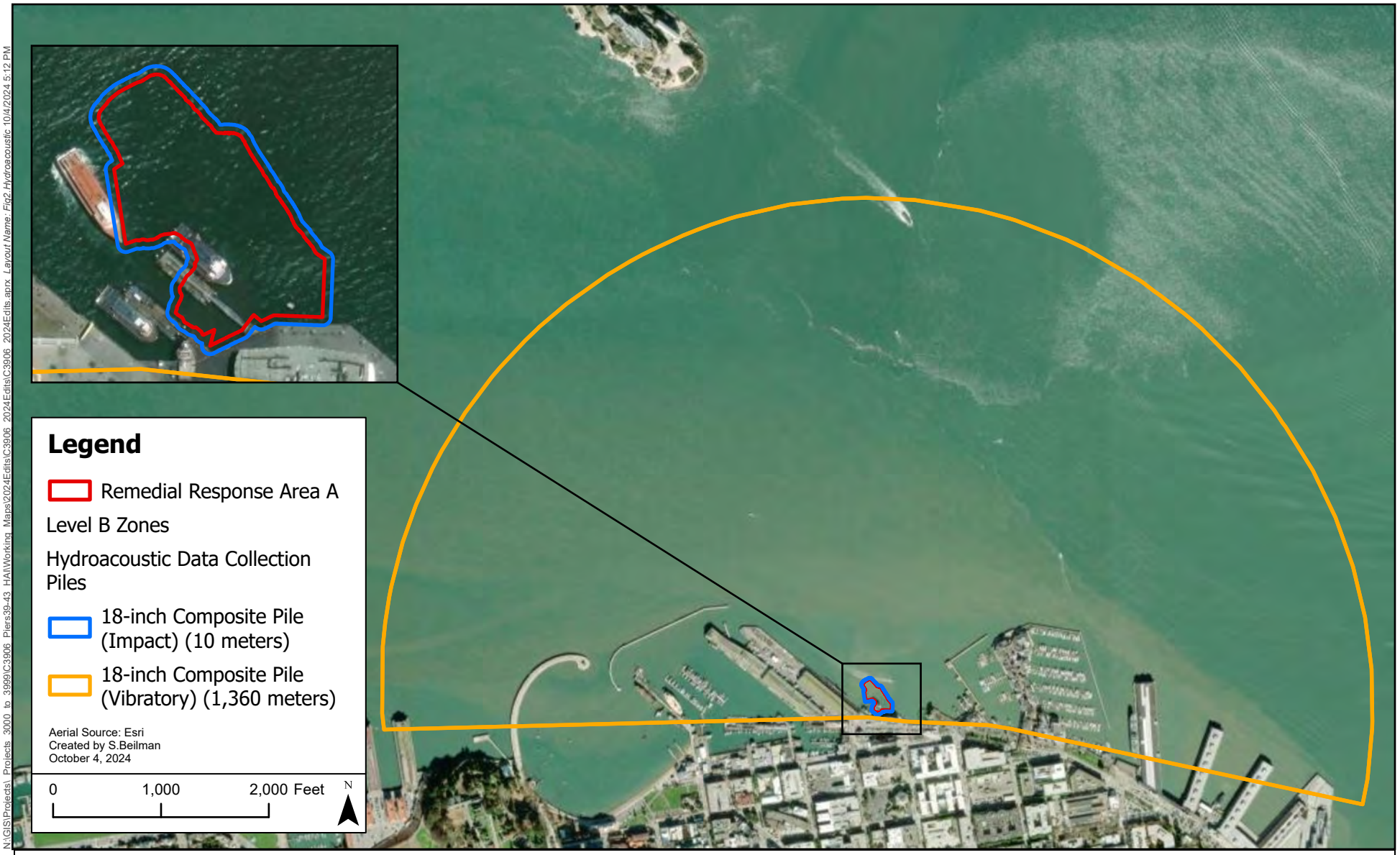

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Figure 2c. Level B Monitoring Zones, Hydroacoustic Test Pile
Piers 39 to 43 1/2 Sediment Remediation Project

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Figure 2d. Level B Monitoring Zones; Red and White Fleet Relocation Pile Installation
Piers 39 to 43 1/2 Sediment Remediation Project

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Figure 3a. Level A Exclusion Zones; Sediment Pin Installation
Pier 39 to 43 1/2 Sediment Remediation Project

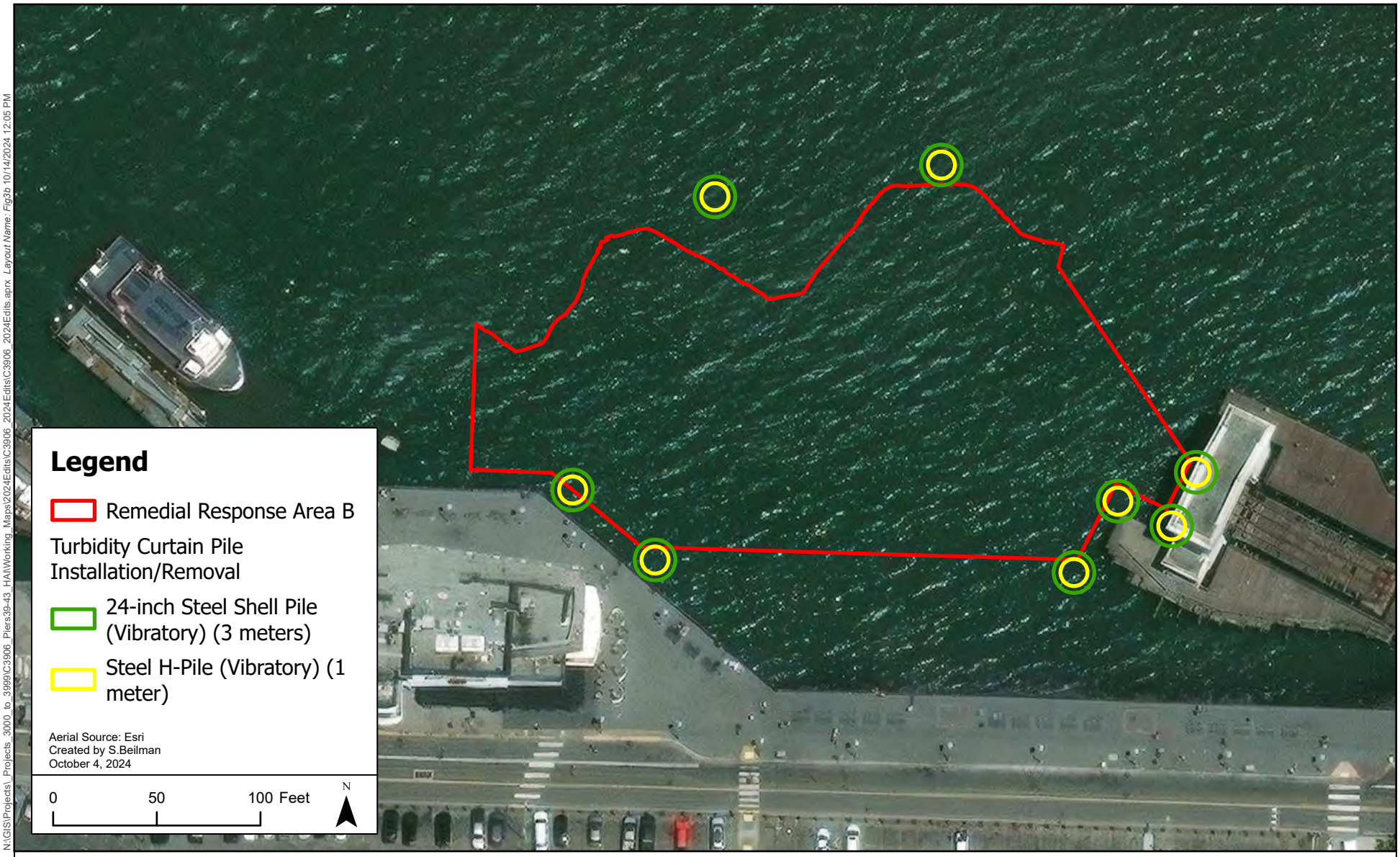

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Figure 3b. Level A Exclusion Zones; Turbidity Curtain Pile Installation
Piers 39 to 43 1/2 Sediment Remediation Project

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Figure 3b. Level A Exclusion Zones; Hydroacoustic Test Pile
Piers 39 to 43 1/2 Sediment Remediation Project

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Figure 3d. Level A Exclusion Zones; Red and White Fleet Relocation Pile Installation
Piers 39 to 43 1/2 Sediment Remediation Project

Legend

- Remedial Response Areas
- Potential Marine Mammal Monitor Locations

Piers 39 to 43 ½ Sediment Remediation Project

Figure 4. Marine Mammal Monitoring Locations

Imagery Source: ESRI
Map Created on: 7/11/23
by S. McGarvey

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Feet

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