

The Stellwagen Bank National Marine Sanctuary encompasses 842 square miles of ocean, stretching between Cape Ann and Cape Cod. Renowned for its scenic beauty and remarkable productivity, the sanctuary supports a rich diversity of marine life including 22 species of marine mammals, more than 30 species of seabirds, over 60 species of fishes, and hundreds of marine invertebrates and plants.

Authority: 16 U.S.C. 1431, *et seq.*

(Federal Domestic Assistance Catalog Number 11.429 Marine Sanctuary Program)

Dated: October 14, 2010.

Daniel J. Basta,

Director, Office of National Marine Sanctuaries, National Ocean Service, National Oceanic and Atmospheric Administration.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XX25

Small Takes of Marine Mammals Incidental to Specified Activities; Exploratorium Relocation Project in San Francisco, CA

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental take authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) regulations, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to the Exploratorium, allowing the take of small numbers of marine mammals, by Level B harassment only, incidental to pile driving associated with the Exploratorium's relocation project.

DATES: Effective October 25, 2010, through October 24, 2011.

ADDRESSES: A copy of the IHA, the application, and the Environmental Assessment are available by writing to P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3225 or by telephoning the contact listed here (*see FOR FURTHER INFORMATION CONTACT*), or visiting the Internet at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications>.

Documents cited in this notice may be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Michelle Magliocca or Jaclyn Daly, Office of Protected Resources, NMFS, 301-713-2289.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specific geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is published in the **Federal Register** and provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as "* * * an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by publication of notice of the proposal to issue an IHA in the **Federal Register** and a 30-day public comment period. Within 45 days of the close of the comment period, NMFS must either issue or deny the authorization.

Except with respect to certain activities not pertinent here, 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].

Summary of Request

On April 28, 2010, NMFS received an application from the Exploratorium—a nature, science, art, and technology museum—requesting an IHA for the take, by Level B harassment, of small numbers of marine mammals incidental to relocation of the Exploratorium museum. The Exploratorium is relocating from the Palace of Fine Arts to Piers 15 and 17, along San Francisco's waterfront, to allow for expansion of the museum's facility. Pile driving during the project may result in harassment of Pacific harbor seals (*Phoca vitulina richardii*), California sea lions (*Zalophus californianus*), harbor porpoises (*Phocoena phocoena*), and gray whales (*Eschrichtius robustus*) within the action area. In accordance with MMPA implementing regulations, NMFS issued a notice in the **Federal Register** on July 22, 2010 (75 FR 42691), requesting comments from the public on the proposed IHA.

Description of the Specified Activity

A complete description of the specified activity may be found in NMFS' proposed IHA notice in the **Federal Register** (75 FR 42691, July 22, 2010) and a summary is provided here.

To make room for the new Exploratorium, a maximum of 69 various sized steel piles (thirty 72-inch, twenty-six 24-inch, and thirteen 20-inch diameter piles) will be installed around Piers 15 and 17 using a vibratory hammer (Table 1). Between two and five steel piles (average of three piles) will be installed daily, depending on their size and the amount of time necessary to install them. Each pile will take approximately 30 minutes to install followed by at least one hour break, the minimum amount of time needed to reset the hammer and next pile. In total, the Exploratorium anticipates conducting 28 hours of pile driving over the course of their authorization; however, this may be increased due to encountering difficulty in driving piles, construction extensions, *etc.* All piles will be installed with an ICE 14122 (or similar) vibratory hammer; however, it may be necessary to seat a pile using an impact hammer. Based on the ground sediments and the depth of pile driving needed, the use of an impact hammer is not anticipated for the smaller 20-inch and 24-inch piles but may be needed for the large diameter 72-inch piles. Should an impact hammer be necessary, the Exploratorium will use a steam or

diesel-powered hammer delivering between 80,000 and 110,000 ft-lbs per blow. For 20, 24, and 72-inch piles, the amount of strikes per pile will be limited to 120, 25, and 5, respectively. A sound attenuation device (e.g., wood block, bubble curtain) will be used during all impact hammering. In addition, impact hammering will not occur between June 1 and November 30 to prevent injury to listed salmonids. In addition to pile driving, the Exploratorium will repair or remove existing piles (Table 1) and remove

existing wharf decking. Existing concrete piles will be removed by cutting them with a hydraulic shear. The shear operates like a knife gate, with hydraulic rams pushing a shear plate through the piling. The cutting shear will be suspended from a crane on deck. In-water noise from this work will be negligible. Pile repair will include installing a fiberglass shell around damaged pile and filling the shell with concrete. The work will be completed by divers using hand tools and does not

involve loud noise. Deck removal and expansion will occur outside of habitat for marine mammals. Finally, there will be two to ten barges or floats at any given time in the water to support construction activities; however, these will be concentrated in the direct vicinity of Piers 15/17. Because pile repair, pile removal, and use of barges do not release loud sounds into the environment, marine mammal harassment from these activities is not anticipated.

TABLE 1—SUMMARY OF PILE ACTIVITIES DURING THE EXPLORATORIUM RELOCATION ACTIVITY

Activity	Maximum number of piles	Location
Installation of new piles	69 steel piles (30 72-inch diameter steel piles, 26 24-inch steel piles, and 13 20-inch steel piles).	Marginal Wharf; South Apron.
Repair of existing piles	1,026	Pier 15; Valley Infill Area; Marginal Wharf; North Apron.
Extension of existing piles	120	Valley Infill Area.
Removal of existing piles—cut at mudline	837	Marginal Wharf; Valley Removal Area; South Apron; Pier 15.
Removal of existing piles—cut above mean lower low water (MLLW).	306	Valley Removal Area; Marginal Wharf.

During the San Francisco-Oakland Bay Bridge Project (SFOBB), the California Department of Transportation (Caltrans), measured vibratory driving sound levels from various pile types, sizes, and locations around San Francisco Bay (Caltrans, 2007). Because no pile driving noise data specific to the Exploratorium project exists, NMFS has determined that hydroacoustic data from the Caltrans SFOBB project are appropriate to use to estimate sound levels from the specified activity. For background, sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and is generally characterized by several variables. Frequency describes the sound's pitch and is measured in hertz (Hz) or kilohertz (kHz), while sound level describes the sound's loudness and is measured in decibels (dB). Sound level

increases or decreases exponentially with each dB of change. For example, 10 dB yields a sound level 10 times more intense than 1 dB, while a 20 dB level equates to 100 times more intense, and a 30 dB level is 1,000 times more intense. Sound levels are compared to a reference sound pressure (micro-Pascal) to identify the medium. For air and water, these reference pressures are “re: 20 microPa” and “re: 1 microPa,” respectively. In this document, all sound pressure levels (SPLs) will be referenced to 1 microPa unless otherwise noted.

In 2007, Caltrans released a report summarizing typical and maximum sound pressure levels (SPLs) measured during vibratory pile driving in San Francisco Bay (Table 2). In summary, Caltrans found that SPLs measured 5 m from the vibratory hammer did not exceed 180 dB root mean square (rms)

and were typically around 170 dB rms. Most of the energy during vibratory pile driving was below 600 Hz. NMFS notes that the vibratory hammers Caltrans used to install the 72-inch pile were the King Kong and Super Kong Driver (Model 600). The hammer the Exploratorium will be using is 40 percent of the energy of the King Kong hammer; therefore, source levels will be lower for the relocation project as hammer noise levels are proportional to blow energy. Vibratory pile driving measurements taken by Caltrans approximately 11–13 kilometers (km) northeast of the Exploratorium in similar depth water indicate that peak sound pressures drop off at a rate of about 7 dB per doubling of distance. For comparison, spherical spreading (20 log R) is characterized by a drop-off rate of 6 dB per doubling of distance.

TABLE 2—MEASURED SOUND PRESSURE LEVELS DURING VIBRATORY PILE DRIVING IN SAN FRANCISCO BAY [Caltrans, 2007]

Pile type/size	Relative water depth	SPL at 10 m (rms)
72-inch steel pile	5 meters	Average = 170 dB. Loudest = 180 dB.
34-inch steel pile	5 meters	Average = 170 dB. Loudest = 175 dB.
24-inch steel pile	5 meters	Average = 160 dB. Loudest = 165 dB.
12-inch steel pile	5 meters	Average = 155 dB.

Caltrans also conducted hydroacoustic surveys within San Francisco Bay during impact pile driving of similar size piles proposed for use by the Exploratorium (Table 3). Bubble curtains can provide between 5–

20 dB reduction in source level; however, this is highly directional and a function of current and device effectiveness (Caltrans, 2009). Therefore, distances to the Level A and Level B harassment isopleths are based on

estimated unattenuated source levels. These distances are likely an overestimate of sound levels produced by pile driving using a bubble curtain or wood cap.

TABLE 3—MEASURED UNATTENUATED SOUND PRESSURE LEVELS IN THE NEAR FIELD (10 M) DURING IMPACT PILE DRIVING IN SAN FRANCISCO BAY

[Caltrans, 2009]

Pile type/size	Relative water depth	SPL at 10 m (rms)
96-inch steel pile	10 meters	205 dB.
60-inch steel pile	<5 meters	195 dB.
36-inch steel pile	<5 meters	190 dB.
24-inch steel pile	5 meters	190 dB.
14-inch steel pile	15 meters	184 dB.

Comments and Responses

A notice of receipt and request for public comment on the application and proposed authorization was published on July 22, 2010 (75 FR 42691). During the 30-day public comment period, the Marine Mammal Commission (Commission) provided the only comments.

Comment 1: The Commission recommends that NMFS issue the requested authorization, provided that observations be made during all soft-starts of pile driving activities in order to gather the data needed to analyze and report on its effectiveness as a mitigation measure.

Response: NMFS disagrees that the Exploratorium needs to monitor for marine mammals during all soft-starts. PSOs will be on-site and monitoring for marine mammals at least 30 minutes prior to, during, and after all impact hammer (including during soft-starts) and at least two full days per week during all vibratory pile hammering. NMFS believes that monitoring for at least two pile driving days per week will allow for adequate interpretation of how marine mammals are behaving in response to pile hammering, including during soft-starts.

Comment 2: The Commission recommends that NMFS issue the requested authorization, provided that the Exploratorium be required to monitor the presence and behavior of marine mammals during all impact and vibratory pile driving activities.

Response: As stated in the proposed IHA, marine mammal monitoring will occur 30 minutes before, during, and 30 minutes after all impact pile driving activities. In addition, at least one PSO will conduct behavioral monitoring at least two days per week during vibratory pile driving for the duration of the project to estimate take and evaluate the behavioral impacts that pile driving

has on marine mammals out to the Level B harassment isopleth (1,900) m. NMFS believes this is an adequate effort of monitoring because vibratory pile driving will not produce source SPLs exceeding 180 dB rms (Level A harassment threshold) and therefore, the activity will not require shut-down in order to prevent Level A harassment. Monitoring by Caltrans is also being conducted in the area, and given the limited number of pile driving hours and Exploratorium resources, this amount of monitoring is expected to be adequate to verify that the specified activity is having a negligible impact on the affected species and stocks.

Description of Marine Mammals in the Area of the Specified Activity

Marine mammals with confirmed occurrences in San Francisco Bay are the Pacific harbor seal, California sea lion, harbor porpoise, gray whale, humpback whale (*Megaptera novaeangliae*), and sea otter (*Enhydra lutris*). However, humpback whales are considered extremely rare in San Francisco Bay and are highly unlikely to be present in the project vicinity during pile driving. Sea otters are managed by the U.S. Fish and Wildlife Service. Information on Pacific harbor seals, California sea lions, harbor porpoises, and gray whales was provided in the July 22, 2010 (75 FR 42691) **Federal Register** notice.

Potential Effects on Marine Mammals

Pile driving at the Exploratorium’s new location may temporarily impact marine mammal behavior within the action area due to elevated in-water noise levels. A detailed description of potential impacts to marine mammals can be found in NMFS’ July 22, 2010 **Federal Register** notice (75 FR 42691) and are summarized here.

Marine mammals produce sounds in various contexts and use sound for various biological functions including, but not limited to, (1) Social interactions; (2) foraging; (3) orientation; and (4) predator detection. Interference with producing or receiving these sounds may result in adverse impacts. Audible distance, or received levels (RLs) will depend on the nature of the sound source, ambient noise conditions, and the sensitivity of the receptor to the sound (Richardson *et al.*, 1995). Type and significance of marine mammal reactions to noise are likely to dependent on a variety of factors including, but not limited to, the behavioral state (*e.g.*, feeding, traveling, *etc.*) of the animal at the time it receives the stimulus, frequency of the sound, distance from the source, and the level of the sound relative to ambient conditions (Southall *et al.*, 2007).

Hearing Impairment

Temporary or permanent hearing impairment is possible when marine mammals are exposed to very loud sounds. Hearing impairment is measured in two forms: Temporary threshold shift (TTS) and permanent threshold shift (PTS). There are no empirical data for onset of PTS in any marine mammal; therefore, PTS-onset must be estimated from TTS-onset measurements and from the rate of TTS growth with increasing exposure levels above the level eliciting TTS-onset. PTS is presumed to be likely if the hearing threshold is reduced by ≥40 dB (*i.e.*, 40 dB of TTS). Due to proposed mitigation measures and source levels, NMFS does not expect that marine mammals will be exposed to levels that could elicit PTS.

Temporary Threshold Shift (TTS)

TTS is the mildest form of hearing impairment that can occur during exposure to a loud sound (Kryter, 1985).

While experiencing TTS, the hearing threshold rises and a sound must be louder in order to be heard. TTS can last from minutes or hours to, in cases of strong TTS, days. For sound exposures at or somewhat above the TTS-onset threshold, hearing sensitivity recovers rapidly after exposure to the noise ends. Few data on sound levels and durations necessary to elicit mild TTS have been obtained for marine mammals. Southall *et al.* (2007) considers a 6 dB TTS (*i.e.*, baseline thresholds are elevated by 6 dB) sufficient to be recognized as an unequivocal deviation and thus a sufficient definition of TTS-onset. Because it is non-injurious, NMFS considers TTS as Level B harassment that is mediated by physiological effects on the auditory system; however, NMFS does not consider onset TTS to be the lowest level at which Level B harassment may occur.

Southall *et al.* (2007) summarizes underwater pinniped TTS data from Kastak *et al.* (2005), indicating that a tested harbor seal showed a TTS of around 6 dB when exposed to a nonpulse noise at SPL 152 dB re: 1 μ Pa for 25 minutes. In contrast, a tested sea lion exhibited TTS-onset at 174 dB re: 1 μ Pa under the same conditions as the harbor seal. Data from a single study on underwater pulses found no signs of TTS-onset in sea lions at exposures up to 183 dB re: 1 μ Pa (peak-to-peak) (Finneran *et al.*, 2003). There is no information on species-specific TTS for harbor porpoises exposed to non-pulse sound or for gray whales. Based on studies summarized in Southall *et al.* (2007), NMFS anticipates that vibratory pile driving will not induce TTS since SPLs generated from the activity are low and, contrary to animals confined to a tank, animals in the wild will likely not remain in the area long enough to be exposed for an extended period of time. Similarly, if impact pile driving is required, it will only be temporary (5–25 strikes) and will be delayed if animals are seen approaching the Level A harassment isopleth. As such, impact pile driving is not likely to induce TTS.

No known data exists for sound levels resulting from the type of vibratory hammer and pile sizes that would be used at the Exploratorium; however, measured sound levels for the “King Kong” vibratory hammer used in Richmond, California ranged between 163 and 180 dB rms (Illingworth and Rodkin, 2007). Sound levels at the Exploratorium are expected to be substantially lower because the vibratory hammer being used is approximately 40 percent of the energetic capacity of the “King Kong” hammer and will not be used at full

capacity. In addition, San Francisco Bay is highly industrialized and masking of the pile driver by other vessels and anthropogenic noise within the action area may, especially in the nearby shipping channel, may also make construction sounds difficult to hear at greater distances. Underwater ambient noise levels along the San Francisco waterfront may be around 133 dB rms, based on measurements from the nearby Oakland Outer Harbor (Caltrans, 2009).

Any impacts to marine mammal behavior are expected to be temporary. First, animals may avoid the area around the hammer; thereby reducing exposure. Second, pile driving does not occur continuously throughout the day. As described above, the vibratory hammer only operates for about 30 minutes followed by at least a one hour break. Two to five pilings are anticipated to be driven per day, resulting in a total of 1–2.5 hours of pile driving within any given 24 hour period. Limiting pile driving to less than three hours per day will allow for minimal disruption of foraging or dispersal throughout the habitat. Any disturbance to marine mammals is likely to be in the form of temporary avoidance or alteration of opportunistic foraging behavior near the pile driving location. In addition, because pile driving is anticipated to be accomplished using only a vibratory hammer, marine mammal injury or mortality is not anticipated. If an impact hammer is used, a protected species observer (PSO) will be on watch to implement pile driver shut down, a mitigation measure designed to prevent animals from being exposed to injurious level sounds. For these reasons, any changes to marine mammal behavior are expected to be temporary and result in a negligible impact to affected species and stocks.

Anticipated Effects on Habitat

Marine mammal habitat will be temporarily disturbed due to pile driving activities. Installation of new piles will be permanent; however, overall site conditions are anticipated to be substantively unchanged from existing conditions for marine mammals following project implementation. NMFS Southwest Regional Office determined that the proposed construction activities would adversely affect Essential Fish Habitat (EFH); however, adequate measures are in place to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH.

Mitigation Measures

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses. The latter does not apply here, as no subsistence hunting takes place in California. The following summarizes mitigation and monitoring measures set forth in the IHA.

Limited Use of an Impact Hammer

All piles will be installed using a vibratory pile driver unless sufficient depth cannot be reached, at which point an impact hammer may be used. In the event that an impact hammer is necessary, a bubble curtain, wood block, or both will be used as an attenuation device to reduce hydroacoustic sound levels to avoid the potential for injury.

Establishment of a Safety Zone

For all in-water impact pile driving, the Exploratorium will establish a preliminary marine mammal safety zone of 500 m (1,640 ft) around each pile before pile driving commences. Once impact pile driving commences, the Exploratorium may establish a new safety zone where sound levels do not exceed 180 dB rms and 190 dB rms (for cetaceans and pinnipeds, respectively) based on acoustical monitoring data collected during pile driving. No safety zone for vibratory pile driving is necessary, as source levels will not exceed the Level A harassment threshold.

Pile Driving Shut Down and Delay Procedures

If a PSO observes a marine mammal within or approaching the safety zone prior to start of impact pile driving, the PSO will notify the Resident Engineer (or other authorized individual) who will then be required to delay pile driving until the marine mammal has moved outside of the safety zone or if the animal has not been resighted within 15 minutes. If a marine mammal is sighted within or on a path toward the safety zone during pile driving, pile driving will cease until that animal has cleared and is on a path away from the safety zone or 15 minutes has lapsed since the last sighting. In addition, if a marine mammal not authorized to be taken under the IHA (*e.g.*, humpback whale) is observed within the Level B

harassment zone (1,900 m), pile driving will be delayed until that animal has cleared and is on a path away from the safety zone or 15 minutes has lapsed since the last sighting.

Soft-start Procedures

A “soft-start” technique will be used at the beginning of each pile installation to allow any marine mammal that may be in the immediate area to leave before the pile hammer reaches full energy. For vibratory pile driving, the soft-start procedure requires contractors to initiate noise from the vibratory hammer for 15 seconds at 40–60 percent reduced energy followed by a 1-minute waiting period. The procedure will be repeated two additional times before full energy may be achieved. For impact hammering, contractors will be required to provide an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 1-minute waiting period, then two subsequent three-strike sets. The soft-start procedure will be conducted prior to driving each pile if vibratory hammering ceases for more than 30 minutes.

Visual Monitoring and Reporting

The Exploratorium must designate at least one biologically-trained, on-site individual, approved in advance by NMFS, to monitor the area for marine mammals 30 minutes before, during, and 30 minutes after all impact pile driving activities and call for shut down if any marine mammal is observed within or approaching the designated Level A harassment zone (preliminarily set at 500 m). In addition, at least one NMFS-approved PSO will conduct behavioral monitoring in and around the Exploratorium at least two days per week for the duration of vibratory pile driving activities to estimate take and evaluate the behavioral impacts

vibratory pile driving has on marine mammals out to the Level B harassment isopleth (1,900 m). Should a non-authorized marine mammal (*i.e.* humpback whale) be observed at any time in this zone, the aforementioned shut down and delay procedures will be followed.

PSOs will be provided with the equipment necessary to effectively monitor for marine mammals (*e.g.*, high-quality binoculars, compass, and range-finder) in order to determine if animals have entered into the harassment isopleths and to record species, behaviors, and responses to pile driving. PSOs will be required to submit a report to NMFS within 120 days of expiration of the IHA or completion of pile driving, whichever comes first. The report should include data from marine mammal sightings (*e.g.*, species, group size, behavior), any observed reactions to construction, distance to operating pile hammer, and construction activities occurring at time of sighting.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, 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].

Based on the Exploratorium’s application and subsequent analysis, the impact of the described pile driving operations may result in, at most, short-term modification of behavior by small numbers of marine mammals who are

within the action area. Marine mammals may avoid the area or temporarily halt any behaviors (*e.g.*, foraging) at time of exposure. Due to the short duration of pile driving per day, animals are not anticipated to be exposed multiple times per day.

Current NMFS practice regarding exposure of marine mammals to anthropogenic noise is that in order to avoid the potential for injury of marine mammals (*e.g.*, PTS), cetaceans and pinnipeds should not be exposed to impulsive sounds of 180 and 190 dB rms or above, respectively. This level is considered precautionary as it is likely that more intense sounds would be required before injury would actually occur (Southall *et al.*, 2007). Potential for behavioral harassment (Level B) is considered to have occurred when marine mammals are exposed to sounds at or above 160 dB rms for impulse sounds (*e.g.*, impact pile driving) and 120 dB rms for non-pulse noise (*e.g.*, vibratory pile driving), but below the aforementioned thresholds. These levels are also considered precautionary.

Based on empirical measurements taken by Caltrans (which are presented in the *Description of Specified Activities* section above), estimated distances to NMFS current threshold sound levels from pile driving during the Exploratorium’s relocation project are presented in Table 4. These estimates are based on the worst case scenario of driving the 72-inch steel piles but would be carried over for all pile driving. Note that despite short distances to the Level A harassment isopleth, the Exploratorium has proposed to implement a preliminary 500-m marine mammal safety zone until empirical pile driving measurements can be made and distances to this threshold isopleth can be verified.

TABLE 4—MODELED UNDERWATER DISTANCES TO NMFS’ MARINE MAMMAL HARASSMENT THRESHOLD LEVELS

	Level A (190/180 dB)	Level B harassment (160 dB)	Level B harassment (120 dB)
Impact hammering	20 m (w/o sound attenuation device)	100 m	n/a
Vibratory hammering	n/a	n/a	1900 m

The estimated number of potential marine mammal takes was based on marine mammal monitoring reports prepared by Caltrans during similar activities in San Francisco Bay and on discussions with the NMFS Southwest Regional Office. Caltrans’ SFOBB marine mammal monitoring reports were used to estimate the number of pinnipeds near the Exploratorium

project area as the SFOBB site and Exploratorium are relatively close to each other and are similar in bathymetric features (*e.g.*, water depth, substrate). However, monitoring conducted for the SFOBB project has been in close proximity to a haul out area, while the Exploratorium project is in an area of high commercial boat activity with no haul out sites.

Therefore, the Caltrans data likely overestimates marine mammal abundance for the Exploratorium project area. Based on consultation with the NMFS Southwest Regional Office and review of Caltrans monitoring reports for pile driving activities in San Francisco Bay, the Exploratorium requested a total take of two Pacific harbor seals, one California sea lion, and

one gray whale per day of pile driving. Upon further consultation with NMFS Southwest Regional Office, NMFS is proposing to include harbor porpoise as a species potentially taken by pile driving, due to the recorded, albeit infrequent, sightings of harbor porpoises within San Francisco Bay.

The Exploratorium estimates an average of three piles would be driven in a single day. Given 69 piles in total, pile driving would occur for approximately 23 days over the life of the project. Therefore, NMFS is proposing to authorize annual take, by Level B harassment only, of 38 Pacific harbor seals, 19 California sea lions incidental to the Exploratorium's pile driving activities. Due to the infrequent, but potential presence of harbor porpoise and gray whales in the area, NMFS is also proposing to authorize the take of 28 harbor porpoise and five gray whales, annually, based on consultation with the NMFS Southwest Regional Office, NMFS. These numbers are conservative and indicate the maximum number of animals expected to occur within the Level B harassment isopleth (1,900 m). Estimated and proposed level of take of each species is less than one percent of the affected stock population and therefore is considered small in relation to the population numbers previously set forth. The most recent harbor seal counts estimate the California stock of Pacific harbor seals at 34,233 individuals and the population appears to be stabilizing at what may be their carrying capacity. The abundance of the U.S. stock of California sea lions is estimated to be 238,000 individuals and the stock is approaching carrying capacity. Any harbor porpoises encountered during the Exploratorium relocation project would likely be part of the San Francisco-Russian River stock which has an estimated abundance of 9,189 animals and has steadily increased since 1993 (although the increase is not statistically significant). Lastly, the most recent 2008 stock assessment report estimated the Eastern North Pacific gray whale stock to be approximately 18,813 individuals with an increasing population trend over the past several decades.

Negligible Impact and Small Numbers Analysis and Determination

NMFS has defined "negligible impact" in 50 CFR 216.103 as "an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

NMFS has determined that the impact of pile driving within the

Exploratorium's action area, as described in this notice and the IHA application, may result in the temporary modification in behavior (Level B harassment) of small numbers of marine mammals. Further, this activity is expected to result in a negligible impact on the affected species or stocks of marine mammals. The provision requiring that the activity not have an unmitigable impact on the availability of the affected species or stock of marine mammals for subsistence use is not implicated for this action.

For reasons stated previously in this document, the specified activities associated with relocation of the Exploratorium are not likely to cause TTS, PTS, or other non-auditory injury, serious injury, or death to affected marine mammals because of the following:

- (1) The fact that sound pressure levels from vibratory pile driving in San Francisco Bay will not exceed 180 dB rms;
- (2) The limited use of an impact hammer during pile driving;
- (3) The use of sound attenuation devices (e.g., wood block, bubble curtain) during all impact hammering;
- (4) The monitoring requirements during all impact pile driving and during vibratory pile driving two full days per week; and
- (5) The incorporation of other required mitigation measures (i.e., shut-down, soft-starts).

As a result, no take by injury, serious injury, or death is anticipated or authorized, and the potential for temporary or permanent hearing impairment is very low and will be avoided through the incorporation of the required monitoring and mitigation measures.

While the number of marine mammals potentially incidentally harassed will depend on the distribution and abundance of marine mammals in the vicinity of the pile driving activities, the number of potential Level B incidental harassment takings is estimated to be small (less than one percent) relative to the estimated population sizes and has been mitigated to the lowest level practicable through incorporation of the monitoring and mitigation measures previously addressed in this document. No known foraging sites occur around Piers 15/17 and the closest pinniped haul out area is 3 km away.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action.

Endangered Species Act (ESA)

No marine mammal species listed under the ESA are anticipated to occur within the action area; therefore, ESA consultation on issuance of the proposed IHA was not required. However, other ESA-listed species under NMFS' jurisdiction do occur within the action area. On May 28, 2010, the NMFS Southwest Regional Office concluded Section 7 and EFH consultation with the U.S. Army Corps of Engineers (Corps) on issuance of a Corps permit to the Exploratorium. Both parties concurred that adequate measures are in place to avoid, minimize, mitigate, or otherwise offset adverse effects to EFH.

National Environmental Policy Act (NEPA)

On October 15, 2010, NMFS released an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Exploratorium relocation project. NMFS determined that issuance of the IHA would not significantly impact the quality of the human environment and that preparation of an Environmental Impact Statement was not required.

Dated: October 14, 2010.

James H. Lecky,

*Director, Office of Protected Resources,
National Marine Fisheries Service.*

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XZ46

Magnuson-Stevens Act Provisions; General Provisions for Domestic Fisheries; Application for Exempted Fishing Permit (EFP)

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce.

ACTION: Notification of a proposal for an EFP to conduct experimental fishing; request for comments.

SUMMARY: The Assistant Regional Administrator for Sustainable Fisheries, Northeast Region, NMFS (Assistant Regional Administrator), is soliciting public comment on an EFP application submitted by Wallace & Associates on behalf of Truex Enterprises. The proposed EFP would extend a previously authorized EFP for an additional year to continue testing the