BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN: 0648-XA933

Taking of Marine Mammals Incidental to Specified Activities; Construction of the East Span of the San Francisco-Oakland Bay Bridge

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

ACTION: Notice; proposed incidental harassment authorization; request for comments and information.

SUMMARY: NMFS has received a request from the California Department of Transportation (CALTRANS) for an incidental take authorization to take small numbers of California sea lions, Pacific harbor seals, harbor porpoises, and gray whales, by harassment, incidental to construction activities associated with the East Span of the San Francisco-Oakland Bay Bridge (SF-OBB) in California. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an authorization to CALTRANS to incidentally take, by harassment, small numbers of marine mammals for a period of 1 year. NMFS is also requesting comments, information, and suggestions concerning CALTRANS' application and the structure and content of future regulations.

DATES: Comments and information must be received no later than [insert date 30 days after date of publication in the FEDERAL REGISTER].

ADDRESSES: Comments on the application should be addressed to 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. The mailbox address for providing email comments is itp.guan@noaa.gov. NMFS is not responsible for e-mail comments sent to addresses other than the one provided here. Comments sent via e-mail, including all attachments, must not exceed a 10-megabyte file size.

Instructions: All comments received are a part of the public record and will generally be posted to http://www.nmfs.noaa.gov/pr/permits/incidental.htm without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

A copy of the renewal request may be obtained by writing to the address specified above, telephoning the contact listed below (see FOR FURTHER INFORMATION CONTACT), or visiting the internet at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm. Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Shane Guan, Office of Protected Resources, NMFS, (301) 427-8401.

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 specified 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 provided to the public for review.

An 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 U.S. can apply for a one-year authorization to incidentally take small numbers of marine mammals by harassment, provided that there is no potential for serious injury or mortality to result from the activity. Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny the authorization.

Summary of Request

On October 19, 2011, CALTRANS submitted a request to NOAA requesting an IHA for the possible harassment of small numbers of California sea lions (Zalophus californianus), Pacific harbor seals (Phoca vitulina richardsii), harbor porpoises (Phocoena phocoena), and gray whales (Eschrichtius robustus) incidental to construction associated with a replacement bridge for the East Span of the SF-OBB, in San Francisco Bay (SFB), California. The proposed construction activities would last for approximately three years, starting 2013. After receiving NMFS comments on the IHA application regarding proposed monitoring measures, CALTRANS submitted a revised IHA application on April 23, 2012. The action discussed in this document is based on CALTRANS April 23, 2012, IHA application.

An IHA was previously issued to CALTRANS for this activity on February 7, 2011 and it expired on February 6, 2012 (76 FR 7156, February 9, 2011). No in-water construction activity was conducted during the period covered by that IHA. CALTRANS' renewal application indicates that the next stage of the construction activities will involve dismantling of the existing bridge, which is expected to start in fall 2013. However, some preparatory construction activities related to the dismantling may take place as early as the summer 2012. CALTRANS also states that the dismantling of the existing east span may take up to five years to complete, therefore, a five-year LOA under a rulemaking may seem to be preferable. However, CALTRANS also indicated that activities involving the existing bridge dismantling are likely to differ from year to year, and the agency may not be able to predict annual construction activities in advance. Therefore, it is most likely that CALTRANS will pursue annual IHAs to take marine

mammals incidental to its construction activities. NMFS is requesting public comment on whether issuance of five-year regulations would be preferable to issuance of multiple IHAs. A detailed description of the proposed SF-OBB East Span project is provided in the CALTRANS' IHA application, and is summarized below.

Background and Project History

Construction activities for the replacement of the east span of the SF-OBB commenced in 2002 and are currently ongoing. The new bridge will consist of four structural sections including (1) the Yerba Buena Island (YBI) Transition Structure, (2) the Self-Anchored Suspension (SAS) Span, (3) the Skyway, and (4) the Oakland Touchdown. Construction of the Skyway was completed in 2007. The remaining three structural sections are currently under construction. The entire Skyway and portions of both the SAS and Oakland Touchdown span the Bay and have required in-water construction.

The foundations for the piers of the new east span consist of large-diameter steel pipe piles driven into the Bay floor. Construction of pier foundations required driving a total of 259 in-Bay large-diameter permanent steel pipe piles. Of these, 189 piles were 2.5 meters (8.2 feet) in diameter and 70 piles were 1.8 meters (5.9 feet) in diameter. The larger 2.5-meter (8.2-foot) diameter piles support the Skyway and SAS sections of the replacement bridge, and were driven to depths ranging from about -66 meters to about -108 meters (about -217 feet to about -354 feet). The smaller 1.8-meter (5.9-foot) diameter piles support the Oakland Touchdown structures, and were driven to tip elevations ranging from about 41 meters to about 65 meters (135 feet to about 213 feet) below the sediment. All in-Bay pier foundations for the new east span have been

constructed and the driving of in-Bay large-diameter permanent steel pile piles was complete, as of 2009.

To construct all permanent structures, it was necessary to install temporary piles to support temporary structures, supports, falsework, and trestles. These temporary structures were required to facilitate construction and support the permanent structures until they were self-supporting. Since the temporary structures were contractor-designed, their exact nature (size, type, quantity, etc.) was not known until the contractors submitted their plans to CALTRANS. To date a total of 2,180 temporary piles have been installed. This includes H-piles, cast-in-drill-hole (CIDH) piles and steel pipe piles ranging from 0.61 meter (24 inches) to 1.52 meters (60 inches) in diameter. All in-water temporary pile installation for the construction of the east span was complete, as of 2009.

On November 10, 2003, NMFS issued an IHA to CALTRANS, authorizing the take of a small number of marine mammals incidental to the construction of the SF-OBB Project. The authorization was issued based on information provided in CALTRANS' IHA request submitted in September 2001. CALTRANS was issued four subsequent IHAs for the SFOBB Project to date.

The existing east span connecting YBI and the Oakland shoreline was constructed in 1936. The east span is a double-deck structure 3,696 meters (12,127 feet) in length and approximately 18 meters (58 feet) wide, carrying five traffic lanes in east-and westbound directions. The east span is supported by 22 in-water bridge piers (Piers E2 through E23), as well as land-based bridge piers and bents on both YBI and Oakland. The existing east span can be divided into three major sections.

(1). Cantilever Superstructure – The Cantilever section is comprised of three major elements: two cantilever anchor arm elements that are 154.8 meters (508 feet) long and 156 meters (512 feet) long, respectively; and a 426.7-meter (1,400-foot) long main span over the navigation channel consisting of a suspended segment which is supported on either side by anchor arms. The superstructure of this segment includes the trusses, road deck and steel support towers.

(2). 504' & 288' Spans Superstructure – This segment of the bridge is comprised of five 153.6-meter (504-foot) long steel truss spans and fourteen 87.8-meter (288-foot) long steel truss spans. The vertical clearance beneath the 504-foot spans is approximately 50 meters (165 feet) above mean high water levels, while the vertical clearance beneath the 288-foot spans varies greatly as the structure descends towards the Oakland shoreline. The superstructure of this segment includes the trusses, road deck and steel and/or concrete support towers.

(3). Marine Foundations - The in-water or marine foundations vary in type. Piers E2 through E5 consist of concrete caissons founded on deep bedrock. Piers E6 through E23 consist of lightly reinforced concrete foundations that are supported by timber piles.

Remaining Construction Work to be Completed

1. Completion of New East Span Construction

All in-water pile driving of both permanent and temporary piles for the construction of the new east span is complete. The only remaining in-water work with the potential to result in the incidental take of marine mammals will be the removal of temporary piles. Temporary piles may be cut off 0.46 meter (1.5 feet) below the mud

line or completely removed. The removal of piles may employ the use of a vibratory pile driver/extractor.

2. Dismantling of the Existing East Span

East span dismantling activities with the potential to result in incidental take of marine mammals may include: dredging and dredged material disposal, vibratory and impact driving of temporary piles, and dismantling of marine foundations by mechanical means.

2.1. Dredging and Dredged Material Disposal

Due to shallow water depth near the Oakland shore, dredging may be required to create a barge access channel to dismantle the existing bridge. Dredging will also be required to remove piers from the existing bridge. It is anticipated that 145,785 cubic meters (190,680 cubic yards) of material would be dredged to create the barge access channel for dismantling the existing bridge.

This material may be disposed of at the San Francisco Deep Ocean disposal site, at an upland wetland reuse site, or at a landfill reuse site, as directed by the Dredged Material Management Office (DMMO). For removal of the existing piers, it is anticipated that 17,374 cubic meters (22,724 cubic yards) of material will be dredged. This material may be disposed of at the Alcatraz Island disposal site, or as directed by the DMMO.

2.2. Vibratory and Impact Driving of Temporary Piles

CALTRANS anticipates that two temporary access trestles and in-water falsework may be required to dismantle the existing bridge. These temporary structures, to be designed by the contractor, may be required to facilitate support of the existing east

span until it is completely removed and provide for construction access. Since the temporary structures will be contractor designed, their exact nature (size, type, number of piles, etc.) will not be known until the dismantling begins. However, CALTRANS has developed estimates as to the approximate size, location and number of piles needed for these temporary structures. The anticipated temporary structures are described below and the quantity and size of piles needed to support these structures are presented in Table 1.

Table 1. Estimate of Number and Size of Piles for Temporary Structures

Temporary Structure	**Pile Sizes & Type**	**Maximum No. of Piles**	**Durations of Construction Contract**	**Weeks of Work (work will be intermittent)**
Temporary Supports for the Cantilever Superstructure	24" to 36" pipe piles	440	January 2013 – September 2015	20
Temporary Supports for the 504' Superstructure	24" to 36" pipe piles	450	August 2014 – August 2016	20
Temporary Supports for the 288' Superstructure	18" to 36" pipe piles	700	August 2014 – August 2016	30
Oakland Access Trestle	18" to 36" pipe piles	700	August 2014 – July 2017	30
YBI Access Trestle	H-piles	100	January 2013 – September 2015	4
Other (spud, fender, access, etc.)	18" to 36" pipe piles	150	January 2013 – July 2017	6

Two trestles may be needed to facilitate construction access and allow for the off-haul of materials. One of the trestles would extend into the Bay from the YBI shoreline (YBI Access Trestle). The other trestle would extend into the Bay from the Oakland shoreline (Oakland Access Trestle).

YBI Access Trestle: It is anticipated that a small, approximately 650 square meters (7,000 square ft), H-pile supported trestle would be constructed on the southeast

side of YBI. The YBI Access Trestle would primarily be used for the off-haul of materials during the dismantling of the cantilever superstructure. Installation of the YBI Access Trestle is anticipated as one of the first orders of work for the dismantling and would likely be constructed during summer or fall 2012.

Oakland Access Trestle: It is anticipated that an approximately 8,920 square meters (96,000 square ft) pipe pile-supported trestle will be constructed parallel to the southern side of the existing east span. The trestle would likely have fingers extending under the bridge, perpendicular to the main trestle to allow for access between the foundations. It is anticipated that the trestle would extend westward from the Oakland shoreline, potentially as far as Pier E9 of the existing east span. The trestle would be used for construction access during the dismantling of the superstructure and/or marine foundation removal. The Oakland Access Trestle may be constructed between 2014 and 2017, depending on construction schedules.

Temporary falsework supports would be necessary to ensure the stability of portions of the structure not yet removed. It is anticipated that marine pile-supported falsework would be needed to facilitate the removal of the superstructure.

It is conservatively estimated that a maximum of 2,540 temporary piles may be installed to support all temporary structures, including the two access trestles, and falsework needed to support the structural sections of the existing bridge until completely removed. These piles are expected to be 0.45 meter (18 inches) to 0.91 meter (36 inches) in diameter. When no longer needed, all temporary piles will be retrieved or cut off 0.46 meter (1.5 ft) below the mudline, per US Coast Guard (USCG) requirements.

All pipe piles will be installed with a vibratory hammer. The vibratory hammer will be used to drive the majority of the total pile lengths. The remainder of the pile may be impact-driven with the use of a marine pile driving energy attenuator (i.e., air bubble curtain system), or other equally effective sound attenuation method (e.g., dewatered cofferdam). A maximum of twenty piles may be impact-driven per day.

In the event a pipe pile is entirely installed with a vibratory hammer, it will still be subject to final "proofing" with an impact hammer. "Proofing" will be accomplished by using a limited number of blows with an impact hammer intended to test integrity and seating of the pile. A maximum of 10% of the piles installed completely with a vibratory hammer may be proofed with an impact hammer, without the use of a marine pile driving energy attenuator. Proofing of piles will be limited to a maximum of two piles per day, for less than 1 minute per pile, administering a maximum of twenty blows per pile.

All H-piles needed for the construction of the YBI Access Trestle will be installed with an impact hammer, without the use of a marine pile driving energy attenuator. Impact driving (with the exception of pile proofing) will be restricted to the period between June 1 and November 30 to avoid the peak migration period for salmonids and spawning adult green sturgeon. Vibratory driving and proofing of piles may be performed year round.

In addition to the temporary pipe piles and H-piles described above, sheet piles would be driven with a vibratory hammer to construct temporary cofferdams. A cofferdam is temporary enclosure, built within a body of water, usually composed of sheet piles welded together. The enclosures are generally water tight allowing them to be pumped dry so that construction may take place in a dry environment. The proposed

cofferdams will be contractor-designed; therefore, the exact number and exact nature will be dependent on the contractor's means and methods. It is anticipated that a maximum of 22 cofferdams may be constructed around in-water marine foundations to facilitate the dismantling of the foundations. A typical sheet pile is approximately 0.3 meters (1 foot) long. To construct cofferdams completely surrounding each of the 22 marine foundations a maximum of 7,700 individual sheet piles may be needed. Due to the physical conditions of the project site (e.g., water depths) it is very unlikely that all or even a majority of the cofferdams will be fully dewatered. Some of the cofferdams may be fully dewatered while others may solely be used to isolate the work area; preventing water temporarily impacted by construction activities from mixing with the surrounding waters of the Bay.

2.3. Noise Levels from Pile Driving

To estimate underwater sound pressure levels for the proposed project, measurements from a number of underwater pile driving projects conducted under similar conditions were compiled (see Appendix B: Pile Driving Projects Considered in Development of Underwater Sound level Estimate in CALTRANS' IHA application). Based on this information, CALTRANS' hydroacoustic consultant has provided an estimate of underwater sound levels during vibratory driving, attenuated impact pile driving, and unattenuated proofing of both 0.61-m (24-in) and 0.91-m (36-in) diameter piles and during impact driving of H-piles to determine the distance at which sound levels may exceed specific thresholds for marine mammal takes (Table 2). The distances from the pile to the sound level threshold represent the respective exclusion zone and zones of influence for Level A and Level B harassment (see below).

Sound level estimates were not prepared for 0.46-m (18-in) diameter piles. Given that estimated sound levels for 0.61-m (24-in) diameter piles are lower than those estimated for the 0.91-m (36-in) diameter piles, it is assumed that sound levels from the vibratory and impact driving of 0.46-m (18-in) diameter piles will be lower than those for the 0.91-m (24-in) diameter piles.

Table 2. Estimated distances which sound levels may exceed specific marine mammal take thresholds

Pile Installation Method	Pile Size (m)	Distance to 120 dB re 1 µPa (rms) (m)	Distance to 160 dB re 1 µPa (rms) (m)	Distance to 180 dB re 1 µPa (rms) (m)	Distance to 190 dB re 1 µPa (rms) (m)
Vibratory Driving	24	1,800 – 2,000	NA	<10*	<10*
	36	1,800 – 2,000	NA	<10*	<10*
Attenuated Impact Driving	24	NA	50	<10	<10
	36	NA	65	<10	<10
Unattenuated Proofing	24	NA	385	25	<10
	36	NA	500	35	<10
Unattenuated Impact Driving	H-pile	NA	330	25	<10

* Sound pressure levels from vibratory pile driving are not expected to reach 180 dB RMS or 190 dB RMS at any distance from the pile. However, sound level measurements are generally not taken within less than 10 meters (33 ft) of piles and the behavior of sound within the near field is not well documented or reliably predicted.

2.4. Dismantling of Marine Foundations by Mechanical Means

Dismantling of concrete foundations would require reducing the reinforced concrete to pieces small enough to be hauled away, which could be done by mechanical means such as saw cutting, flame cutting, mechanical splitting, drilling, pulverizing and/or hydro-cutting. Dismantling of the marine foundations will be one of the last orders of work, and will not be undertaken until the superstructures and towers are removed.

3. Dates, Duration and Geographic Location of the Activities

Construction activities for the replacement of the east span of the SFOBB commenced in 2002 and are currently ongoing. The majority of the construction

activities to build the new east span are now complete. The dismantling of the existing span is anticipated to take place immediately following the opening of the new east span to traffic, currently expected in the fall of 2013.

Dismantling of the existing east span may take up to five years to complete. Some preparatory construction activities related to the dismantling may take place as early as the summer of 2012, with completion of the dismantling targeted for 2017. The actual work schedule will be determined by the contractor.

The SF-OBB Project site is located in central San Francisco Bay, between YBI (which is within the jurisdictional boundaries of the City and County of San Francisco) and the City of Oakland, in Alameda County in California, as indicated in Figure 2-1 of CALTRANS LOA application.

Description of Marine Mammals in the Area of the Specified Activity

General information on the marine mammal species found in California waters can be found in Caretta et al. (2011), which is available at the following URL: http://www.nmfs.noaa.gov/pr/pdfs/sars/po2010.pdf. Refer to that document for information on these species.

The marine mammals most likely to be found in the SF-OBB area are the California sea lion, Pacific harbor seal, and harbor porpoise. From December through May gray whales may also be present in the SF-OBB area. Information on California sea lion, harbor seal, and gray whale was provided in the November 14, 2003 (68 FR 64595), Federal Register notice; information on harbor porpoise was provided in the January 26, 2006 (71 FR 4352), Federal Register notice.

Potential Effects on Marine Mammals and Their Habitat

CALTRANS and NMFS have determined that open-water pile driving and pile removal, as well as dredging and dismantling of concrete foundation of existing bridge by saw cutting, flame cutting, mechanical splitting, drilling, pulverizing and/or hydro-cutting, as outlined in the project description, has the potential to result in behavioral harassment of California sea lions, Pacific harbor seals, harbor porpoises, and gray whales that may be swimming, foraging, or resting in the project vicinity while pile driving is being conducted. Pile driving and removal could potentially harass those few pinnipeds that are in the water close to the project site, whether their heads are above or below the surface.

Marine mammals exposed to high intensity sound repeatedly or for prolonged periods can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Kastak et al. 1999; Schlundt et al. 2000; Finneran et al. 2002; 2005). TS can be permanent (PTS), in which case the loss of hearing sensitivity is unrecoverable, or temporary (TTS), in which case the animal's hearing threshold will recover over time (Southall et al. 2007). Since marine mammals depend on acoustic cues for vital biological functions, such as orientation, communication, finding prey, and avoiding predators, marine mammals that suffer from PTS or TTS will have reduced fitness in survival and reproduction, either permanently or temporarily. Repeated noise exposure that leads to TTS could cause PTS.

Measured source levels from impact pile driving can be as high as 214 dB re 1 μPa @ 1 m. Although no marine mammals have been shown to experience TTS or PTS as a result of being exposed to pile driving activities, experiments on a bottlenose dolphin (Tursiops truncates) and beluga whale (Delphinapterus leucas) showed that exposure to a single watergun impulse at a received level of 207 kPa (or 30 psi) peak-to-peak (p-p),

which is equivalent to 228 dB (p-p) re 1 μPa, resulted in a 7 and 6 dB TTS in the beluga whale at 0.4 and 30 kHz, respectively. Thresholds returned to within 2 dB of the pre-exposure level within 4 minutes of the exposure (Finneran et al. 2002). No TTS was observed in the bottlenose dolphin. Although the source level of pile driving from one hammer strike is expected to be much lower than the single watergun impulse cited here, animals being exposed for a prolonged period to repeated hammer strikes could receive more noise exposure in terms of SEL than from the single watergun impulse (estimated at 188 dB re 1 μPa^2-s) in the aforementioned experiment (Finneran et al. 2002).

Noises from dismantling of marine foundations by mechanical means include, but is not limited to, saw cutting, mechanical splitting, drilling and pulverizing. Saw cutting and drilling constitute non-pulse noise, whereas mechanical splitting and pulverizing constitute impulse noise. Although the characteristics of these noises are not well studied, noises from saw cutting and drilling are expected to be similar to vibratory pile driving, and noises from mechanical splitting and pulverizing are expected to be similar to impact pile driving, but at lower intensity, due to the similar mechanisms in sound generating but at a lower power outputs. CALTRANS states that drilling and saw cutting is anticipated to produce underwater sound pressure levels (SPLs) in excess of 120 dB RMS, but is not anticipated to exceed the 180 dB re 1 μPa (RMS). The mechanical splitting and pulverizing of concrete with equipment such as a hammer hoe has the potential to generate high sound pressure levels in excess of 190 dB re 1 μPa (RMS) at 1 m.

However, in order for marine mammals to experience TTS or PTS, the animals have to be close enough to be exposed to high intensity noise levels for prolonged period

of time. Based on the best scientific information available, these sound levels are far below the threshold that could cause TTS or the onset of PTS.

In addition, chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions. Masking can interfere with detection of acoustic signals such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired from maximizing their performance fitness in survival and reproduction.

Masking occurs at the frequency band which the animals utilize. Therefore, since noise generated from in-water pile driving during the SF-OBB construction activities is mostly concentrated at low frequency ranges, it may have less effect on high frequency echolocation sounds by harbor porpoises. However, lower frequency man-made noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. It may also affect communication signals when they occur near the noise band and thus reduce the communication space of animals (e.g., Clark et al. 2009) and cause increased stress levels (e.g., Foote et al. 2004; Holt et al. 2009).

Unlike TS, masking can potentially impact the species at population, community, or even ecosystem levels, as well as individual levels. Masking affects both senders and receivers of the signals and could have long-term chronic effects on marine mammal species and populations. Recent science suggests that low frequency ambient sound levels have increased by as much as 20 dB (more than 3 times in terms of SPL) in the

world's ocean from pre-industrial periods, and most of these increases are from distant shipping (Hildebrand 2009). All anthropogenic noise sources, such as those from vessels traffic, pile driving, dredging, and dismantling existing bridge by mechanic means, contribute to the elevated ambient noise levels, thus intensify masking.

Nevertheless, the sum of noise from the proposed SF-OBB construction activities is confined in an area of inland waters (San Francisco Bay) that is bounded by landmass, therefore, the noise generated is not expected to contribute to increased ocean ambient noise. Due to shallow water depth near the Oakland shore, dredging activities are mainly used to create a barge access channel to dismantle the existing bridge. Therefore, underwater sound propagation from dredging is expected to be poor due to the extremely shallowness of the area to be dredged.

Finally, exposure of marine mammals to certain sounds could lead to behavioral disturbance (Richardson et al. 1995), such as: changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities, changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping), avoidance of areas where noise sources are located, and/or flight responses (e.g., pinnipeds flushing into water from haulouts or rookeries).

The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral modification could be expected to be biologically significant if the change affects growth, survival, and reproduction. Some of these significant behavioral modifications include:

- Drastic change in diving/surfacing patterns (such as those thought to be causing beaked whale stranding due to exposure to military mid-frequency tactical sonar);
- Habitat abandonment due to loss of desirable acoustic environment; and
- Cease feeding or social interaction.

For example, at the Guerreo Negro Lagoon in Baja California, Mexico, which is one of the important breeding grounds for Pacific gray whales, shipping and dredging associated with a salt works may have induced gray whales to abandon the area through most of the 1960s (Bryant et al. 1984). After these activities stopped, the lagoon was reoccupied, first by single whales and later by cow-calf pairs.

The onset of behavioral disturbance from anthropogenic noise depends on both external factors (characteristics of noise sources and their paths) and the receiving animals (hearing, motivation, experience, demography) and is also difficult to predict (Southall et al. 2007).

The proposed project area is not believed to be a prime habitat for marine mammals, nor is it considered an area frequented by marine mammals. Therefore, behavioral disturbances that could result from anthropogenic noise associated with SF-OBB construction activities are expected to affect only a small number of marine mammals on an infrequent basis.

Currently NMFS uses 160 dB re 1 μPa (RMS) at received level for impulse noises (such as impact pile driving, mechanic splitting and pulverizing) as the onset of marine mammal behavioral harassment, and 120 dB re 1 μPa (RMS) for non-impulse noises (vibratory pile driving, saw cutting, drilling, and dredging).

As far as airborne noise is concerned, based on airborne noise levels measured and on-site monitoring conducted during 2004 under a previous IHA, noise levels from the East Span project did not result in the harassment of harbor seals hauled out on Yerba Buena Island (YBI). Also, noise levels from the East Span project are not expected to result in harassment of the sea lions hauled out at Pier 39 as airborne and waterborne sound pressure levels (SPLs) would attenuate to levels below where harassment would be expected by the time they reach that haul-out site, 5.7 km (3.5 miles) from the project site. Therefore, no pinniped hauled out would be affected as a result of the proposed pile-driving. A detailed description of the acoustic measurements is provided in the 2004 CALTRANS marine mammal and acoustic monitoring report for the same activity (CALTRANS' 2005).

Short-term impacts to habitat may include minimal disturbance of the sediment where individual bridge piers are constructed. Long-term impacts to marine mammal habitat will be limited to the footprint of the piles and the obstruction they will create following installation. However, this impact is not considered significant as the marine mammals can easily swim around the piles of the new bridge, as they currently swim around the existing bridge piers.

Estimated Take by Incidental Harassment

For reasons provided in greater detail in NMFS' November 14, 2003 (68 FR 64595) Federal Register notice and in CALTRANS' annual monitoring reports (CALTRANS 2007; 2010) and marine mammal observation memoranda under the previous IHAs, the proposed construction activities would result in harassment of only small numbers of marine mammals and would not result in more than a negligible impact

on marine mammal stocks and their habitat. This was achieved by implementing a variety of monitoring and mitigation measures including marine mammal monitoring before and during pile driving, establishing exclusion zones, using marine pile driving energy attenuator (i.e., air bubble curtain system) or other sound attenuation method (e.g., dewatered cofferdam), and ramping up pile driving.

Marine mammal take estimates are based on marine mammal monitoring reports and marine mammal observations made during pile driving activities associated with the SF-OBB construction work authorized under prior IHAs. For pile driving activities conducted in 2006, 5 harbor seals and no other marine mammals were detected within the isopleths of 160 dB (rms) re 1 μPa during impact pile driving where air bubble curtains were deployed for mitigation measures (radius of zone of influence (ZOI) at 500 m) (CALTRANS 2007). For pile driving activities conducted in the 2008 and 2009 seasons, CALTRANS monitored a much larger ZOI of 120 dB (rms) re 1 μPa as a result of vibratory pile driving. A total of 11 harbor seals and 1 California sea lion were observed entering the 120 dB (rms) re 1 μPa ZOI (CALTRANS). However, despite the ZOI being monitored extended to 1,900 m for the 120 dB isopleths, CALTRANS did not specify which pile driving activities conducted in 2008 and 2009 used an impact hammer and which ones used a vibratory hammer. Therefore, at least some of these animals were not exposed to received level above 160 dB (rms) re μPa, and thus should not be considered as "taken" under the MMPA. No harbor porpoise or gray whale was observed during CALTRANS' pile driving activities since 2006 (CALTRANS 2007; 2010).

Based on these results, and accounting for a certain level of uncertainty regarding the next phase of construction (which would include dismantling of the existing bridge by

mechanical means), NMFS proposes that at maximum 50 harbor seals, 10 California sea lions, 10 harbor porpoises, and 5 gray whales could be exposed to noise levels that could cause Level B harassment as a result of the CALTRAN' SF-OBB construction activities.

Marine Mammal Monitoring Report from Previous IHA

As mentioned above, marine mammal monitoring during CALTRANS' pile driving activities and weekly marine mammal observation memorandums (CALTRANS 2007; 2010) indicate that only a small number of harbor seals (a total of 16 individuals since 2006) and 1 California sea lion (a total of 1 individual in 2009) were observed within ZOIs that could result in behavioral harassment. However, the reports state that none of the animals were observed as been startled by the exposure, which could be an indication that these animals were habituated to human activities in San Francisco Bay. In addition, no harbor porpoise or gray whales were observed during pile driving activities associated to CALTRANS' SF-OBB construction work.

Proposed Mitigation Measures

CALTRANS worked with NMFS and proposes the following mitigation measures for its SF-OBB construction activities to reduce adverse impacts to marine mammals to the lowest extent practicable if in-water pile driving would be conducted.

Minimization of Impacts from Pile Driving

To minimize potential impacts to marine mammals, CALTRANS states that it will limit both the size of piles and duration of impact pile driving, to the extent feasible. Larger piles are expected to generate higher sound pressure levels than smaller piles. Limiting the size of piles to 0.91 meter (36 inches) in diameter or smaller will minimize potential noise impacts.

All pipe piles will be initially installed with a vibratory hammer. The vibratory hammer will be used to drive the majority of the total pile lengths. In the event a pipe pile is entirely installed with a vibratory hammer, it will still be subject to final "proofing" with an impact hammer. A maximum of 10% of the piles installed completely with a vibratory hammer may be proofed with an impact hammer, without the use of a marine pile driving energy attenuator. Proofing of piles will be limited to a maximum of two piles per day, for less than 1 minute per pile, administering a maximum of twenty blows per pile. While both vibratory and impact pile driving have the potential to affect marine mammals, impact driving is expected to generate higher sound pressure levels. Requiring the use of the vibratory hammer will reduce the duration of impact driving and potential exposure to higher sound pressure levels.

Use of a marine pile driving energy attenuator (i.e., air bubble curtain system), or other equally effective sound attenuation method (e.g., dewatered cofferdam) will be required during impact driving of all pipe piles, with the exception of pile proofing.

Monitoring and Establishment of Exclusion Zones and Zones of Influence

During prior in-water permanent and some temporary pile driving, a preliminary 500-meter (1,640-foot) radius exclusion zone was established prior to the commencement of pile driving. Once pile driving commenced, acoustical monitoring data was used to determine the radii at which underwater sound pressure levels equaled or exceeded 180 dB re 1 µPa (RMS) for cetaceans and 190 dB re 1 µPa (RMS) for pinnipeds.

Based on hydroacoustic sound level measured during previous pile driving events, it is unlikely that sound pressure levels from either vibratory or impact driving of pipe piles will equal or exceed 180 or 190 dB re 1 µPa (RMS) beyond 10 meters (33 feet)

from the piles. Therefore, CALTRANS will not establish or monitor an exclusion zone during vibratory or impact driving of pipe piles.

CALTRANS will perform hydroacoustic monitoring during initial impact pile driving events for each of the temporary structures identified in Table 1 to verify estimated underwater sound pressure levels. Should it be determined through monitoring that sound levels from the impact driving of pipe piles have the potential to exceed 180 or 190 dB re 1 µPa (RMS), corresponding exclusion zones will be established and monitored in a manner consistent with CALTRANS' prior IHAs for the SF-OBB Project (see below).

Only the impact driving of H-piles and the proofing of pipe piles is expected to equal or exceed the 180 dB re 1 µPa (RMS) to a distance of 25 to 35 meters (82 to 115 feet) depending on the pile type and size. However, it is not practical to establish and monitor an exclusion zone during the driving of H-pile or proofing of pipe piles.

The proofing of a pipe pile would require less than 1 minute of impact driving. The logistics of scheduling and mobilizing a monitoring team for activities that will last less than one minute is not practical. In addition, considering that it is extremely unlikely that a cetacean would be within 25 to 35 meters (82 to 115 feet) of an H-pile during impact driving or pipe pile during proofing, CALTRANS does not intend to establish an exclusion zone or perform monitoring for cetaceans during these activities. Neither the driving of H-piles or the proofing of pipe piles is expected to equal or exceed the 190 dB re 1 µPa (RMS) beyond 10 meters (33 feet) from the pile. Therefore, a pinniped exclusion zone would not be necessary.

Due to the uncertainty associated with potential sound levels from mechanical means of dismantling marine foundations, CALTRANS will establish a preliminary 500-meter radius exclusion zone around each foundation, prior to splitting or pulverizing concrete via mechanical means. Once removal of concrete foundations commences, acoustical monitoring data will be used to determine the radii at which underwater sound pressure levels equal or exceed 180 dB re 1 μPa (RMS) for cetaceans and 190 dB re 1 μPa (RMS) for pinnipeds. The radii of the exclusion zones will then be adjusted to correspond with noise thresholds.

NMFS-approved marine mammal monitors located on construction barges, trestles, bridge piers, YBI and/or Treasure Island will survey the exclusion zones to ensure that no marine mammals are seen within the zone before activities begin. If marine mammals are found within the exclusion zone, work will be delayed until the monitors are confident the animal has moved out of the area. If a marine mammal is seen above water and then dives below, the contractor will be instructed to wait until enough time has elapsed without a sighting (at least 15 minutes for pinnipeds and 30 minutes for cetaceans) to assume the animal has moved beyond the exclusion zone.

If marine mammals enter the safety zone after the activities have commenced, the operation will continue unabated and marine mammal observers will monitor and record their numbers and behavior. Should the activities stop for a period of 30 minutes or more, then the restart of the activity will be treated in the same manner as described above.

Should it be determined through acoustic monitoring that sound levels from the mechanical splitting and pulverizing of concrete foundations will not have the potential to

equal or exceed 180 or 190 dB re 1 µPa (RMS), monitoring of the exclusion zones will be discontinued.

Soft Start

It should be recognized that although marine mammals will be protected from Level A harassment (i.e., injury) through marine mammal observers monitoring a 190-dB safety zone for pinnipeds and 180-dB safety zone for cetaceans, mitigation may not be 100 percent effective at all times in locating marine mammals. Therefore, in order to provide additional protection to marine mammals near the project area by allowing marine mammals to vacate the area prior to receiving a potential injury, CALTRANS would also "soft start" the hammer prior to operating at full capacity. CALTRANS typically implements a "soft start" with several initial hammer strikes at less than full capacity (i.e., approximately 40-60 percent energy levels) with no less than a 1 minute interval between each strike. Similar levels of noise reduction are expected underwater. Therefore, the contractor would initiate pile driving hammers with this procedure in order to allow pinnipeds or cetaceans in the area to voluntarily move from the area. This should expose fewer animals to loud sounds both underwater and above water noise. This would also ensure that, although not expected, any pinnipeds and cetaceans that are missed during safety zone monitoring will not be injured.

Compliance with Equipment Noise Standards

In addition, CALTRANS will ensure construction equipment complies with noise standards of the US Environmental Protection Agency and that all equipment has noise control devices not less effective than those provided on the original equipment.

Proposed Monitoring Measures

CALTRANS and NMFS worked together and proposed the following monitoring measures for the SF-OBB construction activities.

Proposed Monitoring and Reporting Measures

Visual Monitoring

Exclusion zone monitoring will be conducted during the dismantling of marine foundations by mechanical means having the potential to generate sound levels in excess of 180 dB re 1 μPa (RMS). Monitoring of the pinniped and cetacean exclusion zones will be conducted by a minimum of three qualified NMFS-approved observers. The observers will begin monitoring at least 30 minutes prior to startup of the activity and for at least 30 minutes following the activity. Observers will likely conduct the monitoring from construction barges, trestles, bridge piers, YBI and/or Treasure Island depending on the location of the activity. As discussed above in the proposed mitigation section, the activity will not begin until the exclusion zone is clear of marine mammals.

Observations will be made using high-quality binoculars (e.g., Zeiss, 10 x 42 power). Monitors will be equipped with radios or cell phones for maintaining contact with other observers and CALTRANS engineers, and range finders to determine distance to marine mammals, boats, buoys, and construction equipment. Data on all observations will be recorded and will include items such as species, age class and gender (if possible), numbers, time of observation, location, direction of travel, and behavior.

Due to the extremely small size of the exclusion zone (zones where SPL reaches 180 and 190 dB) as indicated in Table 2, there is no need to conduct monitoring for these zones during pile driving activities. Should it be determined through hydroacoustic monitoring that sound levels from pile driving have the potential to substantively exceed

180 or 190 dB re 1 µPa (rms), corresponding exclusion zones will be established and monitored.

To document the number of marine mammals exposed to impulse sounds greater than 160 dB re 1 µPa (rms), CALTRANS will monitor marine mammals during at least 20% of attenuated impact driving of pipe piles and 100% of unattenuated impact driving of H-piles. This monitoring will be conducted by a minimum of two qualified NMFS-approved protected species observers (PSOs). The PSOs will begin monitoring at least 30 minutes prior to startup of the activity and for at least 30 minutes following the activity. PSOs will likely conduct the monitoring from construction barges, trestles, bridge piers, YBI and/or Treasure Island depending on the location of the activity. Data on all observations will be recorded and will include items such as species, age class, and sex (if possible), numbers, time of observation, location, direction of travel, and behavior.

Hydroacoustic Monitoring

The purpose of the underwater sound monitoring during dismantling of concrete foundations via mechanical means is to establish the exclusion zones of 180 dB re 1 µPa (rms) for cetaceans and 190 dB re 1 µPa (rms) for pinnipeds. Monitoring will occur during the initial use of concrete dismantling equipment with the potential to generate sound pressure levels in excess of 180 dB re 1 µPa (rms). Monitoring will likely be conducted from construction barges and/or boats. Measurements will be taken at various distances as needed to determine the distance to the 180 and 190 dB re 1 µPa (rms) contours.

The purpose of underwater sound monitoring during impact pile driving will be to verify sound level estimates and confirm that sound levels do not equal or exceed 180 dB re 1 μPa (rms).

Reporting

CALTRANS will notify NMFS prior to the initiation of the pile driving and dismantling activities for the removal of the existing east span. NMFS will be informed of the initial sound pressure level measurements for both pile driving and foundation dismantling activities, including sound level measurements taken at the 500-meter (1,640-ft) contour and the final exclusion zone radii established for marine foundation dismantling activities.

Monitoring reports will be posted on the SFOBB Project's biological mitigation website (www.biomitigation.org) on a weekly basis during monitoring. Marine mammal monitoring reports will include species and numbers of marine mammals observed, time and location of observation and behavior of the animal. In addition, the reports will include an estimate of the number and species of marine mammals that may have been harassed as a result of activities. CALTRANS will provide NMFS with a final report detailing: (1) the monitoring protocol; (2) a summary of the data recorded during monitoring; and (3) an estimate of the species and number of marine mammals that may have been harassed due to activities.

Negligible Impact and Small Numbers Analysis and Determination

Pursuant to NMFS' regulations implementing the MMPA, an applicant is required to estimate the number of animals that will be "taken" by the specified activities (i.e., takes by harassment only, or takes by harassment, injury, and/or death). This estimate

informs the analysis that NMFS must perform to determine whether the activity will have a "negligible impact" on the species or stock. Level B (behavioral) harassment occurs at the level of the individual(s) and does not assume any resulting population-level consequences, though there are known avenues through which behavioral disturbance of individuals can result in population-level effects. A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination.

In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, NMFS considers other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), as well as the number and nature of estimated Level A takes, the number of estimated mortalities, and effects on habitat.

The CALTRANS' specified activities have been described based on best estimates of the planned SF-OBB construction project within the proposed project area. Some of the noises that would be generated as a result of the proposed bridge construction and dismantling project, such as impact pile driving, are high intensity. However, the in-water pile driving for the piles would use small hammers and/or vibratory pile driving methods, coupled with noise attenuation mechanism such as air bubble curtains for impact pile driving, therefore the resulting exclusion zones for potential TS are expected to be extremely small (< 35 m) from the hammer. In addition, the source levels from vibratory pile driving are expected to be below the TS onset threshold. Therefore, NMFS does not expect that any animals would receive Level A

(including injury) harassment or Level B harassment in the form of TTS from being exposed to in-water pile driving associated with SF-OBB construction project.

Based on marine mammal monitoring reports under previous IHAs, only 16 harbor seals and 1 California sea lion were observed within the 120 dB (in 2008 and 2009) or 160 dB (in 2006) ZOIs during in-water pile driving since 2006. NMFS estimates that up to 50 harbor seals, 10 California sea lions, 10 harbor porpoises, and 5 gray whales could be exposed to received levels above 120 dB (rms) during vibratory pile driving or 160 dB (rms) during impact pile driving for the next season of construction activities due to the large numbers of piles to be driven and the extended zones of influence from vibratory pile driving. These are small numbers, representing 0.15% of the California stock of harbor seal population (estimated at 34,233; Carretta et al. 2010), 0.00% of the U.S. stock of California sea lion population (estimated at 238,000; Carretta et al. 2010), 0.10% of the San Francisco-Russian River stock of harbor porpoise population (estimated at 9,181; Carretta et al. 2010), and 0.05% of the Eastern North Pacific stock of gray whale population (Allen and Angliss 2010).

Animals exposed to construction noise associated with the SF-OBB construction work would be limited to Level B behavioral harassment only, i.e., the exposure of received levels for impulse noise between 160 and 180 dB (rms) re 1 μPa (from impact pile driving) and for non-impulse noise between 120 and 180 dB (rms) re 1 μPa (from vibratory pile driving). In addition, the potential behavioral responses from exposed animals are expected to be localized and short in duration.

These low intensity, localized, and short-term noise exposures (i.e., 160 dB re 1 μPa (rms) from impulse sources and 120 dB re 1 μPa (rms) from non-impulse sources),

are expected to cause brief startle reactions or short-term behavioral modification by the animals. These brief reactions and behavioral changes are expected to disappear when the exposures cease. Therefore, these levels of received underwater construction noise from the proposed SF-OBB construction project are not expected to affect marine mammal annual rates of recruitment or survival. The maximum estimated 160 dB isopleths from impact pile driving is 500 m from the pile, and the estimated 120 dB maximum isopleths from vibratory pile driving is approximately 2,000 m from the pile. There is no pinniped haul-out area in the vicinity of the pile driving sites.

For the reasons discussed in this document, NMFS has preliminarily determined that the impact of in-water pile driving associated with construction of the SF-OBB would result, at worst, in the Level B harassment of small numbers of California sea lions, Pacific harbor seals, harbor porpoises, and potentially gray whales that inhabit or visit SFB in general and the vicinity of the SF-OBB in particular. While behavioral modifications, including temporarily vacating the area around the construction site, may be made by these species to avoid the resultant visual and acoustic disturbance, the availability of alternate areas within SFB and haul-out sites (including pupping sites) and feeding areas within the Bay has led NMFS to preliminarily determine that this action will have a negligible impact on California sea lion, Pacific harbor seal, harbor porpoise, and gray whale populations along the California coast.

In addition, no take by Level A harassment (injury) or death is anticipated and harassment takes should be at the lowest level practicable due to incorporation of the mitigation measures mentioned previously in this document.

Impact on Availability of Affected Species for Taking for Subsistence Uses

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

National Environmental Policy Act (NEPA)

NMFS' prepared an Environmental Assessment (EA) for the take of marine mammals incidental to construction of the East Span of the SF-OBB and made a Finding of No Significant Impact (FONSI) on November 4, 2003. Due to the modification of part of the construction project and the mitigation measures, NMFS reviewed additional information from CALTRANS regarding empirical measurements of pile driving noises for the smaller temporary piles without an air bubble curtain system and the use of vibratory pile driving. NMFS prepared a Supplemental Environmental Assessment (SEA) and analyzed the potential impacts to marine mammals that would result from the modification of the action. A Finding of No Significant Impact (FONSI) was signed on August 5, 2009. A copy of the SEA and FONSI is available upon request (see ADDRESSES).

Endangered Species Act (ESA)

NMFS has determined that issuance of the IHA will have no effect on listed marine mammals, as none are known to occur in the action area.

Proposed Authorization

NMFS proposes to issue an IHA to CALTRANS for the potential harassment of small numbers of harbor seals, California sea lions, harbor porpoises, and gray whales incidental to construction of a replacement bridge for the East Span of the San Francisco-Oakland Bay Bridge in California, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. NMFS has preliminarily

determined that the proposed activity would result in the harassment of only small numbers of harbor seals, California sea lions, harbor porpoises, and possibly gray whales and will have no more than a negligible impact on these marine mammal stocks.

Dated: August 15, 2012.

Helen M. Golde,
Acting Director, Office of Protected Resources,
National Marine Fisheries Service.

[FR Doc. 2012-20514 Filed 08/20/2012 at 8:45 am; Publication Date: 08/21/2012]