

## ENVIRONMENTAL ASSESSMENT

Issuance of an Incidental Harassment Authorization to the Port of San Francisco to Take Marine Mammals by Harassment Incidental to Pile Driving During the Pier 36/Brannan Street Wharf Project

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**ABSTRACT:** The National Marine Fisheries Service proposes to issue an Incidental Harassment Authorization to the Port of San Francisco for the taking, by Level B harassment, of small numbers of marine mammals, incidental to pile driving during the Pier 36/Brannan Street Wharf Project in San Francisco, California.

## CONTENTS

<b>1. Chapter 1 – Purpose and Need for Action.....</b>	<b>5</b>
1.1 Description of Proposed Action.....	5
1.1.1 MMPA Purpose and Need .....	5
1.2 NEPA Requirements and Scope of NEPA Analysis.....	6
1.2.1 NEPA Scoping Summary.....	7
1.2.2 Public Involvement .....	7
1.3 Applicable Laws and Necessary Federal Permits.....	7
1.3.1 The National Environmental Policy Act.....	8
1.3.2 The Endangered Species Act .....	8
1.3.3 The Marine Mammal Protection Act .....	8
1.3.4 Magnuson-Stevens Fishery Conservation and Management Act .....	9
<b>2. Chapter 2 – Alternatives Including the Proposed Action .....</b>	<b>9</b>
2.1 Project Objectives .....	10
2.2 Alternative 1 – No Action Alternative.....	10
2.3 Alternative 2 – Proposed Action (Preferred) .....	11
2.3.1 Pile Driving Operations .....	11
2.3.2 Mitigation and Monitoring Measures .....	11
2.4 Alternatives Considered but Eliminated from Detailed Study .....	12
<b>3. Chapter 3 – Affected Environment .....</b>	<b>13</b>
3.1 Physical Environment .....	13
3.2 Biological Environment .....	13
3.2.1 Marine Mammals .....	13
3.2.2 Fish.....	13
<b>4. Chapter 4 –Environmental Consequences.....</b>	<b>14</b>
4.1 Effects of Alternative 1 – No Action Alternative .....	15
4.2 Effects of Alternative 2 – Preferred Alternative .....	16

4.2.1	Compliance with Necessary Laws – Necessary Federal Permits .....	17
4.2.2	Unavoidable Adverse Impacts.....	17
4.3	Cumulative Effects.....	17
4.4	Conclusion.....	17
<b>5.</b>	<b>List of Preparers and Agencies Consulted.....</b>	<b>19</b>
<b>6.</b>	<b>References.....</b>	<b>19</b>

## LIST OF ACRONYMS, ABBREVIATIONS, AND INITIALISMS

BiOp	Biological Opinion
CFR	Code of Federal Regulations
CEQ	President's Council on Environmental Quality
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ft	feet
IHA	Incidental Harassment Authorization
km	kilometer
m	meter
mi	mile
MMPA	Marine Mammal Protection Act
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
OMB	Office of Management Budget
Port	Port of San Francisco
PSO	Protected Species Observer
USACE	United States Army Corps of Engineers, San Francisco District
U.S.C.	United States Code

# 1. CHAPTER 1 – PURPOSE AND NEED FOR ACTION

## 1.1 DESCRIPTION OF PROPOSED ACTION

NMFS has received an application from the United States Army Corps of Engineers, San Francisco District (USACE), on behalf of the Port of San Francisco (Port), for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to pile driving during construction of the Brannan Street Wharf in San Francisco Bay, California. The Port's construction activities, which have the potential to behaviorally disturb marine mammals, warrant an incidental take authorization from the National Marine Fisheries Service (NMFS) under section 101(a)(5)(D) of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1631 *et seq.*).

The proposed action considered in this Environmental Assessment (EA) is NMFS' issuance of a 1-year IHA under section 101(a)(5)(D) of the MMPA, for the taking, by Level B harassment only, of small numbers of marine mammals incidental to pile driving during construction of the Brannan Street Wharf.

This EA, titled "*Issuance of an Incidental Harassment Authorization to the Port of San Francisco to Take Marine Mammals by Harassment Incidental to Pile Driving During Construction of the Brannan Street Wharf*" (hereinafter, EA), addresses the impacts on the human environment that would result from issuance of this IHA for MMPA Level B takes of marine mammals during pile driving, taking into account the mitigation measures required in the IHA.

### 1.1.1 MMPA PURPOSE AND NEED

The MMPA and Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*) prohibit "takes" of marine mammals and of threatened and endangered species, respectively, with only a few specific exceptions. The applicable exceptions in this case are an exemption for incidental take of marine mammals in section 101(a)(5)(D) of the MMPA and 7(a)(4) of the ESA.

Section 101(a)(5)(D) of the MMPA directs the Secretary of Commerce to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and a notice of a proposed authorization is provided to the public for review. Section 101(a)(5)(D) of the MMPA also establishes a 45-day time limit for NMFS' review of an application for an IHA followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of small numbers of marine mammals. Within 45 days of the close of the public comment period, NMFS must either issue or deny the IHA.

**Purpose:** The primary purpose of NMFS issuing an IHA to the Port is to provide an exemption from the take prohibitions contained in the MMPA for the take of marine mammals incidental to the Port's pile driving during construction of the Brannan Street Wharf.

**Need:** As noted above this section, the MMPA establishes a general moratorium or prohibition on the take of marine mammals, including take by behavioral harassment. The

MMPA establishes a process by which individuals engaged in specified activities within a specified geographic area may request an IHA. NMFS must authorize the take of small numbers of marine mammals if, among other things, it complies with the process described above this section, makes certain determinations, and requires, where applicable, the implementation of mitigation and monitoring to minimize potential adverse impacts and resulting take. Specifically, NMFS shall grant the IHA if it finds that the taking will have a negligible impact on the species or stock(s), and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). The IHA must, where applicable, set forth the permissible methods of taking, other means of effecting the least practicable adverse impact on the species or stock and its habitat, and requirements pertaining to the mitigation, monitoring, and reporting of such takings.

The USACE and the Port have submitted a complete application demonstrating potential eligibility for issuance of an IHA. NMFS now has a corresponding duty to determine whether and how it can fashion an IHA authorizing take by harassment incidental to the activities described in the application. The need for this action is, therefore, established and framed by the MMPA and NMFS' responsibilities under section 101(a)(5)(D) of that Act, its implementing regulations, and other applicable requirements which will influence its decision making, such as section 7 of the ESA which is discussed in more detail below this section.

The foregoing purpose and need guide NMFS in developing alternatives for consideration, including alternative means of mitigating potential adverse effects.

## **1.2 NEPA REQUIREMENTS AND SCOPE OF NEPA ANALYSIS**

This EA focuses primarily on the environmental effects of authorizing MMPA Level B incidental takes of marine mammals during pile driving in San Francisco Bay. The MMPA and its implementing regulations governing issuance of an IHA require that upon receipt of a valid and complete application for an IHA, NMFS must publish a notice of proposed IHA in the *Federal Register* within 45 days. The notice issued for the Port's action summarized the purpose of the requested IHA, included a statement that NMFS would prepare an EA for the proposed action, and invited interested parties to submit written comments concerning the application and NMFS' preliminary analyses and findings including those relevant to consideration in the EA.

NOAA Administrative Order 216-6 (NAO 216-6) established agency procedures for complying with the National Environmental Policy Act (NEPA) and the implementing regulations issued by the President's Council on Environmental Quality (CEQ). Consistent with the intent of NEPA and the clear direction in NAO 216-6 to involve the public in NEPA decision-making, NMFS requested comments on the potential environmental impacts described in the USACE and Port's application and the proposed IHA. Comments received on the proposed IHA were considered during preparation of this EA.

NMFS has prepared this EA to assist in determining whether the direct, indirect, and cumulative impacts related to its issuance of the authorization for incidental take under the MMPA of four marine mammal species are likely to result in significant impacts to the human environment, or whether the analysis contained herein, including documents referenced and incorporated by reference and public comments received on the proposed IHA, supports the issuance of a Finding of No Significant Impact. Given the limited scope of the decision for which NMFS is responsible (i.e. whether or not to issue the authorization including prescribed means of take,

mitigation measures, and monitoring requirements) and that this EA is intended to inform, the scope of analysis is limited to evaluating and disclosing the impacts to living marine resources and their habitat likely to be affected by issuance of an IHA authorizing the take of marine mammals incidental to the Port's pile driving activities. As described more fully below this section, the EA identifies all marine mammals, and species protected under the ESA, that are likely to occur within the action area.

The analysis focuses on the impacts to certain marine mammal species that could potentially result from issuance of the IHA for the take of marine mammals incidental to the proposed pile driving in San Francisco Bay; impacts that would result from the alternatives presented; and the consideration of potential cumulative environmental impacts. Impacts to other marine species and habitat located in the action area were considered unlikely, and thus received less detailed evaluation.

### **1.2.1 NEPA Scoping Summary**

The purpose of scoping is to identify the issues to be addressed and any potentially significant environmental issues related to the proposed action, as well as identify and eliminate from detailed study the environmental issues that are not significant or that have been covered by review in prior NEPA analyses. An additional purpose of the scoping process is to identify the concerns of the affected public and federal agencies, states, and Indian tribes.

Under 50 CFR 216.104(b) of NMFS' implementing regulations for the MMPA, NMFS must, after deeming the application adequate and complete, publish in the *Federal Register* a notice of proposed IHA or receipt of a request for the implementation or re-implementation of regulations governing the incidental taking. Information gathered during the associated comment period is considered by NMFS in ensuring adequacy of preliminary determinations and proposed mitigation measures for IHAs. In accordance, a notice of proposed IHA was published in the *Federal Register* on October 26, 2011 (76 FR 66274) and was made available for public review and comment for 30 days. Comments received on the proposed IHA were used to develop the scope of this EA.

### **1.2.2 PUBLIC INVOLVEMENT**

On October 26, 2011, NMFS published a notice of a proposed IHA in the *Federal Register* (76 FR 66274) and requested comments from the public for 30 days. NMFS only received comments from the Marine Mammal Commission. NMFS developed responses to the specific comments regarding issuance of an IHA under the MMPA and will provide those responses in the *Federal Register* notice announcing the issuance of the IHA. NMFS does not repeat those responses here. NMFS notes, however, that it fully considered all comments, particularly those related to mitigation and monitoring. NMFS determined, based on the best available data, that the proposed measures are presently the most feasible and effective measures capable of implementation by the Port during pile driving activities.

## **1.3 APPLICABLE LAWS AND NECESSARY FEDERAL PERMITS**

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action.

### **1.3.1 THE NATIONAL ENVIRONMENTAL POLICY ACT**

NEPA's EIS requirement is applicable to all "major" federal actions with the potential to significantly affect the quality of the human environment. Major federal actions include activities that are fully or partially funded, regulated, conducted, or approved by a federal agency. NMFS' issuance of an IHA for incidental harassment of marine mammals represents approval and regulation of takes of marine mammals incidental to the applicant's activities and is a federal action for which environmental review is required. While NEPA does not dictate a substantive outcome for an IHA, it requires consideration of environmental issues in federal agency planning and decision making, and requires an analysis of alternatives and direct, indirect, and cumulative environmental effects of the NMFS proposed action to authorize MMPA Level B incidental take. As noted, NMFS has prepared this EA to assist in determining whether an EIS is necessary for the action.

### **1.3.2 THE ENDANGERED SPECIES ACT**

Section 7 of the ESA requires consultation with the appropriate federal agency (either NMFS or the U.S. Fish and Wildlife Service) for federal actions that "may affect" a listed species or critical habitat. NMFS' issuance of an IHA affecting ESA-listed species or designated critical habitat, directly or indirectly, is a federal action subject to these section 7 consultation requirements. Accordingly, NMFS is required to ensure that its action is not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of critical habitat for such species. Regulations specify the requirements for these consultations (50 CFR § 402).

NMFS has determined that issuance of the IHA is not likely to result in adverse effects to listed marine mammals. However, NMFS Southwest Region completed a Biological Opinion (BiOp) analyzing the U.S. Army Corps of Engineers' and the Port's proposed construction project and potential effects on threatened Central California Coast steelhead distinct population segment (*Oncorhynchus mykiss*), the southern distinct population segment of threatened North American green sturgeon (*Acipenser medirostris*), and their designated critical habitats. NMFS concluded that the proposed project is not likely to jeopardize the continued existence of either stock or result in the destruction or adverse modification of critical habitat (NMFS, 2011).

### **1.3.3 THE MARINE MAMMAL PROTECTION ACT**

Section 101(a)(5)(D) of the MMPA directs the Secretary of Commerce to authorize, upon request, the incidental, but not intentional, taking by harassment of small numbers of marine mammals of a species or population stock, for periods of not more than one year, by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specific geographic region if certain findings are made and a *Federal Register* notice of a proposed authorization is provided to the public for review.

Section 101(a)(5)(D) of the MMPA established an expedited process by which U.S. citizens can apply for an authorization to incidentally take small numbers of marine mammals by 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”].

Section 101(a)(5)(D) of the MMPA 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 small numbers of marine mammals. Not later than 45 days after the close of the public comment period, if the Secretary of Commerce makes the findings set forth in section 101(a)(5)(D)(i) of the MMPA, the Secretary of Commerce shall issue the authorization with appropriate conditions to meet the requirements of section 101(a)(5)(D)(ii) of the MMPA.

NMFS has promulgated regulations to implement the permit provisions of the MMPA (50 CFR Part 216) and has produced Office of Management and Budget (OMB)-approved application instructions (OMB Number 0648-0151) that prescribe the procedures necessary to apply for permits. All applicants must comply with these regulations and application instructions in addition to the provisions of the MMPA. Applications for an IHA must be submitted according to regulations at 50 CFR § 216.104.

#### **1.3.4 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT**

Under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Congress defined Essential Fish Habitat (EFH) as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (16 U.S.C. 1802(10)). The EFH provisions of the Magnuson-Stevens Act offer resource managers means to accomplish the goal of giving heightened consideration to fish habitat in resource management. NMFS Office of Protected Resources is required to consult with NMFS Office of Habitat Conservation for any action it authorizes (e.g., incidental take), funds, or undertakes, or proposes to authorize, fund, or undertake that may adversely affect EFH. This includes renewals, reviews, or substantial revisions of actions.

NMFS Southwest Regional Office concluded EFH consultation with the U.S. Army Corps of Engineers on May 10, 2011 (Schaeffer, 2011) and determined that the proposed action would adversely affect EFH for various federally managed fish species within the Pacific Groundfish, Pacific Salmon, and Coastal Pelagic Fishery Management Plans. However, the proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH. In addition, the project would result in multiple beneficial effects to EFH. NMFS Southwest Regional Office had no EFH conservation recommendations. There are no independent adverse effects to EFH from issuance of the IHA (Alternative 2).

## **2. CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION**

The NEPA implementing regulations (40 CFR § 1502.14) and NAO 216-6 provide guidance on the consideration of alternatives to a federal proposed action and require rigorous exploration and objective evaluation of all reasonable alternatives. Each alternative must be feasible and reasonable in accordance with the CEQ implementing regulations (40 CFR §§ 1500-1508). This chapter describes the range of potential actions (alternatives) determined reasonable with respect to achieving the stated purpose and need, as well as alternatives eliminated from detailed study and also summarizes the expected outputs and any related mitigation for each alternative.

This EA evaluates the alternatives to ensure that they would fulfill the purpose and need, namely: (1) the issuance of an IHA for the take of marine mammals by Level B behavioral harassment, incidental to the Port's pile driving activities during construction of the Brannan Street Wharf; and (2) compliance with the MMPA which sets forth specific standards (i.e., no unmitigable adverse impact and negligible impact) that must be met in order for NMFS to issue an IHA.

NMFS' proposed action (preferred) alternative represents the activities proposed by the applicant for the IHA, along with required monitoring and mitigation measures that would minimize potential adverse environmental impacts.

### **2.1 PROJECT OBJECTIVES**

The fundamental objective of the project is to construct a pile-supported park along the San Francisco waterfront to replace the existing Pier 36. The proposed park would provide a new open space for the purpose of public recreation. The project would require installation of 261 steel and concrete piles and 57,000 square feet of new decking.

### **2.2 ALTERNATIVE 1 – NO ACTION ALTERNATIVE**

Under the No Action Alternative, NMFS would not issue an IHA to the Port for the taking, by Level B harassment, of small numbers of marine mammals, incidental to pile driving activities. The MMPA prohibits all takings of marine mammals unless authorized by a permit or exemption under the MMPA. The consequences of not authorizing incidental take are (1) the entity conducting the activity may be in violation of the MMPA if take occurs, (2) mitigation and monitoring measures cannot be required by NMFS, and (3) mitigation measures might not be performed voluntarily by the applicant, and (4) the applicant may choose not to conduct the activity. By undertaking measures to further protect marine mammals from incidental take through the authorization program, the impacts of these activities on the marine environment can potentially be lessened. While NMFS does not authorize the construction project itself, NMFS does authorize the incidental harassment of marine mammals in connection with this activity and prescribes the methods of taking and other means of effecting the least practicable adverse impact on the species and stocks and their habitats. If an IHA was not issued, the Port could decide either to cancel construction or to continue the proposed activity. If the latter decision was made, the Port could independently implement mitigation measures; however, they would be proceeding without authorization from NMFS pursuant to the MMPA. If the Port did not implement mitigation measures during survey activities, increased takes of marine mammals by harassment (and potentially by injury or mortality) could occur if the activities were conducted when marine mammals were present. Although the No Action Alternative would not meet the purpose and need to allow incidental takings of marine mammals under certain conditions, CEQ

regulations require consideration and analysis of a No Action Alternative for the purposes of presenting a comparative analysis to the action alternatives.

## **2.3 ALTERNATIVE 2 – PROPOSED ACTION (PREFERRED)**

The Proposed Action is the Preferred Alternative. Under this alternative, NMFS would issue an IHA to the Port allowing the take, by Level B harassment, of four marine mammal species in San Francisco Bay, incidental to pile driving with the mitigation, monitoring, and reporting conditions contained within the Port's IHA application and NMFS' proposed IHA *Federal Register* notice. Accordingly, the Proposed Action would satisfy the purpose and need of the NMFS MMPA action – issuance of an IHA, along with required mitigation and monitoring measures – and would enable the Port to comply with the statutory and regulatory requirements of the MMPA.

### **2.3.1 PILE DRIVING OPERATIONS**

The NMFS' proposed IHA *Federal Register* notice (76 FR 66274, October 26, 2011) describes the pile driving protocols in detail and this EA briefly summarizes them here. Installation of 261 steel and concrete piles would take place around the existing Pier 36 in San Francisco Bay. The piles would be installed over a period of about five months, between May and December, 2012.

### **2.3.2 MITIGATION AND MONITORING MEASURES**

The NMFS' proposed IHA *Federal Register* notice (76 FR 66274, October 26, 2011) describes the required mitigation and monitoring measures in detail and this EA briefly summarizes them here. To reduce the potential for disturbance from acoustic stimuli associated with the activities, the Port has proposed to implement the following mitigation and monitoring measures for marine mammals: (1) use of a sound attenuation device; (2) establishment of an exclusion zone; (3) pile driving shut down and delay procedures; (4) soft-start procedures; (5) herring monitoring; (6) visual monitoring; and (7) hydroacoustic monitoring.

**Sound Attenuation Device:** When using impact pile driving to install steel piles in water depths greater than two feet, an unconfined bubble curtain would be used to reduce underwater sound levels to avoid the potential for injury. A bubble curtain is expected to reduce sound levels by at least 5 dB.

**Exclusion Zones:** NMFS has determined that for acoustic effects, using acoustic thresholds in combination with corresponding exclusion zones is an effective way to consistently apply measures to avoid or minimize the impacts of an action. During all in-water impact pile driving, the Port would establish a preliminary marine mammal exclusion zone with 50 m (164 ft) radius around each pile to avoid exposure to sounds at or above 180 dB. This would include an 8-m (26-ft) buffer zone to further avoid marine mammals from entering the 180-dB isopleth. The exclusion zone would be monitored during all impact pile driving to ensure that no marine mammals enter the 50-m (164-ft) radius. Once underwater sound measurements are taken, the exclusion zone may be adjusted accordingly so that marine mammals are not exposed to Level A harassment sound pressure levels.

**Shut Down and Delay Procedures:** The Port would shut down or delay pile driving activities if a marine mammal is seen within or approaching the exclusion zone. Activity would not resume until the marine mammal moves out of the exclusion zone or has not been resighted for 15 minutes (pinnipeds) or 30 minutes (cetaceans).

**Soft-start Procedures:** The Port would implement a “soft-start” technique at the beginning of survey activity to allow marine mammals to leave the immediate area before sound sources reach full energy. Soft-start procedures would be conducted prior to driving each pile if hammering ceases for more than 30 minutes.

**Herring Monitoring:** Herring spawning events could result in harbor seals congregating and approaching the action area sporadically in an unpredictable manner. The Port would conduct monitoring for herring spawning events on a daily basis between December 1 and February (although pile driving is expected to be complete in December). If a herring spawning event is observed, in-water work would cease for a period of 2 weeks following the spawning event (a measure designed to reduce impacts to fish).

**Visual Monitoring:** The Port would have at least one protected species observer (PSO) monitoring the Level B harassment zone for marine mammals 30 minutes before, during, and 30 minutes after all impact pile driving activities. In addition, at least two PSOs would conduct behavioral monitoring out to 1,900 m during all vibratory pile driving for the first two weeks of activity to validate take estimates and evaluate behavioral impacts.

**Hydroacoustic Monitoring:** The Port would conduct hydroacoustic monitoring at the initial installation of each pile type to ensure that the harassment isopleths are not extending past the calculated distances described in the notice of proposed IHA (76 FR 66274, October 26, 2011).

## **2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY**

NMFS considered whether other alternatives could meet the purpose and need and support the Port’s proposed activity. An alternative that would allow for the issuance of an IHA with no required mitigation or monitoring was considered but eliminated from consideration, as it would not be in compliance with the MMPA and therefore would not meet the purpose and need. For that reason, this alternative is not analyzed further in this document.

NMFS also considered an alternative whereby NMFS issues the IHA for another time. However, this alternative failed to meet the statutory and regulatory requirements of the MMPA for an IHA as the Port did not submit an application (i.e., NMFS shall issue an IHA upon request) to conduct pile driving at an alternate time. Pile driving activities are expected to begin shortly after issuance of an IHA and are determined by the most suitable dates that would satisfy the purpose and need, from a logistical perspective, for the Port. The potential environmental impacts of pile driving at a different time would be similar to the impacts of the proposed action.

### **3. CHAPTER 3 – AFFECTED ENVIRONMENT**

The summary of the physical and biological environment of the project area, as analyzed in the IHA application and notice of proposed IHA, is hereby incorporated by reference (USACE, 2011; 76 FR 66274, October 26, 2011). In addition to the marine mammal stocks and species that are the subject of the IHA, a number of sea birds, sea turtles, fish, and invertebrates may be found in the action area.

#### **3.1 PHYSICAL ENVIRONMENT**

The project area is located on the western, central banks of San Francisco Bay. San Francisco Bay abuts the Sacramento-San Joaquin Delta, a system that drains 40 percent of California's landmass. Together, the Bay and Delta make up one of the largest estuarine systems on the continent. This intertidal landscape measures up to 19 km wide and up to 97 km long and is made up of numerous habitats, from deep channels to shallow marshes. Although the Bay has undergone extensive industrialization – losing 95 percent of its wetlands since 1850 – the estuary remains an important environment for healthy marine mammal populations year round.

Waters adjacent to Pier 36 experience high traffic for tugboat activities, other large marine shipping, and cruise vessels. The area between the project site and Angel Island is the primary route for shipping traffic into and out of ports, including the Port of San Francisco and the Port of Oakland. Residents and visitors to the Bay area also utilize this water body as a recreational boating resource.

#### **3.2 BIOLOGICAL ENVIRONMENT**

San Francisco Bay is a habitat for numerous coastal and marine species, including birds, fish, and marine mammals, that are protected by a variety of environmental regulations. Caltrans' 2009 EA for the San Francisco-Oakland Bay Bridge Project, incorporated here by reference, identifies and describes a variety of biologically important and protected species inhabiting the action area (Caltrans, 2009). NMFS' action of issuing an IHA would allow for the incidental harassment of marine mammals and, therefore, is the focus of this section. Summary information is also provided on fish because EFH exists in and around the proposed action area.

##### **3.2.1 MARINE MAMMALS**

At least 35 marine mammal species can be found off the coast of California; however, few venture into the Bay. Marine mammals with confirmed occurrences in San Francisco Bay are the Pacific harbor seal, California sea lion, harbor porpoise, gray whale, humpback whale, and sea otter. However, humpback whales are extremely rare in San Francisco Bay and are unlikely to be present in the project vicinity during pile driving. Sea otters are managed by the U.S. Fish and Wildlife Service and NMFS does not authorize take of this species. Therefore, these two species will not be considered further in this analysis and no take authorization is requested or proposed for this action. The Port requested take of Pacific harbor seals (*Phoca vitulina*), California sea lions (*Zalophus californianus*), gray whales (*Eschrichtius robustus*), and Pacific harbor porpoises (*Phocoena phocoena*). Detailed information on these species can be found in the notice of proposed IHA (76 FR 66274, October 26, 2011).

### 3.2.2 FISH

Federally managed fish species within the Pacific Groundfish, Pacific Salmon, and Coastal Pelagic Fishery Management Plans are present in San Francisco Bay. These include various rockfish, flatfish, sharks, northern anchovy, Pacific sardine, the Central California Coast and Central Valley steelhead (*Oncorhynchus mykiss*) distinct population segments, the Sacramento River Winter-run and Central Valley Spring-run chinook salmon (*O. tshawytscha*), and the North American Green Sturgeon (*Acipenser medirostris*) distinct population segment.

## **4. CHAPTER 4 –ENVIRONMENTAL CONSEQUENCES**

NMFS has evaluated the potential impacts of the Port’s action in order to determine whether to authorize incidental take of marine mammals under the MMPA. NMFS expects that marine mammals may be present throughout the study area.

NMFS’ evaluation indicates that any direct or indirect effects of the action would not result in a substantial impact to living marine resources or their habitats and would not have any adverse impacts on biodiversity or ecosystem function. Effects of the proposed action are considered to be short-term, temporary in nature, and negligible, and unlikely to affect normal ecosystem function or predator/prey relationships; therefore, there would not be a substantial impact on marine life biodiversity or on the normal function of the near shore marine environment. NMFS has determined that appropriate mitigation measures would be in place to minimize impacts to marine mammals and other marine species.

The Port proposes to conduct pile driving during daylight hours for about 5 months. During pile driving, any displacement of fish species in the proposed action would be temporary. Many fish species (i.e., those that do not have swim bladders, have rudimentary swim bladders (such as bottom-dwelling species, including flatfish), or well-developed swim bladders that are not directly connected to the ears) tend to have relatively poor auditory sensitivity and are not likely to be affected by exposure to intense noise. Pile driving may potentially displace prey items of marine mammals, such as fish. However, prey items would return after pile driving ends and the ambient sound has returned to baseline levels.

NMFS expects that pile driving would have no more than a temporary and minimal adverse effect on any fish species and no cumulative effects on the environment. Although there is a potential for injury to fish or marine life in close proximity to the pile hammer, the impacts of pile driving on fish and other marine life specifically related to acoustic activities are expected to be temporary in nature, negligible, and would not result in substantial impact to these species or to their role in the ecosystem.

The impacts of pile driving on marine mammals are specifically related to acoustic activities, and these are expected to be temporary in nature, negligible in intensity, and would not result in substantial impacts to marine mammals or to their role in the ecosystem. Pile driving may cause increased levels of turbidity, but impacts to fish are expected to be minor, localized, and short-term.

NMFS anticipates, and would authorize, the incidental Level B harassment only of small numbers of marine mammals, in the form of temporary behavioral disturbance. NMFS does not anticipate that take by injury (Level A harassment), serious injury, or mortality would occur and expects that harassment takes would be at the lowest level practicable due to the incorporation of the mitigation measures required by the proposed IHA and analyzed in this EA. Level B harassment is not expected to affect biodiversity or ecosystem function.

### **4.1 EFFECTS OF ALTERNATIVE 1 – NO ACTION ALTERNATIVE**

Under the No Action Alternative, NMFS would not issue an IHA to the Port for the proposed pile driving activities. In this case, the Port would decide whether or not it would want to continue with survey activities. If the Port chose not to conduct the activity, then there would be no effects to marine mammals. Conducting the activity without an MMPA authorization (i.e., an

IHA) could result in a violation of federal law. If the Port decided to conduct some or all of the activity without implementing any mitigation measures, and if activities occur when marine mammals are present in the action area, there is the potential for unauthorized harassment of marine mammals. The sounds produced by pile driving would have the potential to cause behavioral harassment of marine mammals in the action area, while some marine mammals may avoid the area altogether. Additionally, masking of natural sounds may occur. Auditory impacts (i.e., temporary and permanent threshold shifts) could also occur if no mitigation or monitoring measures are implemented. Monitoring of exclusion zones for the presence of marine mammals allows for the implementation of mitigation measures, such as shutdowns and delays when marine mammals occur within these zones. These measures are required to prevent the onset of shifts in hearing thresholds. However, although unlikely, if a marine mammal occurs within these high energy ensonified zones, it is possible that hearing impairments to marine mammals could occur. If the Port were to decide to implement mitigation measures similar to those described in the proposed IHA, then the impacts would most likely be similar to those described for Alternative 2 below.

#### **4.2 EFFECTS OF ALTERNATIVE 2 – PREFERRED ALTERNATIVE**

The IHA *Federal Register* notice, incorporated by reference (76 FR 66274, October 26, 2011), describes in detail the potential effects of pile driving on marine mammals. The BiOp, incorporated here by reference, has analyses of effects on protected fish species (NMFS, 2011). In summary, elevated in-water sound levels from pile driving in the proposed project area may temporarily impact marine mammal behavior. NMFS expects these changes to be in the form of temporary, Level B harassment, limited to avoidance or alteration of behavior. Marine mammal prey species, such as fish, may also be temporarily impacted by elevated in-water-sound levels. However, the increase of unshaded water (due to the net removal of pile fill and timber debris) is expected to be beneficial to benthic invertebrates, fish, and marine mammals through restoration of ambient light conditions and increased biological productivity. Overall, the proposed activity is not expected to cause significant or long-term adverse impacts on marine mammal habitat.

The Port proposed a number of monitoring and mitigation measures for marine mammals, which were included in the proposed IHA *Federal Register* notice (76 FR 66274, October 26, 2011). In analyzing the effects of the preferred alternative, NMFS has considered the following monitoring and mitigation measures as part of the preferred alternative:

- (1) use of a sound attenuation device;
- (2) proposed exclusion zone;
- (3) pile driving shut-down and delay procedures;
- (4) soft-start procedures;
- (5) herring monitoring by PSOs;
- (6) visual monitoring by PSOs; and
- (7) hydroacoustic monitoring.

Inclusion of these monitoring and mitigation measures is anticipated to minimize and/or avoid impacts to marine resources. With the above planned monitoring and mitigation measures, any unavoidable impacts to a marine mammal encountered are expected to be limited to short-term, localized changes in behavior (such as brief masking of natural sounds) and short-term changes in animal distribution near the pile hammer. At worst, effects on marine mammals may be interpreted as falling within the MMPA definition of “Level B behavioral harassment.” Under



the proposed action, NMFS expects no long-term or substantial adverse effects on marine mammals, the populations to which they belong, or on their habitats.

NMFS does not anticipate that take by injury (Level A harassment), serious injury, or mortality would occur and expects that harassment takes would be at the lowest level practicable due to the incorporation of the mitigation measures proposed in the application and NMFS' notice of proposed IHA (76 FR 66274, October 26, 2011), nor is take by injury, serious injury, or mortality authorized by the proposed IHA.

#### **4.2.1 COMPLIANCE WITH NECESSARY LAWS – NECESSARY FEDERAL PERMITS**

NMFS has determined that the IHA is consistent with the applicable requirements of the MMPA, ESA, and NMFS' implementing regulations. The applicant has secured or applied for necessary permits from NMFS. The applicant is responsible for complying with all other applicable laws and regulations.

#### **4.2.2 UNAVOIDABLE ADVERSE IMPACTS**

The summary of unavoidable adverse impacts to marine mammals, fish, the populations to which they belong, and on their habitats occurring in the survey area are described in section 4.2 of this document and are also analyzed in the BiOp and NMFS' notice of proposed IHA, are hereby incorporated by reference (NMFS, 2011; 76 FR 66274, October 26, 2011).

NMFS does not expect the Port's activities to have adverse consequences on the viability of marine mammals in the study area. Further, NMFS does not expect that marine mammal populations in the survey area would experience reductions in reproduction, numbers, or distribution that might appreciably reduce their likelihood of surviving and recovering in the wild. Numbers of individuals of all species taken by harassment are expected to be small (relative to species or stock abundance), and the geophysical survey will have a negligible impact on the affected species or stocks of marine mammals. The MMPA requirement of ensuring the proposed action has no unmitigable adverse impact to subsistence uses does not apply here because of the location of the proposed activity.

### **4.3 CUMULATIVE EFFECTS**

Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR§1508.7). Cumulative impacts may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location or during a similar time period, or when past or future actions may result in impacts that would additively or synergistically affect a resource of concern. These relationships may or may not be obvious. Actions overlapping within close proximity to the proposed action can reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally will tend to offer a higher potential for cumulative effects.

Actions that might permanently remove a resource would be expected to have a potential to act additively or synergistically if they affected the same population, even if the effects were separated geographically or temporally. Note that the proposed action considered here would not be expected to result in the removal of individual cetaceans or pinnipeds from the population or

to result in harassment levels that might cause animals to permanently abandon preferred feeding areas or other habitat locations, so concerns related to removal of viable members of the populations are not implicated by the proposed action. This cumulative effects analysis considers these potential impacts, but more appropriately focuses on those activities that may temporally or geographically overlap with the proposed activity such that repeat harassment effects warrant consideration for potential cumulative impacts to the affected four marine mammal species and their habitats.

San Francisco Bay provides recreational, commercial, and industrial resources for the residents of California and is therefore heavily subjected to anthropogenic disturbance. This includes recreational and commercial vessel traffic, vehicular traffic over bridges, and coastal construction and development. As described in Richardson et al. (1995), marine mammals are likely habituated and tolerant to a certain degree of anthropogenic disturbance, including noise. The Port's proposed action is not likely to add an increment of disturbance that would cumulatively, when combined with other actions, result in significant adverse impacts to marine mammals.

Issuance of an IHA to the Port is not related to other actions with individually insignificant, but cumulatively significant impacts. Currently, Caltrans holds an IHA for construction of the San Francisco-Oakland Bay Bridge, authorizing the harassment of the same populations of Pacific harbor seals, California sea lions, harbor porpoises, and gray whales from pile driving in San Francisco Bay. Caltrans' IHA expires in February and they have submitted another IHA application for future work. It is unlikely that pile driving activities at Pier 36 would overlap with construction activities at the Bridge. Any temporary harassment from exposure to either project is not anticipated to result in significant cumulative impacts. There are currently no reasonably foreseeable projects planned for this portion of the San Francisco Bay under NMFS authority that are not currently ongoing (i.e., Caltrans' activities). Any future authorizations would have to undergo the same permitting process and would take the Pier 36/Brannan Street Wharf project into consideration when addressing cumulative effects.

NMFS' proposed action of issuing an IHA for the incidental take of marine mammals by Level B harassment in San Francisco Bay is only expected to result in minimal impacts to marine species in the area. This limited action and any temporary, behavioral effects that may result from the Port's proposed action, are not expected to contribute substantially to other cumulative impacts from activities in San Francisco Bay.

#### **4.4 CONCLUSION**

The inclusion of the mitigation and monitoring requirements in the IHA, as described in the Preferred Alternative, would ensure that the Port's activity and the proposed mitigation measures under Alternative 2 (Preferred Alternative) are sufficient to minimize any potential adverse impacts to the human environment, particularly marine mammal species or stocks and their habitat. With the inclusion of the required mitigation and monitoring requirements, NMFS has determined that the proposed pile driving activities, and NMFS' proposed issuance of an IHA to the Port, would result at worst in a temporary modification of behavior (Level B harassment) of some individuals of four species of marine mammals. In addition, no take by injury, serious injury, and/or mortality is anticipated, and the potential for temporary or permanent hearing impairment would be avoided through the incorporation of the mitigation and monitoring measures described earlier in this document.

## **5. LIST OF PREPARERS AND AGENCIES CONSULTED**

### **Agencies Consulted**

No other persons or agencies were consulted in preparation of this EA.

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## **6. REFERENCES**

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