ENVIRONMENTAL ASSESSMENT

Issuance of an Incidental Harassment Authorization to Maine Department of Transportation (ME DOT) to Take Marine Mammals by Harassment Incidental to In-Water Construction in Eastport, Maine

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LOCATION: Cobscook Bay, Maine

ABSTRACT: The National Marine Fisheries Service (NMFS) proposes to issue an Incidental Harassment Authorization to Maine Department of Transportation (ME DOT) for the taking, by Level B harassment, of small numbers of marine mammals, incidental to in-water construction activities in Eastport, Maine.

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LIST OF ACRONYMS, ABBREVIATIONS, AND INITIALISMS

BiOp	Biological Opinion
CFR	Code of Federal Regulations
CEQ	President's Council on Environmental Quality
DOE	U.S. Department of Energy
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
ft	feet
IHA	Incidental Harassment Authorization
km	kilometer
m	meter
ME DOT	Maine Department of Transportation
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
ORPC	Ocean Renewable Power Company Maine, LLC
PSO	Protected Species Observer
USACE	United States Army Corps of Engineers
U.S.C.	United States Code

Executive Summary

The National Marine Fisheries Service (NMFS), Office of Protected Resources, Permits and Conservation Division has prepared this Environmental Assessment (EA) pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 et seq.), the Council on Environmental Quality regulations at 40 CFR §§1500-1508, and NOAA Administrative Order 216-6.

ES.1 Description of the Proposed Action

The Maine Department of Transportation (ME DOT) and the Eastport Port Authority plan to replace and expand the pier and breakwater system in Eastport, Maine. The existing breakwater is on the verge of being taken out of service due to public safety concerns. Emergency repairs have been completed to prevent shutdown, but these repairs are temporary and will not last very long. The proposed construction activities include the removal of the original 1962 filled sheet pile structure, the replacement of the approach pier, expansion of the existing pier head to provide an equivalent working deck structure, and the construction of a new wave attenuator. We (NMFS, Office of Protected Resources, Permits and Conservation Division) propose to issue and Incidental Harassment Authorization (IHA) to ME DOT, under the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1631 et seq.) for the incidental taking of small numbers of marine mammal incidental to the in-water construction activities at the Eastport breakwater and pier, September 2014 through September 2015. We do not have the authority to permit, authorize or prohibit ME DOT's in-water construction activities in Eastport, ME.

Our proposed action results from ME DOT's request to take marine mammals, by Level B harassment, incidental to in-water construction activities in Eastport, ME. The proposed in-water construction activities, which have the potential to cause marine mammals to be behaviorally disturbed, warrant an incidental harassment authorization from us under section 101(a)(5)(D) of the MMPA.

ES.2 Scope of this Environmental Assessment

This EA titled, *Environmental Assessment on the Issuance of an Incidental Harassment Authorization to Maine Department of Transportation (ME DOT) to Take Marine Mammals by Harassment Incidental to In-Water Construction in Eastport, Maine*, focuses primarily on the environmental effects of authorizing the take of marine mammals incidental to ME DOT's in-water construction activities.

We published a notice of the proposed IHA in the Federal Register (79 FR 44407, July 31, 2014), which provided a detailed description of the proposed in-water construction activities and environmental information and issues related to it. We incorporate that notice by reference.

We have prepared this EA to assist in determining whether the direct, indirect, and cumulative impacts related to our issuance of an IHA under the MMPA for marine mammals for ME DOT's in-water activities is likely to result in significant impacts to the human environment. This EA is intended to inform our decision on issuing the IHA. While the focus of this EA is on the effects caused by the proposed issuance of the IHA, in combining this analysis with the analysis in the previously referenced document, we will consider the environmental impacts of the underlying action which is the full suite of activities conducted for the proposed in-water activities.

Our review of public comments submitted in response to our notice of the proposed IHA did not reveal any additional environmental impacts or issues requiring analysis in this EA.

1. Chapter 1 – Purpose and Need for Action

1.1 DESCRIPTION OF PROPOSED ACTION

The National Marine Fisheries Service (NMFS) has received an application from the Maine Department of Transportation (ME DOT) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to in-water construction in Eastport, Maine. ME DOT's construction activities, which have the potential to behaviorally disturb marine mammals, warrant an incidental take authorization from 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 in-water construction activities in Eastport, Maine.

This EA, titled "*Issuance of an Incidental Harassment Authorization to Maine Department of Transportation (ME DOT) to Take Marine Mammals by Harassment Incidental to In-Water Construction in Eastport, Maine*" (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 and underwater sawings, taking into account the mitigation measures required in the IHA.

1.1.1 MMPA PURPOSE AND NEED

The MMPA (16 U.S.C. 1531 *et seq*.) prohibits "takes" of marine mammals 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.

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 ME DOT would be to provide an exemption from the take prohibitions contained in the MMPA for the take of marine mammals incidental to ME DOT's in-water construction activities.

Need: As noted above, 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. 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.

ME DOT has 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 Endangered Species Act (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 in-water construction activities in Eastport, ME. 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 ME DOT'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 for 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 ME DOT's application and the proposed IHA. Comments received on the proposed IHA were considered during preparation of this EA. During the comment period for the proposed IHA, NMFS received a comment letter from the Marine Mammal Commission (Commission). The Commission's comments mainly focused on underwater noise measurements, establishing of harassment zones, and estimating take numbers. All relevant comments will be addressed in the *Federal Register* notice announcing our final decision on the issuance of the IHA.

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 ME DOT's in-water construction activities. As described more fully

below, 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 and underwater sawing in Eastport, ME; 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. A notice of proposed IHA was published in the *Federal Register* on July 31, 2014 (79 FR 44407) 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

During the public comment period for the notice of proposed IHA, NMFS received comments from the Marine Mammal Commission and one individual. 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 final determination on the proposed IHA. NMFS does not repeat those responses here. NMFS notes, however, that it fully considered all comments, particularly those related to mitigation and monitoring. Based on those comments, NMFS re-evaluated the mitigation and monitoring proposed for incorporation in the IHA. NMFS determined, based on the best available data, that the proposed measures are presently the most feasible and effective measures capable of implementation by ME DOT during pile driving, pile removal, and underwater sawing 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 compliance 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' proposed 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. We are preparing this EA to determine if our action could potentially cause a significant effect on the human environment.

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' proposed 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).

Because no ESA-listed marine mammal species is present in the vicinity of the project area, NMFS has determined that issuance of the IHA would not affect listed marine mammals. Therefore, section 7 consultation is not required.

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.

A total of 14 finfish and one shellfish species have designated EFH within the proposed project area. NMFS issuance of the IHA would not result in adverse effects to EFH, because the proposed action of issuance of the IHA will only allow take of marine mammal species incidental to pile driving and underwater sawing associated with the breakwater construction.

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 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.

To warrant detailed evaluation as a reasonable alternative, an alternative must meet our purpose and need. In this case, as we previously explained, an alternative will only meet the purpose and need if it satisfies the requirements under section 101(a)(5)(D) the MMPA (see Chapter 1), which serves as the alternative's only screening criteria. We evaluated each potential alternative against these criteria. Based on this evaluation, we have identified one action alternative as reasonable and, along with the No Action alternative, have carried two alternatives forward for evaluation in this EA..

ME DOT's proposed in-water construction activities and the performance of the required mitigation and monitoring measures are a direct impact of our issuance of an authorization. As such, this EA includes analysis on the effects of the proposed construction activities on the environment as a direct result of NMFS's proposed action..

2.1 ME DOT'S PROJECT OBJECTIVES

The fundamental objective of the project is to replace and expand the pier and breakwater in Eastport, ME. The project includes the removal of the original filled sheet pile structure (built in 1962), the replacement of the approach pier, expansion of the existing pier head, and the construction of a new wave attenuator.

2.2 ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, NMFS would not issue an IHA to ME DOT for the taking, by Level B harassment, of small numbers of marine mammals, incidental to in-water construction 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, (3) mitigation measures may or may 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 in-water construction activity itself, NMFS does authorize the incidental harassment of marine mammals incidental to 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, ME DOT could decide either to cancel in-water construction or to continue the proposed activity. If the latter

decision was made, ME DOT could independently implement mitigation measures; however, they would be proceeding without authorization from NMFS pursuant to the MMPA. If ME DOT 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. For purposes of this EA, we characterize the No Action Alternative as ME DOT not receiving an IHA and conducting in-water construction activities without the protective measures and reporting requirements required by an IHA under the MMPA. We take this approach to meaningfully evaluate the primary environmental issues—the impact on marine mammals from these activities in the absence of protective measures.

2.3 ALTERNATIVE 2 – PROPOSED ACTION (PREFERRED)

The Proposed Action is the Preferred Alternative. Under this alternative, NMFS would issue an IHA to ME DOT allowing the take, by Level B harassment, of four marine mammal species in Eastport, ME, incidental to in-water construction activities with the mitigation, monitoring, and reporting conditions contained within ME DOT'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 ME DOT to comply with the statutory and regulatory requirements of the MMPA.

2.3.1 IN-WATER CONSTRUCTION ACTIVITIES

NMFS' proposed IHA *Federal Register* notice (July 31, 2014; 79 FR 44407) describes the in-water construction protocols in detail and this EA briefly summarizes them here. The project includes the removal of the original filled sheet pile structure (built in 1962), the replacement of the approach pier, expansion of the existing pier head, and the construction of a new wave attenuator. Installation of 151 steel pipe piles would take place in about 2.4-17 m (8-55 ft) of water. The piles would be installed over a period of 15 months beginning in September 2014.

2.3.2 MITIGATION AND MONITORING MEASURES

The NMFS' proposed IHA *Federal Register* notice (July 31, 2014; 79 FR 44407) 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, ME DOT 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) visual monitoring; and (6) hydroacoustic monitoring.

Sound Attenuation Device: When using a diesel impact hammer to "proof" piles, ME DOT would use sound absorption cushions and/or a bubble curtain to reduce hydroacoustic sound levels and avoid the potential for marine mammal 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, ME DOT would establish a preliminary marine mammal exclusion zone around each pile to avoid exposure to sounds at or above 180 dB. The preliminary exclusion zone would have a radius of 30 m. This encompasses the initial estimate of the 180 dB isopleth, where injury could occur. Once hydroacoustic monitoring is conducted, the exclusion zone will be adjusted based on measurement to ensure that marine mammals are not exposed to Level A harassment sound pressure levels.

Shut Down and Delay Procedures: If a protected species observer (PSO) sees a marine mammal within or approaching the exclusion zone prior to start of impact pile driving, the PSO would notify the on-site project lead (or other authorized individual) who would then be required to delay pile driving until the marine mammal has moved 305 m (1,000 ft) from the sound source or if the animal has not been resighted within 30 minutes. If a marine mammal is sighted within or on a path toward the 30 m exclusion zone during pile driving, pile driving would cease until that animal has moved 305 m (1,000 ft) and is on a path away from the exclusion zone or 30 minutes has lapsed since the last sighting.

Soft-start Procedures: ME DOT would implement a "soft-start" technique at the beginning of each pile installation 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.

Visual Monitoring: ME DOT would have at least two PSOs monitoring the Level B harassment zone for marine mammals 30 minutes before, during, and 30 minutes after all impact pile driving activities. In addition, PSOs would conduct behavioral monitoring out to 4,600 m (2.5 mi) during at least three events of vibratory pile driving and underwater sawing to validate take estimates and evaluate behavioral impacts.

Hydroacoustic Monitoring: ME DOT would conduct hydroacoustic monitoring at the initial installation of each pile driving method to ensure that the harassment isopleths are not extending past the calculated distances described in the notice of proposed IHA (July 31, 2014; 79 FR 44407).

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

NMFS considered whether other alternatives could meet the purpose and need and support ME DOT'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 ME DOT did not submit an application (i.e., NMFS shall issue an IHA upon request) to conduct in-water construction activities at an alternate time. In-water construction 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 ME DOT. NMFS Greater Atlantic Regional Fisheries Office requires that in-water construction involving pile driving be conducted between November 8 and April 9 to avoid impacts to fisheries resources. However, ME DOT may be able to conduct pile driving activities after April 9 if they can demonstrate that noise levels caused by the impact hammer are below NMFS' guidelines.

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 (ME DOT, 2014; 79 FR 44407, July 31, 2014). 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.

The project area is located in Cobscook Bay, in Eastport, Maine. Cobscook Bay is described as part of the Quoddy Region, which is located at the mouth of the Bay of Fundy and encompasses an area between Maine and New Brunswick, Canada. Cobscook Bay is a sub-basin that marks the entrance to the Bay of Fundy, which features the highest tidal range in the world. Cobscook Bay has extremely strong tidal currents and notably high tides (averaging 20 ft around Eastport), creating an extensive intertidal habitat for marine and coastal species. The Bay is considered a relatively intact marine system, as the area has not experienced much industrialization. The proposed project area is primarily used for commercial fishing, marine resource harvesting and aquaculture, recreation, and marine vessel traffic.

3.1 PHYSICAL ENVIRONMENT

3.1.1. Bathymetry and Oceanography

In-water construction activities would take place within a 27,750 ft^2 area in Cobscook Bay. Geotechnical data shows that the area contains mud in locations not previously dredged, sands and gravel. Water depths at the proposed project location are between 8-55 ft.

3.2 BIOLOGICAL ENVIRONMENT

Cobscook 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. FERC and DOE's 2012 EA for the Cobscook Bay tidal energy project identifies and describes a variety of biologically important and protected species inhabiting the area (FERC and DOE, 2012). NMFS' limited action of issuing an IHA would allow for the harassment of marine mammals incidental to in-water construction activities and, therefore, is the focus of this section.

3.2.1 MARINE MAMMALS

Marine mammals with known presence in this region of Cobscook Bay are the harbor seal (*Phoca vitulina*), grey seal (*Halichoerus grypus*), harbor porpoise (*Phocoena phocoena*), and Atlantic white-sided dolphin (*Lagenorhynchus acutus*). Other species that may possible occur in the vicinity of the proposed activity include North Atlantic right whale (*Eubalaena glacialis*), humpback whale (*Megaptera novaengliae*), fin whale (*Balaenoptera borealis*), minke whale, (*Balaenoptera acutorostrata*), and sei whale (*Balaenoptera borealis*). However these five species are not likely to occur in Cobscook Bay and are generally associated with open ocean habitats and offshore locations. Detailed species information and proposed take numbers can be found in the notice of proposed IHA (79 FR 44407, July 31, 2014), and is hereby incorporated by reference.

3.2.2 SEABIRDS

Nearly 300 bird species are known to inhabit Cobscook Bay during some part of the year. Common shorebirds observed near the proposed project area include sea ducks, common terns, spotted sandpipers, and bald eagles. Cobscook Bay is an important habitat for species such as Bonaparte's gulls, American black ducks, and razorbills. Most of the birds expected to occur in the proposed project area are migratory species that typically breed and forage in the summer months.

3.2.3 MARINE TURTLES

Leatherback (*Dermochelys coriacea*) and loggerhead (*Caretta caretta*) marine turtles may occur in the general project vicinity; however, they typically inhabit offshore marine areas and rarely use nearshore areas such as those found in the proposed project area. The proposed project is not expected to impact marine turtles.

3.2.4 FISH

Examples of fish present in Cobscook Bay include winter flounder (*Pseudopleuronectes americanus*), Atlantic cod (*Gadus morhua*), pollock (*Pollachius virens*), silver hake (*Merluccius bilinearis*), Atlantic herring (*Clupea harengus*), rainbow smelt (*Osmerus mordax*), ocean pout (*Macrozoarces americanus*), rock gunnel (*Pholis gunnellus*), and little skate (*Raja erinacea*).

3.2.5 INVERTEBRATES

Examples of crustaceans, mollusks, and other invertebrates present in Cobscook Bay include sea cucumbers, green sea urchins, common sea stars, purple sunstars, northern red anemones, blue mussels, and numerous sponges.

4. CHAPTER 4 –ENVIRONMENTAL CONSEQUENCES

NMFS has evaluated the potential impacts of ME DOT's action in order to determine whether to authorize incidental take of marine mammals under the MMPA.

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.

ME DOT proposes to conduct in-water construction activities during daylight hours for approximately 15 months. During in-water construction, 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. In-water construction activities may potentially displace prey items of marine mammals, such as fish. However, prey items would return after in-water construction ends and the ambient sound has returned to baseline levels.

The impacts of in-water construction activities 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. 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 ME DOT for the take of marine mammals incidental to the proposed in-water construction activities. Conducting the activity without an MMPA authorization (i.e., an IHA) could result in a violation of federal law. If ME DOT 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 in-water construction activities 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, as discussed in the *Federal Register* notice (79 FR 44407; July 31, 2014) for the proposed IHA, and is hereby incorporated by reference. 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, if a marine mammal occurs within these high energy ensonified zones, it is possible that hearing impairments to marine mammals could occur. Additionally, although unlikely, based on an animal's proximity to the sound source, permanent threshold shift (PTS) could also occur, but this possibility is thought to be unlikely.

4.2 EFFECTS OF ALTERNATIVE 2 – PREFERRED ALTERNATIVE

The IHA *Federal Register* notice, incorporated by reference (79 FR 44407; July 31, 2014), describes in detail the potential effects of in-water construction activities on marine mammals. FERC and DOE's EA also includes detailed analyses on effects to fish and other marine species (FERC and DOE, 2012).

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, hearing impairment could result in the reduced ability of marine mammals to detect or interpret important sounds. Repeated noise exposure that leads to TTS could cause PTS.

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).

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 (Clark et al. 2009). 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.

Masking occurs at the frequency band which the animals utilize. Therefore, since noise generated from in-water vibratory pile driving and sawing is mostly concentrated at low frequency ranges, it may have less effect on high frequency echolocation sounds by odontocetes

(toothed whales). 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 and pile driving, contribute to the elevated ambient noise levels, thus intensify masking.

Nevertheless, the sum of noise from the proposed construction activities at the Eastport Breakwater is confined in an area that is largely bounded by jetty and landmass, therefore, the noise generated is not expected to contribute to increased ocean ambient noise. Due to shallow water depths near the construction site, underwater sound propagation for low-frequency sound (which is the major noise source from pile driving and underwater sawing) is expected to be poor.

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.

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 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 from pile driving and underwater sawing associated with breakwater

replacement activities are expected to affect only a small number of marine mammals on an infrequent basis.

ME DOT proposed a number of monitoring and mitigation measures for marine mammals, which were included in the proposed IHA *Federal Register* notice (79 FR 44407; July 31, 2014). 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) visual monitoring by PSOs; and
(6) 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 and underwater saw. 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 (79 FR 44407; July 31, 2014), nor is take by injury, serious injury, or mortality authorized by the proposed IHA.

Based on analysis, the estimated number incidental take of marine mammals are: 378 gray seals, 378 harbor seals, 414 harbor porpoises, and 2 Atlantic white-sided dolphins (Table 1).

Table 8. Estimated Marine Mammal Takes by Level B Harassment

Common species name	Estimated take by Level B harassment	Abundance of stock	Percentage of stock affected	Population trend
Gray seal	456	250,000	0.18%	increasing
Harbor seal	456	70,142	0.65%	N/A
Harbor porpoise	456	79,883	0.57%	N/A
Atlantic white-sided dolphin	76	48,819	0.16%	N/A

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 analyzed in NMFS' notice of proposed IHA and the FERC and DOE EA prepared for a nearby project in Cobscook Bay that involved similar in-water construction activities and are hereby incorporated by reference (79 FR 44407, July 31, 2014; FERC and DOE, 2012). These documents all conclude that ME DOT's proposed construction activities have no significant impacts to the marine environment and will have only negligible effects on marine mammal species in the project vicinity.

NMFS does not expect ME DOT's activities to have adverse consequences on the viability of marine mammals in the proposed project area. Further, NMFS does not expect that marine mammal populations in the 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 in-water construction activities would 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.

Human activities in the region of the proposed in-water construction activities include extensive commercial fishing, marine resource harvesting, aquaculture, and vessel traffic. As described in Richardson et al. (1995), marine mammals are likely habituated and tolerant to a certain degree of anthropogenic disturbance, including noise. Because it its small scale and short duration, ME DOT'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. In addition to the activities listed above, future environmental effects may result from ORPC's proposed Cobscook Bay tidal energy project and the Half Moon Cove Project, a tidal barrage planned for Cobscook Bay. ORPC plans to construct and operate a 300-kilowatt hydrokinetic project at the location of the pile driving activities. The first phase of ORPC's long-term project would consist of a single turbine generator unit mounted on a bottom support frame. The second phase would consist of four additional turbine generator units. ME DOT's proposed in-water construction activities would not overlap with future construction or operation of the turbine units. The environmental effects of ORPC's long-term project were analyzed in FERC and DOE's EA and are incorporated here by reference (FERC and DOE, 2012). In summary, an assortment of mitigation and monitoring measures (e.g., use of a shear plot during cable laying to reduce turbidity, measurement of sound around the turbine, fish and marine mammal monitoring, phased installation, etc.) are expected to minimize impacts to marine species and the surrounding environment. The Half Moon Cove Project would involve the construction of a dam connecting Moose Island (Eastport, Maine) to Perry, Maine. Although the effects of this proposed project are uncertain, the limited action of ME DOT's in-water construction activities would occur over a short period of time and would likely not overlap with the Half Moon Cove Project construction. Any future authorizations would have to undergo the same permitting process and would take ME DOT's in-water construction activities 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 Cobscook 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 ME DOT's proposed action, are not expected to contribute substantially to other cumulative impacts from activities in Cobscook Bay.

4.4 CONCLUSION

The inclusion of the mitigation and monitoring requirements in the proposed IHA, as described in the Preferred Alternative, would ensure that ME DOT'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 in-water construction activities, and NMFS' proposed issuance of an IHA to ME DOT, 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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