ENVIRONMENTAL ASSESSMENT

Issuance of an Incidental Harassment Authorization to Cape Wind Associates to Take Marine Mammals by Harassment Incidental to a High Resolution Geophysical Survey in Nantucket Sound, Massachusetts

December 2011

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ABSTRACT: The National Marine Fisheries Service proposes to issue an Incidental Harassment Authorization to Cape Wind Associates, LLC for the taking, by Level B harassment, of small numbers of marine mammals, incidental to conducting a high resolution geophysical survey in Nantucket Sound, Massachusetts.

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LIST OF ACRONYMS, ABBREVIATIONS, AND INITIALISMS

BiOp	Biological Opinion
BOEMRE	Bureau of Ocean Energy Management, Regulation, and Enforcement
CFR	Code of Federal Regulations
CEQ	President's Council on Environmental Quality
CWA	Cape Wind Associates, LLC
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ft	feet
HSUS	Humane Society of the United States
IHA	Incidental Harassment Authorization
km	kilometer
m	meter
mi	mile
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
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
PSO	Protected Species Observer
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 Cape Wind Associates, LLC (CWA) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to conducting a five-month high resolution geophysical survey in Nantucket Sound, Massachusetts. CWA's survey 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 one-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 conducting a high resolution geophysical survey.

This EA, titled "*Issuance of an Incidental Harassment Authorization to Cape Wind Associates, LLC to Take Marine Mammals by Harassment Incidental to a High Resolution Geophysical Survey in Nantucket Sound, Massachusetts*" (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 the CWA survey, taking into account the mitigation measures required in the IHA.

1.1.1 INCORPORATION OF BOEMRE'S (FORMERLY MMS') ENVIRONMENTAL IMPACT STATEMENT BY REFERENCE

After conducting an independent review of the information and analyses for sufficiency and adequacy, NMFS incorporates by reference BOEMRE's (formerly MMS') Cape Wind Energy Project Final Environmental Impact Statement (hereinafter, EIS) (BOEMRE, 2009). In summary, BOEMRE's analysis concluded that the specific mitigation, monitoring, and reporting measures built into the long-term Cape Wind energy project, as part of BOEMRE or other federal or state-required conservation measures (e.g., lease requirements), are expected to effectively minimize the chance for vessel strikes, as well as reduce the potential for acoustic and other types of harassment during construction and operation of the proposed facility. While the EIS addresses the long-term Cape Wind energy project, the scope of this EA is specifically limited to analyzing the impacts of issuing an IHA for a geophysical survey.

1.1.2 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 CWA is to provide an exemption from the take prohibitions contained in the MMPA for the take of marine mammals incidental to CWA's high resolution geophysical survey.

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 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 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.

CWA 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 CWA's application. The need for this action is, therefore, established and framed by the MMPA and NMFS's 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 a high resolution geophysical survey in Nantucket Sound. 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 CWA 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 CWA's application and the proposed IHA. Comments received on the proposed IHA were considered during preparation of this EA.

Under NAO 216-6, the proposed issuance of authorization for incidental take of marine mammals is an action that is not categorically excluded from NEPA review. In addition, it is not the type of action normally requiring preparation of an Environmental Impact Statement (EIS). Therefore, 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 five 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 CWA's high resolution geophysical survey. 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 CWA high resolution geophysical survey in Nantucket Sound; 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.

The need for this EA is to provide a NEPA analysis informing the decision of whether or not to issue the IHA to CWA and to determine whether the proposed action has any potential significant impacts. NOAA has relied on and incorporated the more comprehensive environmental analysis prepared by BOEMRE addressing the direct, indirect, and cumulative impacts of the underlying activities associated with the survey described in the application and its supporting documents.

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 September 14, 2011 (76 FR 56735) 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 September 14, 2011, NMFS published a notice of a proposed IHA in the *Federal Register* (76 FR 56735) and requested comments from the public for 30 days. NMFS received comments from over 80 individuals and the following organizations: Marine Mammal Commission; Alliance to Protect Nantucket Sound (in conjunction with the Public Employees for Environmental Responsibility, Lower Laguna Madre Foundation, Cetacean Society International, Pegasus Foundation, Oceans Public Trust Initiative, and a private citizen); Humane Society of the United States; Tribal Historic Preservation Department of the Wampanoag Tribe of Gay Head (Aquinnah); Oceans Public Trust Initiative; and a joint letter from the Gloucester Fishermen's Wives Association, Hyannis Yacht Club, Institute for Fisheries Resources, Oceans Public Trust Initiative, A Project of Earth Island Institute's International Marine Mammal Project, Pegasus Foundation, Save Our Sound/Alliance to Protect Nantucket Sound, and Three Bays Preservation.

Numerous comment letters addressed (among other issues) issues related specifically to the NEPA process for this action. The letters expressed two specific issues regarding the NEPA process. First, the commenters believed that NMFS was excluding the public from the NEPA process since NMFS did not release a draft EA for the public to review and provide comments on prior to NMFS taking its final action. Neither NEPA, CEQ's regulations, nor NOAA Administrative Order 216-6 require the circulation of a draft EA for public comment prior to taking final agency action. Instead, NMFS makes every effort, based on the totality of the circumstances, to provide the public with sufficient environmental information to permit the public to weigh in with their views and inform the final decision. In the case of CWA's MMPA IHA request, NMFS involved the public in the decision-making process by distributing CWA's IHA application and addenda for a 30-day notice and comment period. The IHA application and NMFS' *Federal Register* notice of the proposed IHA (76 FR 56735, September 14, 2011) both contained extensive information relating to the potential environmental impacts from both issuance of the proposed IHA and the underlying activity. For example, the application includes a project description, its location, environmental matters such as species and habitat to be affected, and measures designed to minimize adverse impacts to the environment.

Second, commenters believed that CWA's IHA application warrants review in an EIS given the potential for significant impacts. This EA was prepared to evaluate whether significant environmental impacts may result from the proposed action (issuing an IHA to CWA).

NMFS also received a comment from the Tribal Historic Preservation Department of the Wampanoag Tribe of Gay Head (Aquinnah) requesting government-to-government consultation under the National Historic Preservation Act. Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effect of their undertakings on historic properties, and requires agency officials to consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking. Executive Order 13175 requires that federal agencies conduct

government-to-government consultation with Indian tribes prior to issuing regulations that have tribal implications. The Executive Order also outlines principles that should be followed by agencies when formulating policies with tribal implications. Regulations and policies with "tribal implications" include those that have substantial direct effects on one or more Indian tribes, on the relationship between the federal government and Indian tribes, or on the distribution of power and responsibilities between the federal government and Indian tribes.

NMFS recognizes the importance of Nantucket Sound to the Wampanoag Tribe of Gay Head (Aquinnah) as a Traditional Cultural Property, and that the long-term Cape Wind energy project was the subject of a consultation undertaken by BOEMRE under section 106 of the National Historic Preservation Act (NHPA). However, NMFS' undertaking here is narrowly limited to issuance of an IHA under the MMPA. In accordance with 36 CFR Part 800.3(a)(1), NMFS has determined that this undertaking is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, and therefore NFMS has no further obligations under section 106 of the NHPA. Similarly, issuance of an IHA to CWA would not constitute a regulation or policy with tribal implications. Issuance of the IHA would not have substantial direct effects upon the tribe, and government-to-government consultation is therefore not required on this action.

NMFS has developed responses to other 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. Based on those comments, NMFS re-evaluated the mitigation and monitoring proposed for incorporation in the IHA. Based on one of the comments received, NMFS recommended that CWA perform hydroacoustic monitoring at the beginning of the survey to verify the estimated 160 and 180-dB isopleths around the vessel. Other than this addition to the monitoring measures, NMFS determined, based on the best available data, that the proposed measures are presently the most feasible and effective measures capable of implementation by CWA during the proposed survey.

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 mammal. However, MMS/BOEMRE did consult with NMFS on CWA's long-term energy project. NMFS completed formal section 7 consultation and prepared a Biological Opinion (BiOp) which included an analysis of potential effects from CWA's proposed geophysical survey. The BiOp concluded that the project is not likely to adversely affect any large whales (i.e., right, humpback, and fin whales) and, therefore, is not likely to jeopardize the continued existence of these species (NMFS, 2010). With respect to sea turtles, the BiOp concluded that the project may adversely affect, but it not likely to jeopardize the continued existence of any species of sea turtle. Further, potential impacts to sea turtles from the geophysical survey would only occur if the survey took place between June and November, and CWA anticipates that the survey would be complete before June.

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.

EFH has been identified and described in the action area for several species of fish. NMFS Northeast Regional Office provided conservation recommendations regarding Cape Wind's long-term energy project, but none pertained specifically to the high resolution geophysical survey.

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 President's CEQ 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 CWA's high resolution geophysical survey in Nantucket Sound; 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.

Under the requirements of the MMPA, if the proposed action will have no more than a negligible impact on the species or stocks, and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses, then NMFS shall issue the IHA. As described earlier, NMFS must set forth the permissible methods of taking by harassment and requirements pertaining to the mitigation, monitoring, and reporting of such taking.

2.1 PROJECT OBJECTIVES

The fundamental objective of the project is to acquire remote-sensing data around Horseshoe Shoal, which would be used to characterize resources at or below the seafloor, and identify any submerged cultural resources that may be present. The survey would also generate additional data describing the geological environment within the survey area. This survey would satisfy mitigation and monitoring requirements for "cultural resources and geology" in the environmental stipulations of the BOEMRE lease (BOEMRE, 2010).

2.2 ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, NMFS would not issue an IHA to CWA for the taking, by Level B harassment, of small numbers of marine mammals, incidental to conducting a high resolution geophysical survey in Nantucket Sound. 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. 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 geophysical survey 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, CWA could

decide either to cancel its geophysical survey or to continue the proposed activity. If the latter decision was made, CWA could independently implement mitigation measures; however, they would be proceeding without authorization from NMFS pursuant to the MMPA. If CWA did not implement mitigation measures during survey activities, 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 CWA allowing the take, by Level B harassment, of five marine mammal species in Nantucket Sound, incidental to a high resolution geophysical survey with the mitigation, monitoring, and reporting conditions contained within CWA's IHA application and NMFS' proposed IHA *Federal Register* notice. Accordingly, this NEPA Preferred Alternative (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 CWA to comply with the statutory and regulatory requirements of the MMPA.

2.3.1 SURVEY OPERATIONS

The NMFS' proposed IHA *Federal Register* notice (76 FR 56735, September 14, 2011) describes the survey protocols in detail and this EA briefly summarizes them here. The proposed survey would take place around Horseshoe Shoal in Nantucket Sound. The survey would require approximately 5 months of daytime operation, covering about 17 nautical miles of track line per day and a total area of approximately 110 square kilometers (km^2) (42.5 square miles [mi^2]). Data collection would utilize a towed array of instrumentation, including a singlebeam depth sounder, side scan sonar, magnetometer, shallow-penetration subbottom profiler, multibeam depth sounder, and medium-penetration subbottom profiler.

2.3.2 MITIGATION AND MONITORING MEASURES

The NMFS' proposed IHA *Federal Register* notice 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, CWA has proposed to implement the following mitigation and monitoring measures for marine mammals: (1) 500-m exclusion zone; (2) shut down and delay procedures; (3) soft-start procedures; (5) visual monitoring; and (6) hydroacoustic monitoring.

Proposed 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. CWA would establish a 500-m radius exclusion zone around each survey vessel during activities involving the shallow-penetration and medium-penetration subbottom profilers. The purpose of the exclusion zone is to prevent marine mammals from being exposed to a certain level of sound. Typically, the exclusion zone is based on the estimated 180-dB isopleth around the source in order to prevent marine mammals from being exposed to injurious levels of sound. However, BOEMRE's lease specifies a 500-m exclusion zone, which exceeds the estimated

distances to the 160 and 180-dB isopleths (BOEMRE, 2010). CWA's 500-m exclusion zone would be extremely conservative and would essentially minimize the potential for all levels of marine mammal harassment.

Shut Down and Delay Procedures: CWA would shut down or delay survey 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 60 minutes.

Soft-start Procedures: CWA 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.

Visual Monitoring: CWA would have at least one protected species observer (PSO) monitoring the area for marine mammals 60 minutes before, during, and 60 minutes after all survey activities. The PSO would be able to call for shut down if a marine mammal approaches the exclusion zone. Another PSO would conduct behavioral monitoring from the survey vessel at least twice a week to estimate take and evaluate any behavioral impacts. CWA would also send out a PSO on an additional vessel to collect data on species presence and behavior before surveys begin and once a month during survey activities.

Hydroacoustic Monitoring: CWA would conduct hydroacoustic monitoring at the beginning of the survey to verify the estimated 160 and 180-dB isopleths around the source vessel.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

NFMS considered whether other alternatives could meet the purpose and need and support CWA'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 CWA did not submit an application (i.e., NMFS shall issue an IHA upon request) to conduct the survey at an alternate time. The survey is expected to begin shortly after issuance of an IHA and is determined by the most suitable dates that would satisfy the purpose and need, from a logistical perspective, for CWA and its survey crew. The potential environmental impacts of conducting the survey at a different time would be very similar to the impacts of the proposed action.

3. CHAPTER 3 – AFFECTED ENVIRONMENT

The summary of the physical and biological environment of the study area, as analyzed in the EIS and the IHA application, is hereby incorporated by reference (BOEMRE, 2009; CWA, 2011). The EIS presents baseline information necessary for consideration of the alternatives and describes the resources that would be affected by the alternatives, as well as environmental components that would affect the alternatives if they were to be implemented. Sections 3.1 and 3.2 of the EA briefly summarize them.

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. Sections 3.2.2 through 3.2.5 of the EA briefly summarize them.

3.1 PHYSICAL ENVIRONMENT

3.1.1 BATHYMETRY AND OCEANOGRAPHY

The survey would encompass a 110 km^2 (42.5 mi^2) area on Horseshoe Shoal in the central region of Nantucket Sound, which lies south of Cape Cod, Massachusetts. Water depths in this area range from 0.5 ft (0.15 m) to 60 ft (18.3 m).

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 MARINE MAMMALS

Sixteen marine mammal species may occur in the vicinity of the proposed survey area, including seven odontocetes (toothed cetaceans), five mysticetes (baleen whales), and four pinnipeds. Of these, three cetaceans and two pinnipeds are likely to occur in the proposed survey area in Nantucket Sound. None of these species are listed as threatened or endangered under the ESA.

The species of marine mammals that could be commonly encountered in the survey area include the minke whale (*Balaenoptera acutorostrata*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*), harbor porpoise, (*Phocoena phocoena*), gray seal (*Halichoerus grypus*), and harbor seal (*Phoca vitulina concolor*). More information about each stock may be found in the respective Stock Assessment Reports, which are available online at http://www.nmfs.noaa.gov/pr/sars/species.htm.

3.2.2 SEABIRDS

Terrestrial and coastal birds may cross over the survey area, but typically do not linger or forage in the area. Large numbers of migrating landbirds pass over Horseshoe Shoal during autumn and spring. The survey is expected to avoid these peak periods of migration by beginning operation in December. Numerous marine birds are known to spend the majority of their time in Nantucket Sound and include: loons, grebes, Wilson's storm-petrel, northern gannet, cormorants, seaducks, gulls, terns, and auks. Roseate terns (*Sterna dougallii*) are the only federally-endangered species with possible occurrence in the survey area and are considered summer residents within Nantucket Sound.

3.2.3 MARINE TURTLES

Four species of marine turtles have the potential to occur in the area during the proposed survey activities. They include the green (*Chelonia mydas*); leatherback (*Dermochelys coriacea*); loggerhead (*Caretta caretta*); and Kemp's ridley (*Lepidochelys kempi*) sea turtles.

3.2.4 FISH

Examples of fish present in Nantucket Sound include species important to commercial and recreational fisheries such as summer flounder (*Paralichthys dentatus*), black sea bass (*Centropristis striata*), bluefish (*Pomatomus saltatrix*), striped bass (*Morone saxatilis*), scup (*Stenotomus chrysops*), and Atlantic mackerel (*Scomber scombrus*) to name a few.

3.2.5 INVERTEBRATES

Examples of crustaceans, mollusks, and other invertebrates present in Nantucket Sound include squid (*Loligo* and *Illex* spp.), whelk (*Busycotypus canaliculatus* and *Busycon carica*), and spider crabs (*Libinia emarginata*).

4. CHAPTER 4 –ENVIRONMENTAL CONSEQUENCES

The EIS, BiOp, and proposed IHA, which together address potential direct, indirect, and cumulative impacts of the proposed marine seismic survey on marine mammals, sea turtles, fish, and invertebrates, and impacts to prey species and marine mammal habitats, are hereby incorporated by reference (BOEMRE, 2009; NMFS, 2010; 76 FR 56735, September 14, 2011).

NMFS has evaluated the potential impacts of CWA's action in order to determine whether to authorize incidental take of marine mammals under the MMPA. NMFS has determined that an EA is appropriate to evaluate the potential significance of environmental impacts to the marine environment resulting from issuance of this IHA. 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 or offshore marine environment. NMFS has determined that appropriate mitigation measures would be in place to minimize impacts to marine mammals and other marine species.

CWA proposes to conduct the geophysical survey for approximately 5 months in relatively shallow water. As the vessel transits the area while conducting the survey, any displacement of marine fish species by 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. The geophysical survey may potentially displace prey items of marine mammals, such as fish. However, prey items would return after the vessel has transited through the area and the ambient sound has returned to baseline levels.

The overall response of fishes and squids is to exhibit startle responses and undergo vertical and horizontal movements away from the sound source. NMFS expects that the geophysical survey would have no more than a temporary and minimal adverse effect on any fish or invertebrate 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 vessel, the impacts of the seismic survey 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.

CWA's high resolution geophysical survey is not expected to substantially impact benthic and invertebrate communities in the study area. The existing body of information on the impacts of seismic survey sound on marine invertebrates and benthic fauna is very limited. Recent controlled field experiments[1] on adult crustaceans exposed to seismic energy found no pathological impacts to the research animals. The study reported that the seismic survey did not: (1) cause any acute or mid-term mortality of the crab; (2) alter feeding behavior; or (3) affect

[1] Christian, J.R., A. Mathieu, D.H. Thomson, D. White, and R.A. Buchanan. 2003. Effect of seismic energy on snow crab (*Chionoecetes opilio*). Environmental Studies Research Funds Report No. 144. Calgary, AB, Canada. November.

embryo survival or post-hatch locomotion of larvae.

The impacts of the seismic survey on marine mammals and sea turtles 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, sea turtles, or to their role in the ecosystem. These temporary acoustic activities would not affect physical habitat features, such as substrates and water quality. Additionally, the effects from vessel transit would not result in substantial damage to ocean and coastal habitats that might constitute marine mammal habitats. While the potential for striking marine mammals and sea turtles is a valid concern, the likelihood of a survey vessel striking a marine mammal is considered low due to low marine mammal densities within Nantucket Sound, the relatively short distance from port to the survey site, the limited amount of vessels, and the small vessel size. During survey operations, survey vessels would travel at a considerably slow speed (3 knots). Large whales are considered rare in Nantucket Sound and small marine mammals (e.g., harbor porpoise and seals) move quickly through the water column and would likely avoid the vessels.

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. As with marine mammals, sea turtles may at worst experience temporary hearing threshold shifts and may exhibit relatively minor and short-term behavioral responses. However, the BiOp only anticipated impacts to sea turtles if the survey took place during the months of June through November.

4.1 EFFECTS OF ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, NMFS would not issue an IHAs to CWA for the proposed geophysical survey. In this case, CWA would decide whether or not it would want to continue with survey activities. If CWA 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 CWA 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 the geophysical survey 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 safety zones for the presence of marine mammals allows for the implementation of mitigation measures, such as power-downs and shutdowns 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. If CWA 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 EIS and proposed IHA *Federal Register* notice, incorporated by reference (BOEMRE, 2009; 76 FR 56735, September 14, 2011), describe, in detail, the potential effects of subbottom profiler signals on marine mammals. The EIS also includes analyses of effects on sea turtles, fish, and invertebrates.

CWA proposed a number of monitoring and mitigation measures for marine mammals, which were included in the proposed IHA *Federal Register* notice (76 FR 56735, September 14, 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) proposed exclusion zones;
(2) power-down procedures;
(3) shut-down procedures;
(4) ramp-up 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 or sea turtle 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 survey vessel. At worst, effects on marine mammals may be interpreted as falling within the MMPA definition of "Level B behavioral harassment." CWA's proposed 500-m exclusion zone alone is very conservative because it extends beyond both the Level A (180 dB) and Level B (160 dB) harassment isopleths, essentially minimizing the potential for all levels of harassment. Under the proposed action, NMFS expects no long-term or substantial adverse effects on marine mammals, marine turtles, seabirds, fish, invertebrates, or 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 56735, September 14, 2011) (and added due to public comments), 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, marine turtles, seabirds, fish, invertebrates, the populations to which they belong, and on their habitats occurring in the survey area analyzed in the EIS and NMFS' notice of proposed IHA are hereby incorporated by reference (BOEMRE, 2009; 76 FR 56735, September 14, 2011).

NMFS does not expect CWA'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 five marine mammal species and their habitats.

Human activities in the region of the proposed geophysical survey in Nantucket Sound include commercial and recreational vessel traffic, fishing, coastal development, alternative energy offshore development, offshore sand and gravel mining, and submarine cable and pipeline projects. Those activities were analyzed in detail in the EIS (BOEMRE, 2009). The action area where CWA's survey would be conducted is within the area analyzed in the EIS; therefore, the cumulative impact analysis from the EIS is incorporated by reference in this section (BOEMRE, 2009). That analysis concluded that the long-term Cape Wind energy project is not expected to add significantly to the impacts from past, present, and reasonably foreseeable future activities for the following: geology and soft sediments; physical oceanographic conditions; benthic fauna and shellfish; fish resources and commercial/recreational fisheries; sea turtles and marine mammals; terrestrial ecology, wildlife, and protected species; avian resources and protected bird species; coastal and freshwater wetland resources; water quality; visual impacts; cultural resources; recreational resources; noise; transportation and navigation; electrical and magnetic fields; telecommunication systems; air and climate; and socioeconomics.

The summary of cumulative effects to marine mammals, marine turtles, seabirds, fish, invertebrates, or the populations to which they belong or on their habitats occurring in the survey area were also analyzed in the EIS, and are hereby incorporated by reference (BOEMRE, 2009). The impacts of conducting the survey on marine mammals and sea turtles are specifically related to acoustic activities, and these are expected to be temporary in nature, negligible, and would not result in substantial impacts to marine mammals or to their role in the ecosystem. NMFS does not expect that the survey would have any adverse cumulative effect on any fish or invertebrate species.

NMFS has issued incidental take authorizations for other seismic surveys throughout the Atlantic Ocean, but the surveys are dispersed both geographically and temporally, are short-term in nature, and all of the authorization holders would be required to use mitigation and monitoring measures to minimize impacts to marine mammals and other living marine resources in the activity area. In 2009, NMFS issued a 1-year IHA to Rice University for the Level B harassment of small numbers of marine mammals, incidental to a low-energy marine seismic survey around Martha's Vineyard. The limited duration, sound propagation, and authorized take of that survey was not expected to result in any long-term impacts to marine mammals. There are no other seismic surveys scheduled for Nantucket Sound in 2012 and therefore, NMFS is unaware of any synergistic impacts to marine resources associated with reasonably foreseeable future actions that may be planned or occur within the same region of influence. NMFS has also issued (and is in the process of issuing) numerous scientific research permits that allow for the harassment of marine mammals and sea turtles. However, these permits typically cover large bodies of water (e.g., Atlantic Ocean) and are not specific to the Horseshoe Shoal or Nantucket Sound area.

NMFS' proposed action of issuing an IHA for the incidental take of marine mammals by Level B harassment in Nantucket Sound is only expected to result in minimal impacts to marine species in the area. The monitoring and mitigation zones may even preclude any marine mammals from being exposed to sound levels exceeding 160 dB. This limited action and any temporary, behavioral effects that may result from CWA's high resolution geophysical survey, are not expected to contribute substantially to other cumulative impacts addressed in the EIS (BOEMRE, 2009).

4.4 CONCLUSION

The inclusion of the mitigation and monitoring requirements in the IHA, as described in the Preferred Alternative, would ensure that CWA'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 geophysical survey, and NMFS' proposed issuance of an IHA to CWA, would result at worst in a temporary modification of behavior (Level B harassment) of some individuals of five 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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