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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN: 0648-XE954

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Breakwater Replacement Project in Eastport, Maine

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the Maine Department of Transportation (ME DOT) to incidentally harass, by Level B harassment only, marine mammals during in-water pile driving construction activities from the Eastport Breakwater Replacement Project (EBRP) in Eastport, ME.

DATES: This Authorization is effective from January 24, 2017 through January 23, 2018.

FOR FURTHER INFORMATION CONTACT: Stephanie Egger, Office of Protected Resources, NMFS, at (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Availability

An electronic copy of ME DOT's application and supporting documents, as well as a list of the references cited in this document, may be obtained online at

www.nmfs.noaa.gov/pr/permits/incidental/construction.htm. In case of problems accessing these documents, please call the contact listed above.

National Environmental Policy Act

NMFS prepared an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) and considered comments submitted in response to the Proposed IHA as part of that process.

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce to allow, upon request by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

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

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the U.S. can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) establishes a 45-day time limit for

NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny the authorization. Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as "any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment)."

Summary of Request

On August 31, 2016, we received an application from ME DOT for authorization to take marine mammals incidental to construction activities associated with the replacement and expansion of 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. The ME DOT submitted a revised version of the application on October 21, 2016, and a final application on December 2, 2016, which we deemed adequate and complete.

Harbor seal (*Phoca vitulina*), gray seal (*Halichoerus grypus*), harbor porpoise (*Phocoena phocoena*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*) and minke whale (*Balaenoptera acutorostrata*) are expected to be present during the project activities. Pile driving activities are expected to produce in-water noise disturbance that has the potential to result in the behavioral harassment of marine mammals.

Description of the Specified Activities

Project activities will occur in Cobscook Bay (Washington County) in Eastport, ME. The breakwater lies near the mouth of the St. Croix River at the end of a long peninsula adjacent to Quoddy Head. Cobscook Bay has extremely strong tidal currents and notably high tides, creating an extensive intertidal habitat for marine and coastal species. Water depths at the at the project location are between 8 and 55 feet (ft) (2.4 – 17 meter (m)). The Bay is considered a relatively intact marine system, as the area has not experienced much industrialization.

The overall pier replacement structure consists of an open pier supported by 151 piles, including steel pipe piles, reinforced concrete pile caps, and a precast pre-stressed plank deck with structural overlay. The approach pier will be 40 ft by 300 ft and the main pier section that will be parallel to the shoreline will be 50 ft by 400 ft.

The replacement pier consists of two different sections. The approach pier will be replaced in kind by placing fill inside of a sheet pile enclosure, supported by driven piles. The sheet piles can be installed by use of a vibratory hammer only. The main pier, fender system, and wave fence system will be pile supported with piles ranging from 16 inch (in) to 36 in diameter pipe piles. These piles will be driven with a vibratory hammer to a point and must be seated with an impact hammer to ensure stability. In addition, approximately 50 old piles are expected to be removed through vibratory extraction (included in the estimated number of project workdays). The number of piles and types of piles needed to complete this project are described in Table 1.

Table 1. Pile types and amounts required to complete the project.

Pile size and type	Number of piles remaining to be installed

16” steel pipe pile (vibratory hammer)	37
20” steel pipe pile (impact and vibratory hammer)	25
36” steel pipe pile (impact and vibratory hammer)	2
Steel sheet pile (vibratory hammer)	80 pairs

ME DOT was issued an IHA for their previous work on this project in 2014 (79 FR 59247; October 4, 2014) with a revised date for project activities in 2015 (80 FR 46565; July 20, 2015). This prosed IHA is a continuation of the work to complete the project that began in 2015.

A detailed description of the EBRP project is provided in the **Federal Register** notice for the proposed IHA (81 FR 89066; December 12, 2016). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

Comments and Responses

A notice of NMFS' proposal to issue an IHA to ME DOT was published in the **Federal Register** on December 12, 2016 (81 FR 89066). That notice described, in detail, ME DOT’s activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission (MMC). The comments are posted online at *http://www.nmfs.noaa.gov/pr/permits/incidental/construction.html*. The following are the substantive comments and NMFS' responses:

Comment 1: The MMC requested NMFS require the applicant to use a sound attenuation device (*e.g.*, pile cushions or confined bubble curtain) during impact driving of steel piles.

Response: NMFS added the a mitigation measure requiring the use of a sound attenuation device that specifically states: when using an impact pile hammer to install piles, sound absorption cushions and/or a bubble curtain shall be used to reduce underwater sound levels and avoid the potential for marine mammal injury.

Comment 2: The MMC requested that for species for which authorization has not been granted or species for which authorization has been granted, but the authorized number of takes has already been met, NMFS require the applicant to use delay and shut-down procedures when individuals approach or are observed within the Level B harassment zone.

Response: NMFS added this language to the Final IHA (see Pile Driving Shut Down and Delay Procedures in the Mitigation section).

Comment 3: The MMC requested NMFS require the applicant use 15- and 30-min clearance times for small cetaceans and pinnipeds and large cetaceans, respectively.

Response: In the Proposed IHA, a 30-min clearance time was proposed for all marine mammals. We have since modified the Final IHA to use the 15- and 30-min clearance times for small cetaceans and pinnipeds and large cetaceans, respectively.

Comment 4: The MMC requested NMFS increase the Level B harassment takes from a total of 8 to 72 Atlantic white-sided dolphins based on group size and frequency of occurrence.

Response: NMFS has made the recommended change from 8 dolphins to 72 based on 1 group (9 dolphins) that may enter the bay each month (also described in the Estimated Take of Incidental Harassment section).

Comment 5: The MMC commented on a lack of information regarding the extent of Level A and B Harassment zones for installation of 16-, 20- and 36-in piles using a vibratory hammer. The MMC recommended using 161 and 167 decibel (dB) source levels (SL) to calculate harassment zones.

Response: The applicant used a higher SL of 170 dB for vibratory pile driving (accounting for both sheet piles and piles) and used the new acoustic guidance, *Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (July 2016),* spreadsheet (NMFS 2016) (confirmed by NMFS) to determine the permanent threshold shift (PTS) isopleths for cetaceans and pinnipeds. The applicant then conservatively applied this one larger shutdown zone (Level A zone) to all cetaceans groups, using an area slightly larger than the PTS isopleth for high-frequency cetaceans, which provides greater protection for low- and mid-frequency cetaceans. The shutdown zone (Level A zone) for pinnipeds is slightly larger than the PTS isopleth calculated by the new acoustic guidance spreadsheet. Therefore, the Level A zones calculated under the 170 dB source level are more conservative and consider all pile sizes and sheet piles. For Level B Harassment zones for vibratory driving of piles, NMFS used the source levels of 161 dB and 167 dB, and used practical spreading to calculate zones of 500 m and 1,260 m for 16-20 in and 36 in piles, respectively (this is described in the Estimated Take of Incidental Harassment section).

Comment 6: The MMC questioned why there were two Level B Harassment zones (400 m and 665 m) for installation of sheet piles using a vibratory hammer.

Response: ME DOT will install two different types of sheet piles; therefore, two Level B Harassment zones were appropriately calculated for monitoring. The Level B

Harassment zones were calculated at 400 m and 665 m based on the sheet pile type. Data from several sheet piles of each pile type were used to determine the Level B zones of influence (ZOI). The applicant indicated that the two types of sheet piles are not usually driven simultaneously. However, if they are, the larger Level B Harassment zone (665m) will be applied during vibratory pile driving of sheet piles.

Comment 7: The MMC asked for clarification on whether sheet pile removal is part of the project and if so, by which method piles will be removed *(e.g.*, vibratory extraction or cutting).

Response: NMFS clarified with the applicant that an estimated 50 piles will be removed using vibratory extraction. The number of workdays includes pile removal; therefore, no revised take estimate is needed. This information was added to the Final IHA.

Comment 8: The MMC commented that NMFS underestimated the number of Level B harassment takes for gray/harbor seals. The MMC recommends that NMFS use the maximum number of gray/harbor seals that were observed in the Level B Harassment zone on a given day during the previous authorization to inform the number of Level B harassments takes to be authorized.

Response: In the proposed IHA, NMFS projected 120 pinnipeds per month from January through August would be taken by Level B harassment. This was calculated using an average group size of 6 animals per day for a 20-day work period/month. When comparing this to ME DOT's data collected from their previous authorization, the maximum number of seals that were observed in one month was 190 (July 2015), however; only 11 of those 190 seals were taken as Level B harassment over a 20-day

period. The average of all seals observed in July 2015 was 10 seals per day. Therefore, NMFS has revised the take estimate to an average of 10 seals per day, increasing the total number of seals that may be taken by Level B harassment from 120 seals per month to 200 seals per month (also described in the Estimated Take of Incidental Harassment section). In a previous discussion with the applicant, ME DOT commented that in July 2015, 50 seals were observed in one monitoring day. However, the protected species observers for ME DOT believe it was a maximum of six pinnipeds seen multiple times that day.

Comment 9: The MMC recommended the inclusion of Level B harassment takes for minke whales.

Response: NMFS recognizes 28 minke whales were observed during ME DOT's previous authorization during a 4-month period (July through October); however, none of them were observed in the Level B Harassment zone, or thought to be taken by Level B harassment. The maximum number of minkes that were observed was in December 2015, where 11 animals occurred over an 18-day work period (but again, not within the harassment zone). However, at the recommendation of the MMC to authorize take of minke whales, NMFS will authorize 16 minke whales by Level B harassment, assuming an average group size of two whales that may enter the Level B Harassment zone once each month over an eight month period.

Comment 10: The MMC suggested that ME DOT's application included some inaccuracies and that NMFS should have worked with the applicant more to ensure that its application was accurate and complete before sharing it with the public and publishing the Notice of a Proposed IHA.

Response: NMFS works with applicants to ensure that applications are accurate, as well as adequate and complete, before we develop and publish a Notice of Proposed IHA, and we work internally to ensure that correct and comprehensive information is included in our proposed IHAs. In this case, in addition to working to attain this necessary quality of documentation, we worked hard to adhere to the aggressive timeline proposed by the applicant in order to support their important and time-sensitive work on this project. We will continue to ensure that the information we rely on for our decisions is based on the best available information and strive to conduct our regulatory processes in a timely manner that supports applicants' needs.

Description of Marine Mammals in the Area of the Specified Activity

The marine mammal species under NMFS jurisdiction authorized for incidental Level B take as a result of project activities, are the harbor seal, gray seal, harbor porpoise, Atlantic white-sided dolphin and minke whale (Table 2).

Table 2. Marine mammal information for the project area

Species	**Stock**	**ES)/MMPA status; Strategic (Y/N)[1]**	**Stock abundance (CV, N_{min}, most recent abundance survey)[2]**	**PBR[3]**	**Annual M/SI[4]**	**Relative occurrence/season of occurrence**
Harbor seal	Western North Atlantic	-; N	75,834 (0.15; 66,884; 2012)	2,006	420	Harbor seals are year-round inhabitants of the coastal waters of Maine and eastern Canada.
Gray seal	Western North Atlantic	-; N	unknown 505,00 (best estimate 2014 Canadian population DFO 2014)	unknown	5,004	Gray seals currently pup at two established colonies in Maine: Green and Seal Islands

Harbor porpoise	Gulf of Maine/ Bay of Fundy	-; N	79,883 (0.32; 61,415; 2011)	706	564	During winter (January to March), intermediate densities of harbor porpoises can be found in waters off New York to New Brunswick, Canada. In spring (April–June), harbor porpoises are widely dispersed from ME to NJ, with lower densities farther north and south.
Atlantic white-sided dolphin	Western North Atlantic	-; N	48,819 (0.61; 30,403; 2011)	304	102	During January to May, low numbers of white-sided dolphins are found from Georges Bank (separates the Gulf of Maine from the Atlantic Ocean to Jeffreys Ledge (in the Western Gulf of Maine off of New Hampshire)
Minke whale	Canadian East Coast	-; N	20,741 (0.30; 16,199; 2007)	162	7.9	During the spring and fall, minkes are relatively widespread and common and when the whales are most abundant in New England waters. During the winter, minkes appears to be largely absent.

[1]Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR (see footnote 3) or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2]CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For certain stocks of pinnipeds, abundance estimates are based upon observations of animals (often pups) ashore multiplied by some correction factor derived from knowledge of the species (or similar species) life history to arrive at a best abundance estimate; therefore, there is no associated CV. In these cases, the minimum abundance may represent actual counts of all animals ashore. The most recent abundance survey that is reflected in the abundance estimate is presented; there may be more recent surveys that have not yet been incorporated into the estimate.

[3]Potential biological removal, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population size (OSP).

[4]These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, subsistence hunting, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value.

A detailed description of the of the species likely to be affected by the EBRP, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (81 FR

89066; December 12, 2016) (with the exception of the minke whale that has been added to this Final IHA). Since that time, we are not aware of any changes in the status of these species and stocks that were previously described in the proposed IHA; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (*www.nmfs.noaa.gov/pr/species/mammals/*) for generalized species accounts.

Minke whale

The minke whale is common and widely distributed within the U.S. Atlantic Exclusive Economic Zone (EEZ) (CETAP 1982 as cited in Waring *et al*., 2015). During the spring to fall, minkes are relatively widespread and common occurrence, and when the whales are most abundant in New England waters. However, during winter months, minkes appear to be largely absent (*e.g*., Risch *et al.*, 2013 as cited as Waring *et al*., 2015). Like most other baleen whales, minke whales generally occupy the continental shelf proper (< 100 m deep), rather than the continental shelf-edge region (Waring *et al*., 2015). In the North Atlantic, there are four recognized populations —Canadian East Coast, west Greenland, central North Atlantic, and northeastern North Atlantic (Donovan 1991 as cited in Waring *et al*., 2015). Minke whales off the eastern coast of the United States are considered to be part of the Canadian East Coast stock, which inhabits the area from the western half of the Davis Strait (45ºW) to the Gulf of Mexico (Waring *et al*., 2015). The most current abundance estimate for minke whales is 20,741. A current population trend analysis has not been conducted for this stock (Waring *et al*., 2015).

Effects of the Specified Activity on Marine Mammals and Their Habitat

In-water construction activities associated with the EBRP such as impact and vibratory pile driving components of the specified activity have the potential to result in impacts to marine mammals and their habitat in the project area. The **Federal Register** notice for the proposed IHA (81 FR 89066; December 12, 2016) included a detailed discussion of the behavioral and acoustic effects on marine mammals. Therefore, that information is not repeated here. Please refer to the referenced **Federal Register** notice for that information. No take by injury, serious injury, or death is anticipated as a result of the construction activities.

Mitigation

In order to issue an IHA for the under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, "and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking" for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat (50 CFR 216.104(a)(11)).

ME DOT worked with NMFS and developed the following mitigation measures to minimize the potential impacts to marine mammals in the project vicinity. The primary purposes of these mitigation measures are to minimize sound levels from the activities, and to monitor marine mammals within designated ZOI corresponding to NMFS' current

Level A and B harassment thresholds. Here we provide a description of the mitigation measures required as part of the Authorization:

Noise Attenuation Devices

When using an impact hammer to "proof" piles, ME DOT shall use sound absorption cushions and/or a bubble curtain to reduce hydroacoustic sound levels and avoid the potential for marine mammal injury. Based on previous studies, sound attenuation devices are expected to reduce sound levels by at least 5 dB.

Zones of Influence

Direct measured data from the pile driving events of the EBRP IHA were used to calculate the ZOIs for Level B Harassment for pile driving activities. These values were used to develop mitigation measures for pile driving activities at EBRP. The ZOIs effectively represent the mitigation zone that will be established around each pile to prevent Level A harassment to marine mammals, while providing estimates of the areas within which Level B harassment might occur. In addition to the specific measures described later in this section, the EBRP will conduct briefings between construction supervisors and crews, marine mammal monitoring team, and EBRP staff prior to the start of all pile driving activity, and if/when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

Monitoring and Shutdown for Pile Driving

The following measures will apply to the EBRP's mitigation through shutdown and disturbance zones:

Shutdown Zone – For all pile driving activities, EBRP will establish exclusion zones (shutdown zones). Shutdown zones are intended to contain the area in which SPLs equal or exceed acoustic injury criteria, with the purpose being to define an area within which shutdown of activity will occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area), thus preventing injury marine mammals (PTS) of marine mammals (as described previously under Potential Effects of the Specified Activity on Marine Mammals, serious injury or death are unlikely outcomes even in the absence of mitigation measures).

Using the user spreadsheet for the NMFS new acoustic guidance, injury zones were determined for low-, mid- and high-frequency cetaceans and pinnipeds (phocids) as the hearing groups analyzed for this project (see Table 3). The purpose of a shutdown zone is to define an area within which shutdown of activity will occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). As a precautionary measure, intended to reduce the unlikely possibility of injury from direct physical interaction with construction operations, ME DOT will implement a minimum shutdown zone of 10 m radius around each pile for all construction methods for all marine mammals. The shutdown zones calculated for injury were rounded to the nearest 10 m to be more conservative or species were grouped (*e.g.*, low-, mid- and high-frequency cetaceans combined into one group) for more streamlined monitoring in the field. For both impact and vibratory pile driving, the shutdown zones were increased for low- and mid-frequency cetaceans to that which was calculated for high-frequency cetaceans in order to group all cetaceans together for monitoring. The shutdown zones for vibratory pile driving were calculated considering all piles (sheet piles and piles) and are more conservative for

piles as their source levels are lower than the one entered into the spreadsheet for sheet piles.

Table 3. Injury zones and shutdown zones for hearing groups for each construction method.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds
Vibratory Pile Driving[1]				
PTS Isopleth to threshold	79.5 m	7.0 m	117.5 m	48.3 m
Shutdown Zone	120 m			50 m
Impact Pile Driving[2]				
PTS Isopleth to threshold	130.7 m	4.6 m	155.6 m	69.9 m
Shutdown Zone	160 m			70 m

[1]For vibratory driving, SL is 170 dB, TL is15logR, weighting function is 2.5, duration is 5 hours, and distance from the source is 10 m. This covers all vibratory hammering.
[2]For impact driving, SL (Single Strike/shot SEL) is 171 dB, TL is 15log R, weighting function is 2, strikes per pile is 250, number off piles per day is 3, and distance from the source is 10 m.

Disturbance Zone – Disturbance zones are the areas in which SPLs equal or exceed 160 and 120 dB rms (for impulse and continuous sound, respectively). Disturbance zones provide utility for monitoring conducted for mitigation purposes (*i.e.*, shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of disturbance zones enables observers to be aware of and communicate the presence of marine mammals in the project area but outside the shutdown zone and thus prepare for potential shutdowns of activity. However, the primary purpose of disturbance zone monitoring is for documenting incidents of Level B harassment; disturbance zone monitoring is discussed in greater detail later (see Monitoring and Reporting). Any marine mammal documented within the Level B

harassment zone will constitute a Level B take (harassment), and will be recorded and reported as such. Nominal radial distances for disturbance zones are shown in Table 4. Given the size of the disturbance zone for both impact and vibratory pile driving, it is impossible to guarantee that all animals will be observed or to make comprehensive observations of fine-scale behavioral reactions to sound, and only a portion of the zone (*e.g.*, what may be reasonably observed by visual observers) would be observed.

Table 4. Calculated threshold distances (m) for Level B Harassment of marine mammals.

Source	Threshold distances (m)	
	160 dB	**120 dB**
Vibratory pile driving	n/a	400 m for PZC-18 Sheet Piles 665 m for PZC-26 Sheet Piles 500 m for 16-20 in piles 1,260 m for 36 in piles
Impact pile driving	550 m	n/a

Note: If both types of sheet piles were installed simultaneously, the larger Level B zone of 665 m will be used.

In order to document observed incidents of harassment, monitors will record all marine mammal observations, regardless of location. The observer's location, as well as the location of the pile being driven or removed, is known from a GPS unit. The location of the animal is estimated as a distance from the observer, which is then compared to the location from the pile. It may then be estimated whether the animal was exposed to sound levels constituting incidental harassment on the basis of predicted distances to relevant thresholds in post-processing of observational and acoustic data, and a precise accounting of observed incidences of harassment created. This information may then be used to extrapolate observed takes to reach an approximate understanding of actual total takes.

Two Qualified Protected Species Observers (PSO) (NMFS approved biologists, monitoring responsibilities fully described in the Monitoring section) will be stationed on

the pier. One PSO will be responsible for monitoring the shutdown zones, while the second observer will conduct behavioral monitoring outwards to a distance of 1 nautical mile (nmi).

Pile Driving Shut Down and Delay Procedures

If a PSO sees a marine mammal within or approaching the shutdown zones prior to start of pile driving, the observer will notify the on-site project lead (or other authorized individual) who will then be required to delay pile driving until the marine mammal has moved out of the shutdown zone from the sound source or if the animal has not been resighted within 15 min for small cetaceans and pinnipeds and 30 min for large cetaceans. If a marine mammal is sighted within or on a path toward a shutdown zone during pile driving, pile driving will cease until that animal has moved out of the shutdown zone and is on a path away from the shutdown zone or 15 min (pinnipeds and small cetaceans)/30 min (large cetaceans) has lapsed since the last sighting. Shutdown and delay procedures will also be required if a species for which authorization has not been granted or if a species for which authorization has been granted but the authorized number of takes has been met, approaches or is observed within the Level B harassment zone.

Soft-start Procedures

A “soft-start” technique will be used at the beginning of each pile installation to allow any marine mammal that may be in the immediate area to leave before the pile hammer reaches full energy. For vibratory pile driving, the soft-start procedure requires contractors to initiate noise from the vibratory hammer for 15 seconds at 40-60 percent reduced energy followed by a 1-min waiting period. The procedure will be repeated two additional times before full energy may be achieved. For impact pile driving, contractors

will be required to provide an initial set of 3 strikes from the impact hammer at 40 percent energy, followed by a 1-min waiting period, then two subsequent 3 strike sets. Soft-start procedures will be conducted any time hammering ceases for more than 30 min.

Time Restrictions

Work will occur only during daylight hours, when visual monitoring of marine mammals can be conducted.

Mitigation Conclusions

To ensure that the "least practicable adverse impact" will be achieved, NMFS has carefully evaluated mitigation measures in consideration of the following factors in relation to one another: the manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, their habitat, and their availability for subsistence uses (latter where relevant); the proven or likely efficacy of the measures; and the practicability of the measures for applicant implementation (including, consideration of personnel safety, practicality of implementation).

Any mitigation measure(s) prescribed by NMFS should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed below:

1. Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).
2. A reduction in the numbers of marine mammals (total number or number at biologically important time or location) exposed to received levels of pile driving, or other activities expected to result in the take of

marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).

3. A reduction in the number of times (total number or number at biologically important time or location) individuals would be exposed to received levels of pile driving, or other activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).
4. A reduction in the intensity of exposures (either total number or number at biologically important time or location) to received levels of pile driving, or other activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing the severity of harassment takes only).
5. Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base, activities that block or limit passage to or from biologically important areas, permanent destruction of habitat, or temporary destruction/disturbance of habitat during a biologically important time.
6. For monitoring directly related to mitigation – an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of

such taking". The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for incidental take authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the project action area.

Any monitoring requirement we prescribe should improve our understanding of one or more of the following:

- Occurrence of marine mammal species in the action area (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) Action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) Affected species (*e.g.*, life history, dive patterns); (3) Co-occurrence of marine mammal species with the action; or (4) Biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual responses to acute stressors, or impacts of chronic exposures (behavioral or physiological).
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of an individual; or (2) population, species, or stock.
- Effects on marine mammal habitat and resultant impacts to marine mammals.
- Mitigation and monitoring effectiveness.

Visual Marine Mammal Observations

PSOs shall be used to detect, document, and minimize impacts to marine mammals. Monitoring will be conducted before, during, and after construction activities. In addition, PSOs shall record all incidents of marine mammal occurrence, regardless of distance from activity, and document any behavioral reactions in concert with distance from construction activities. Important qualifications for PSOs for visual monitoring include:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of marine mammals on land or in the water with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Advanced education in biological science or related field (undergraduate degree or higher required);
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when construction activities were conducted; dates and times when construction activities were suspended, if necessary; and marine mammal behavior; and

- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

PSOs shall also conduct mandatory biological resources awareness training for construction personnel. The awareness training shall be provided to brief construction personnel on marine mammals and the need to avoid and minimize impacts to marine mammals. If new construction personnel are added to the project, the contractor shall ensure that the personnel receive the mandatory training before starting work. PSOs will have authority to stop construction if marine mammals appear distressed (evasive maneuvers, rapid breathing, inability to flush) or in danger of injury.

The ME DOT has developed a monitoring plan based on discussions between ME DOT and NMFS. The ME DOT will collect sighting data and behavioral responses to construction activities for marine mammal species observed in the region of activity during the period of activity. All PSOs will be trained in marine mammal identification and behaviors and are required to have no other construction-related tasks while conducting monitoring.

Data Collection

We require that PSOs use approved data forms. Among other pieces of information, the ME DOT will record detailed information about any implementation of shutdowns, including the distance of animals to the pile and description of specific actions that ensued and resulting behavior of the animal, if any. In addition, the ME DOT will attempt to distinguish between the number of individual animals taken and the number of

incidents of take. We require that, at a minimum, the following information be collected on the sighting forms:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (*e.g.*, percent cover, visibility);
- Water conditions (*e.g.*, sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Locations of all marine mammal observations; and
- Other human activity in the area.

Reporting

ME DOT is required to submit a draft monitoring report to NMFS within 90 days of completion of in-water construction activities. The report will include data from marine mammal sightings as described in the Data Collection section above (*i.e.*, date, time, location, species, group size, and behavior), any observed reactions to construction, distance to operating pile hammer, and construction activities occurring at time of sighting and environmental data for the period (*i.e.*, wind speed and direction, sea state, tidal state cloud cover, and visibility).

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury (Level A

harassment), serious injury, or mortality, ME DOT will immediately cease the specified activities and immediately report the incident to the Permits and Conservation Division, Office of Protected Resources, NMFS and the Greater Atlantic Regional Fisheries Office Stranding Coordinator. The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hrs preceding the incident;
- Water depth;
- Environmental conditions (*e.g.*, wind speed and direction, sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hrs preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities will not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with ME DOT to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. ME DOT may not resume their activities until notified by NMFS via letter, email, or telephone.

In the event that ME DOT discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*i.e.*, in less than a moderate state of decomposition as described in the next paragraph), ME DOT will immediately report the incident to the NMFS' Permits and Conservation Division, Office of Protected Resources at (301) 427-840 and NMFS' GARFO Stranding Coordinator at (978) 282-8478. The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with ME DOT to determine whether modifications in the activities are appropriate.

In the event that ME DOT discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), ME DOT will report the incident to the NMFS' Permits and Conservation Division, Office of Protected Resources at (301) 427-840 and the NMFS' GARFO Stranding Coordinator at (978) 282-8478 within 24 hrs of the discovery. ME DOT will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.

Estimated Take of Incidental Harassment

Except with respect to certain activities not pertinent here, section 3(18) of 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)."

All anticipated takes will be by Level B harassment resulting from pile driving activities involving temporary changes in behavior. The mitigation and monitoring measures are expected to minimize the possibility of injurious or lethal takes such that potential for take by Level A harassment, serious injury, or mortality is considered discountable.

Given the many uncertainties in predicting the quantity and types of impacts of sound on marine mammals, it is common practice to estimate take based on how many animals are likely to be present within a particular distance of a given activity, or exposed to a particular level of sound. In practice, depending on the amount of information available to characterize daily and seasonal movement and distribution of affected marine mammals, it can be difficult to distinguish between the number of individuals harassed and the instances of harassment and, when duration of the activity is considered, it can result in a take estimate that overestimates the number of individuals harassed. In particular, for stationary activities, it is more likely that some smaller number of individuals may accrue a number of incidences of harassment per individual than for each incidence to accrue to a new individual, especially if those individuals display some degree of residency or site fidelity and the impetus to use the site (*e.g.*, because of foraging opportunities) is stronger than the deterrence presented by the harassing activity.

Elevated in-water sound levels from pile driving activities in the project area may temporarily impact marine mammal behavior. Elevated in-air sound levels are not a

concern because the nearest significant pinniped haul-out is more than six nmi away. Marine mammals are continually exposed to many sources of sound. For example, lightning, rain, sub-sea earthquakes, and animals are natural sound sources throughout the marine environment. Marine mammals produce sounds in various contexts and use sound for various biological functions including, but not limited to: (1) Social interactions; (2) Foraging; (3) Orientation; and (4) Predator detection. Interference with producing or receiving these sounds may result in adverse impacts. Audible distance or received levels will depend on the sound source, ambient noise, and the sensitivity of the receptor (Richardson *et al.*, 1995). Marine mammal reactions to sound may depend on sound frequency, ambient sound, what the animal is doing, and the animal's distance from the sound source (Southall *et al.*, 2007).

Behavioral disturbances that could result from anthropogenic sound associated with these activities are expected to affect only a small number of individual marine mammals, although those effects could be recurring over the life of the project if the same individuals remain in the project vicinity.

The ME DOT has requested authorization for the incidental taking of small numbers of harbor seals, gray seals, harbor porpoise, Atlantic white-sided dolphins, and minke whales incidental to the pile driving associated with the EBRP described previously in this document. In order to estimate the potential incidents of take that may occur incidental to the specified activity, we must first estimate the extent of the sound field that may be produced by the activity and then consider in combination with information about marine mammal density or abundance in the project area and the number of days the activity will be conducted. We first provide information on applicable sound thresholds

for determining effects to marine mammals before describing the information used in estimating the sound fields, the available marine mammal density or abundance information, and the method of estimating potential incidents of take.

As discussed above, in-water pile driving activities generate loud noises that could potentially harass marine mammals in the vicinity of ME DOT's EBRP. No impacts from visual disturbance are anticipated because there are no known pinniped haul-outs within the project area. The only potential disturbance anticipated to occur will be during driving operations, which may cause individual marine mammals to temporarily avoid the area.

Sound Thresholds

We use generic sound exposure thresholds to determine when an activity that produces sound might result in impacts to a marine mammal such that a take by Level B harassment might occur. To date, no studies have been conducted that explicitly examine impacts to marine mammals from pile driving sounds or from which empirical sound thresholds have been established. These thresholds (Table 5) are used to estimate when harassment may occur (*i.e.*, when an animal is exposed to levels equal to or exceeding the relevant criterion) in specific contexts; however, useful contextual information that may inform our assessment of effects is typically lacking and we consider these thresholds as step functions. NMFS new technical guidance establishes new thresholds for predicting auditory injury, which equates to Level A harassment under the MMPA. The ME DOT project used this new technical guidance when determining the injury (Level A) zones (see Table 3).

Table 5. Current Acoustic Exposure Criteria for Level B Harassment.

Criterion	Definition	Threshold
Level B harassment	Behavioral disruption	160 dB (impulsive source) / 120 dB (continuous source)

(underwater)[1]		
Level B harassment (airborne)[2]	Behavioral disruption	90 dB (harbor seals) / 100 dB (other pinnipeds) (unweighted)

Note: All thresholds are based off of root mean square (rms) levels.
[1] All decibels referenced to 1 micro Pascal (re: 1uPa)
[2] All decibels referenced to 20 micro Pascals (re: 20uPa)

Distance to Sound Thresholds

Pile driving generates underwater noise that can potentially result in disturbance to marine mammals in the project area. Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

$TL = B * \log_{10}(R_1/R_2)$, where

R_1 = the distance of the modeled SPL from the driven pile, and

R_2 = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source (20*log[range]). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source (10*log[range]). A practical spreading value of fifteen is often used under conditions,

where water increases with depth as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions.

For Level B ZOIs for vibratory driving of piles, NMFS used source levels of 161 dB and 167 dB, and used practical spreading to calculate zones of 500 m and 1,260 m for 16-20 in and 36-in piles, respectively.

In this case of sheet piles, we have measured field data available from the previous EBRP IHA at the same location and from the same type sheet piles showing at a particular point where the received level is below 120 dB, to determine the disturbance distance for the Level B ZOI. Data from several sheet piles of each pile type were used to determine the Level B ZOIs. For sheet pile type PZC-18, 400 m is the measured distance where the Level B ZOI is below 120 dB. For sheet pile type PZC-26, the farthest measurement did not go below 120 dB so the statistical analysis of 90 percent confidence interval was used, which pointed to 665 m for the Level B ZOI. For impact pile driving, we used the third farthest point from the measured field data, which was 550 m from the source, and measured under 160 dB.

The sound field in the project area is the existing ambient noise plus additional construction noise from the project. The primary components of the project expected to affect marine mammals is the sound generated by impact and vibratory pile driving. The intensity of pile driving sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. In order to determine the distance to the thresholds and the received levels to marine mammals that are likely to result from pile driving at EBRP, we evaluated the acoustic monitoring data

(Table 6) from the previous EBRP IHA with similar properties to the current project activity.

Table 6. Eastport Breakwater noise monitoring data for un-attenuated pile strikes with an impact hammer and a vibratory hammer.

Pile Type/Size	Relative Water Depth	Max Avg dB RMS
Impact Pile Driving		
20 ft /Steel Pipe	15 m	182
20 ft /Steel Pipe ('Spin fin')	15 m	186
Vibratory Pile Driving		
24 ft Steel Sheet PZC-16	15 m	170 (max dB RMS)

We consider the values presented in Table 6 to be representative of SPLs that may be produced by pile driving in the project area. Distances to the harassment isopleths vary by marine mammal type and pile extraction/driving tool. All calculated distances to and the total area encompassed by the marine mammal sound thresholds are provided in Tables 3 and 4.

In addition, we generally recognize that pinnipeds occurring within an estimated airborne harassment zone, whether in the water or hauled out (no haul outs within six nmi of the project area), could be exposed to airborne sound that may result in behavioral harassment. However, any animal exposed to airborne sound above the behavioral harassment threshold is likely to also be exposed to underwater sound above relevant thresholds (which are typically in all cases larger zones than those associated with airborne sound). Thus, the behavioral harassment of these animals is already accounted for in the estimates of potential take. Multiple incidents within a day of exposure to sound above NMFS' thresholds for behavioral harassment are not believed to result in increased behavioral disturbance, in either nature or intensity of disturbance reaction. Therefore, we

do not believe that authorization of incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further here.

Acoustic Impacts

When considering the influence of various kinds of sound on the marine environment, it is necessary to understand that different kinds of marine life are sensitive to different frequencies of sound. Based on available behavioral data, audiograms have been derived using auditory evoked potentials, anatomical modeling, and other data. Southall *et al.* (2007) designated hearing groups for marine mammals and estimated the lower and upper frequencies of hearing of the groups. NMFS made modifications to the marine mammal hearing groups proposed in Southall *et al*. (2007) which is reflected in the new technical guidance (NMFS 2016). The marine mammal hearing groups, pinnipeds, high frequency cetaceans (harbor porpoise), mid-frequency cetaceans (Atlantic white-sided dolphin) and low-frequency cetaceans (minke whale) which are the subject of this project, and their associated generalized hearing range were previous discussed in the Marine Mammal Hearing section.

As mentioned previously in this document, five marine mammal species (three cetacean and two pinniped species) are likely to occur in the area of the activity. Of the three cetacean species likely to occur in the project area, the minke whale is considered a low-frequency cetacean, the Atlantic white-sided dolphin is classified as a mid-frequency cetacean and the harbor porpoise is classified as a high-frequency cetacean (NMFS 2016). A species' hearing group and its generalized hearing range is a consideration when we analyze the effects of exposure to sound on marine mammals.

ME DOT and NMFS determined that in-water construction activities involving the use of impact and vibratory pile driving during the EBRP has the potential to result in behavioral harassment of marine mammal species and stocks in the vicinity of the project activity.

Description of Take Calculation

The following sections are descriptions of how take was determined for impacts to marine mammals from noise disturbance related to pile driving.

Incidental take is calculated for each species by estimating the likelihood of a marine mammal being present within the ensonified area above the threshold during pile driving activities, based on information about the presence of the animal (density estimates or the best available occurrence data) and the size of the zones of influence, which in this case is based on previous measurements from the acoustic monitoring in the previous EBRP IHA. Expected marine mammal presence is determined by past observations and general abundance during the construction window. When local abundance is the best available information, in lieu of the density-area method, we may simply multiply some number of animals (as determined through counts of animals hauled-out) by the number of days of activity, under the assumption that all of those animals will be present within the area ensonified by the threshold and incidentally taken on each day of activity.

There are a number of reasons why estimates of potential incidents of take may be conservative, assuming that available density or abundance estimates and estimated ZOI areas are accurate. We assume, in the absence of information supporting a more refined conclusion, that the output of the calculation represents the number of individuals that

may be taken by the specified activity. In fact, in the context of stationary activities such as pile driving and in areas where resident animals may be present, this number more realistically represents the number of incidents of take that may accrue to a smaller number of individuals. While pile driving can occur any day throughout the in-water work window, and the analysis is conducted on a per day basis, only a fraction of that time (typically a matter of hours on any given day) is actually spent pile driving. The potential effectiveness of mitigation measures in reducing the number of takes is typically not quantified in the take estimation process. For these reasons, these take estimates may be conservative.

For this project, the take requests were estimated using local marine mammal data sets and information from Federal agencies and other experts. The best available data for marine mammals in the vicinity of the project area was derived from three sources including: three years (2007-2010) of marine mammal monitoring data from the Ocean Renewable Power Company (ORPC) tidal generator project that was located between Eastport and Lubec, ME, the 2015-2016 marine mammal monitoring data from the previous EBRP IHA, and communication with marine mammals experts from ME (Stephanie Wood (NOAA Biologist) and Dr. James Gilbert (Wildlife Ecologist, University of ME)). Although the ORPC project was located on the other side of the peninsula from the Eastport pier, the presence of species and timing of their occurrence appears similar between the ORPC data and marine mammal monitoring data from the previous EBRP IHA.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N (number of animals in the area that is ensonified above the thresholds based on the previous sound measurements) * 160 days of pile driving activities from January to August 2017.

The estimated number of animals in the area was previously determined based on the maximum group size of animals observed during ORPC's marine mammal observation effort (six seals (harbor and gray seals combined), six harbor porpoises, and one Atlantic white-sided dolphin) multiplied by the maximum expected number of pile/sheet installation and sheet removal days. During the winter and spring months we expect lower numbers of harbor porpoise in the Gulf of Maine (including the project area) and therefore take estimates were lower (January through May). Atlantic white-sided dolphins are not expected to frequent the project area, as they are more of a pelagic species. Only two Atlantic white-sided dolphins were observed in four years of marine mammal monitoring (ORPC and EBRP IHA). Harbor and gray seals were combined into one pinniped group because they cannot always be identified by species level. See Tables 7 and 8 for total estimated incidents of take.

Based on comments provided by the MMC, take estimates are now revised for gray/harbor seal and Atlantic white-side dolphins. Minke whale take has also been added. In the proposed IHA, NMFS estimated 120 pinnipeds per month from January through August would be taken by Level B Harassment. This was calculated using an average group size of six animals per day for a 20-day work period/month. When comparing this to ME DOT's data collected from their previous authorization, the maximum number of seals observed in one month was 190 (July 2015), however; only 11 of those 190 seals were taken as Level B harassment over a 20-day period. The average of all seals observed

in July 2015 was 10 seals per day. Therefore, NMFS has revised the take estimate to an average of 10 seals per day, increasing the total number of seals that may be taken by Level B harassment from 120 seals to 200 seals per month (Table 7). Although only two Atlantic white-sided dolphins were observed over the past four years, NMFS has revised the Level B take estimate, recommended by the MMC, from one Atlantic white-sided dolphins per month to nine dolphins per month based on one group (nine dolphins) that may enter the bay each month. NMFS added minke whales to be taken by Level B Harassment over the project period. NMFS recognizes 28 minke whales were observed during ME DOT's previous authorization during a 4-month period (July through October); however, none of these whales were taken by Level B harassment. The maximum number of minkes observed was in December 2015, where 11 animals occurred over an 18-day work period. NMFS will authorize 16 minke whales may be taken by Level B Harassment assuming a group size of two whales may enter the Level B Harassment zone each month over an eight month period.

Table 7. Marine Mammal Calculated Take for Level B Harassment.

Month	Pile Driving Days per Month	Calculated Harbor/Gray Seal Take by Level B Harassment	Calculated Harbor Porpoise Take by Level B Harassment	Calculated Atlantic White-Sided Dolphin Take by Level B Harassment	Calculated Minke Whale Take by Level B Harassment
Jan	20	200	6	9	2
Feb	20	200	6	9	2
March	20	200	6	9	2
April	20	200	6	9	2
May	20	200	6	9	2
June	20	200	120	9	2
July	20	200	120	9	2
August	20	200	120	9	2
Sept					
Oct					
Nov					
Dec					
Total:	160	1,600	390	72	16

Table 8. Estimated Marine Mammal Takes by Level B Harassment.

Species	Take Authorization	Abundance	Approximate Percentage of Estimated Stock (Takes Authorized/ Population)	Population Trend
Harbor seal*	1,600	75,834 – Western North Atlantic stock	2.11	unknown
Gray seal		Unknown for U.S. - Western North Atlantic stock	unknown	increasing in the U.S. (EEZ), but the rate of increase is unknown.
Harbor porpoise	390	79,883 – Gulf of Maine/Bay of Fundy stock	0.48	unknown
Atlantic white-sided dolphin	72	48,819 – Western North Atlantic stock	0.15	unknown
Minke whale	16	20,741 – Canadian East Coast stock	0.077	unknown

*Note: Any pinnipeds observed/taken by Level B harassment will likely be harbor seals rather than gray seal (as gray seals do not frequent the waters of the project area as much and are found more in Canadian waters/haul out).

Analysis and Determinations

Negligible Impact

NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival." A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken"
through behavioral harassment, we consider other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical

reproductive time or location, migration), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat.

Pile driving activities associated with this project have the potential to disturb or displace marine mammals. Elevated noise levels are expected to be generated as a result of these activities. However, ME DOT will use noise attenuation devices (*e.g.*, pile cushions, bubble curtains) during impact pile driving to ensure that sound levels of 180 dB (rms) do not extend more than 10 m from the pile, which eliminates the potential for injury (PTS) and temporary threshold shift. Serious injury or mortality is not expected at all, and with mitigation, we expect to avoid any potential for Level A harassment as a result of the EBRP activities, and none are authorized by NMFS. The specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from in-water noise from construction activities.

Effects on individuals that are taken by Level B harassment, on the basis reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions from these low intensity, localized, and short-term noise exposures that may cause brief startle reactions or short-term behavioral modifications by the animals. These reactions and behavioral changes are expected to subside quickly when the exposures cease. Moreover, marine mammals are expected to avoid the area during in-water construction because animals generally move away from active sound sources, thereby reducing exposure and impacts. In addition, through mitigation measures including soft start, marine mammals are expected to move away from a sound source that is annoying prior to its becoming potentially injurious and detection of marine mammals by observers will enable the implementation of shutdowns to avoid injury. Repeated exposures of

individuals to levels of noise disturbance that may cause Level B harassment are unlikely to result in hearing impairment or to significantly disrupt foraging behavior.

In-water construction activities will occur in relatively shallow coastal waters of Cobscook Bay. The project area is not considered significant habitat for marine mammals and therefore no adverse effects on marine mammal habitat are expected. Marine mammals approaching the action area will likely be traveling or opportunistically foraging. There are no rookeries or major haul-out sites nearby, foraging hotspots, or other ocean bottom structure of significant biological importance to marine mammals that may be present in the marine waters in the vicinity of the project area. The closest significant pinniped haul out is more than six nmi away, which is well outside the project area's largest harassment zone. The 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 associated with breakwater replacement activities are expected to affect only small numbers of marine mammals on an infrequent basis. Although it is possible that some individual marine mammals may be exposed to sounds from in-water construction activities more than once, the duration of these multi-exposures is expected to be low since animals will be constantly moving in and out of the area and in-water construction activities will not occur continuously throughout the day.

Harbor and gray seals, harbor porpoise, Atlantic white-sided dolphins and minke whales as the potentially affected marine mammal species under NMFS' jurisdiction in the action area, are not listed as threatened or endangered under the ESA and are not considered strategic under the MMPA. Because of the low level of impact, even repeated

Level B harassment of some small subset of the overall stocks is unlikely to result in any significant realized decrease in fitness to those individuals, and thus would not result in any adverse impact to the stocks as a whole. Additionally, Level B harassment will be reduced to the level of least practicable impact through use of mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to avoid the project area while the activity is occurring.

In summary, this negligible impact analysis is founded on the following factors: (1) The possibility of injury, serious injury, or mortality may reasonably be considered discountable; (2) The anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior; (3) There is no known foraging or reproductive habitat in the project area and the project activities are not expected to result in the alteration of habitat important to these behaviors or substantially impact the behaviors themselves; (4) There is no major haul out habitat within six nmi of the project area; (5) The project area is not a prime habitat for marine mammals, nor will the activity otherwise have adverse effects on marine mammal habitat; and (6) Mitigation measures are expected to be effective in reducing the effects of the specified activity to the level of least practicable impact. In addition, these stocks are not listed under the ESA or considered depleted under the MMPA. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities will have only short-term effects on individuals. The specified activities are not expected to have adverse effects on annual rates of recruitment or survival and will therefore not result in population-level impacts.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, we preliminarily find that the total marine mammal take from the construction activities will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers

The amount of take NMFS is authorizing is considered small, less than one percent relative to the estimated populations for harbor porpoises, Atlantic white-sided dolphins, and minke whales and 2.11 percent for harbor seals. Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, NMFS finds that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

No ESA-listed marine mammal species under NMFS' jurisdiction or their designated critical habitat are expected to be affected by these activities. Therefore, we have determined that a consultation under the ESA is not required. The applicant consulted with the NMFS' GARFO for federally listed fish species.

National Environmental Policy Act (NEPA)

NMFS prepared an EA and analyzed the potential impacts to marine mammals that will result from the EBRP. A Finding of No Significant Impact (FONSI) was signed January 2017. A copy of the EA and FONSI is available upon request (see ADDRESSES).

Authorization

NMFS has issued an IHA to ME DOT for the potential harassment of small numbers of marine mammals incidental to the EBRP in Eastport, ME, provided the previously mentioned mitigation, monitoring and reporting.

Dated: March 8, 2017.

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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