



## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[RTID 0648-XB162]

#### **Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys off of Delaware and New Jersey**

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

**ACTION:** Notice; issuance of 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 IHA to Garden State Offshore Energy, LLC (Garden State) to incidentally harass, by Level B harassment, marine mammals incidental to marine site characterization surveys offshore of Delaware and New Jersey in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0482) and along potential export cable routes to landfall locations in Delaware and New Jersey.

**DATES:** This authorization is effective from June 11, 2021 through June 10, 2022.

**FOR FURTHER INFORMATION CONTACT:** Carter Esch, Office of Protected Resources, NMFS, (301) 427-8421. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

**SUPPLEMENTARY INFORMATION:**

## **Background**

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be 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) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

## **Summary of Request**

On November 2, 2020, NMFS received a request from Garden State for an IHA to take marine mammals incidental to marine site characterization surveys offshore of Delaware and New Jersey in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0482) and

along potential export cable routes (ECRs) to a landfall location in Delaware and New Jersey. Following NMFS' review of the draft application, a revised version was submitted on March 30, 2021. The application was deemed adequate and complete on April 5, 2021. Garden State's request is for take of a small number of 16 species of marine mammals (with 17 managed stocks) by Level B harassment only. Neither Garden State nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

### **Description of Specified Activity**

#### *Overview*

As part of its overall marine site characterization survey operations, Garden State plans to conduct high-resolution geophysical (HRG) surveys in the Lease Area and along potential ECRs to landfall locations in Delaware and New Jersey.

The purpose of the marine site characterization surveys is to obtain a baseline assessment of seabed (geophysical, geotechnical, and geohazard), ecological, and archeological conditions within the footprint of offshore wind facility development. Surveys are also conducted to support engineering design and to map unexploded ordnance. Underwater sound resulting from Garden State's site characterization survey activities, specifically HRG surveys, has the potential to result in incidental take of marine mammals in the form of Level B harassment. Table 1 identifies representative survey equipment with the expected potential to result in exposure of marine mammals and potentially result in take. The survey activities planned by Garden State are described in detail in the notice of the proposed IHA (86 FB 22160; April 27, 2021).

#### *Dates and Duration*

The estimated duration of HRG survey activity is expected to be up to 350 survey days over the course of a single year ("survey day" defined as a 24-hour (hr) activity period), with 200 vessel survey days expected in the Lease Area and 150 vessel survey

days expected in the ECR area. This schedule is based on 24-hour operations and includes potential down time due to inclement weather. Although some shallow-water locations may be surveyed by a smaller vessel during daylight hours only, the estimated number of survey days assumes uniform 24-hr operations.

*Specific Geographic Region*

The survey activities will occur within the Project Area which includes the Lease Area and potential ECRs to landfall locations, as shown in Figure 1 of the notice of the proposed IHA. The Lease Area is approximately 284 square kilometers (km<sup>2</sup>) and is within the Delaware Wind Energy Area (WEA) of the Bureau of Ocean Energy Management (BOEM) Mid-Atlantic planning area. Water depths in the Lease Area range from 15 meters (m) to 30 m. Water depths in the ECR area extend from the shoreline to approximately 30 m.

**Table 1—Summary of Representative HRG Survey Equipment**

Equipment	Acoustic Source Type	Operating Frequency (kHz)	SL <sub>rms</sub> (dB re 1 μPa m)	SL <sub>0-pk</sub> (dB re 1 μPa m)	Pulse Duration (width) (millisecond)	Repetition Rate (Hz)	Beamwidth (degrees)	CF= Crocker and Fratantonio (2016) MAN = Manufacturer
Non-impulsive, Non-parametric, Shallow Sub-bottom Profilers (CHIRP Sonars)								
ET 216 (2000DS or 3200 top unit)	Non-impulsive, mobile, intermittent	2–16 2–8	195	-	20	6	24	MAN
ET 424	Non-impulsive, mobile, intermittent	4–24	176	-	3.4	2	71	CF
ET 512	Non-impulsive, mobile, intermittent	0.7–12	179	-	9	8	80	CF
GeoPulse 5430A	Non-impulsive, mobile, intermittent	2–17	196	-	50	10	55	MAN
Teledyne Benthos Chirp III - TTV 170	Non-impulsive, mobile, intermittent	2–7	197	-	60	15	100	MAN
Impulsive, Medium Sub-bottom Profilers (Sparkers & Boomers)								
AA, Dura-spark UHD (400 tips, 500 J) <sup>1</sup>	Impulsive, mobile	0.3–1.2	203	211	1.1	4	Omni	CF
AA, Dura-spark UHD (400+400) <sup>1</sup>	Impulsive, mobile	0.3–1.2	203	211	1.1	4	Omni	CF (AA Dura-spark UHD Proxy)
GeoMarine, Geo-Source dual 400 tip sparker (800 J) <sup>1</sup>	Impulsive, mobile	0.4–5	203	211	1.1	2	Omni	CF (AA Dura-spark UHD Proxy)
GeoMarine Geo-Source 200 tip sparker (400 J) <sup>1</sup>	Impulsive, mobile	0.3–1.2	203	211	1.1	4	Omni	CF (AA Dura-spark UHD Proxy)
GeoMarine Geo-Source 200-400 tip light weight sparker (400 J) <sup>1</sup>	Impulsive, mobile	0.3–1.2	203	211	1.1	4	Omni	CF (AA Dura-spark UHD Proxy)
GeoMarine Geo-Source 200-400 tip freshwater sparker (400 J) <sup>1</sup>	Impulsive, mobile	0.3–1.2	203	211	1.1	4	Omni	CF (AA Dura-spark UHD Proxy)
AA, triple plate S-Boom (700–1,000 J) <sup>2</sup>	Impulsive, mobile	0.1–5	205	211	0.6	4	80	CF

- = not applicable; NR = not reported;  $\mu\text{Pa}$  = micropascal; AA = Applied Acoustics; dB = decibel; ET = EdgeTech; HF = high-frequency; J = joule; LF = low-frequency; Omni = omnidirectional source; re = referenced to; PK = zero-to-peak sound pressure level; SL = source level;  $\text{SPL}_{\text{rms}}$  = root-mean-square sound pressure level; UHD = ultra-high definition; WFA = weighting factor adjustments.

<sup>1</sup>The Dura-spark measurements and specifications provided in Crocker and Fratantonio (2016) were used for all sparker systems proposed for the survey. The data provided in Crocker and Fratantonio (2016) represent the most applicable data for similar sparker systems with comparable operating methods and settings when manufacturer or other reliable measurements are not available.

<sup>2</sup>Crocker and Fratantonio (2016) provide S-Boom measurements using two different power sources (CSP-D700 and CSP-N). The CSP-D700 power source was used in the 700 J measurements but not in the 1,000 J measurements. The CSP-N source was measured for both 700 J and 1,000 J operations but resulted in a lower SL; therefore, the single maximum SL value was used for both operational levels of the S-Boo

As noted above, a detailed description of Garden State's planned surveys is provided in the **Federal Register** notice for the proposed IHA (86 FR 22160; April 27, 2021). Since that time, no changes have been made to the planned survey activities; therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the more thorough description of the specified activity. Required mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Mitigation and Monitoring and Reporting**).

### **Comments and Responses**

A notice of NMFS' proposal to issue an IHA to Garden State was published in the **Federal Register** on April 27, 2021 (86 FR 22160). During the 30-day comment period, NMFS received comments from: 1) a group of environmental non-governmental organizations (ENGOs) including the Natural Resources Defense Council, Conservation Law Foundation, National Wildlife Federation, Defenders of Wildlife, Southern Environmental Law Center, Wildlife Conservation Society, Surfrider Foundation, Mass Audubon, Friends of the Earth, International Fund for Animal Welfare, NY4WHALES, WDC Whale and Dolphin Conservation, Marine Mammal Alliance Nantucket, Gotham Whale, All Our Energy, Seatuck Environmental Association, Inland Ocean Coalition, Nassau Hiking & Outdoor Club, and Connecticut Audubon Society; and 2) the Delaware Department of Resources and Environmental Control (DNREC).

NMFS has posted the comments online at: [www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable](http://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable). Please see the letters for full detail and rationale for the comments.

*Comment 1:* The ENGOs recommended that NMFS incorporate additional data sources into calculations of marine mammal density and take and that NMFS must ensure all available data are used to ensure that any potential shifts in North Atlantic right whale habitat usage are reflected in estimations of marine mammal density and take. The

ENGOS asserted in general that the density models used by NMFS do not fully reflect the abundance, distribution, and density of marine mammals for the U.S. East Coast and therefore result in an underestimate of take.

*Response:* At the outset of their letter, the ENGOS note that the comments reflect overarching concerns regarding NMFS' IHAs for marine site characterization survey (including HRG survey) activities required for offshore wind energy development, as well as their intention that the comments be considered in relation to all authorizations associated with marine site characterization activities for offshore wind energy off the U.S. East Coast. The comments provided in the letter apparently focus concern on available data regarding the Massachusetts and Rhode Island and Massachusetts Wind Energy Areas, and on North Atlantic right whale habitat usage within those areas. As such, the specific comments pertaining to those data and right whale habitat usage within those areas are not germane to this specific action, *i.e.*, issuance of an IHA associated with HRG survey activity off of Delaware and New Jersey. We address the general comments regarding sufficiency of the available data on marine mammal occurrence below.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Lab (MGEL) (Roberts *et al.* 2016, 2017, 2018, 2020) represent the best available scientific information concerning marine mammal occurrence within the U.S. Atlantic Ocean. Density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016); more information, including the model results and supplementary information for each of those models, is available at <https://seamap.env.duke.edu/models/Duke/EC/>. These models provided key improvements over previously available information, by incorporating additional aerial and shipboard survey data from NMFS and from other organizations collected over the period 1992-2014, incorporating 60 percent more shipboard and 500 percent more aerial



survey hours than did previously available models; controlling for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting; and modeling density from an expanded set of eight physiographic and 16 dynamic oceanographic and biological covariates. In subsequent years, certain models have been updated on the basis of additional data as well as methodological improvements. In addition, a new density model for seals was produced as part of the 2017-18 round of model updates.

Of particular note, Roberts *et al.* (2020) further updated density model results for North Atlantic right whales by incorporating additional sighting data and implementing three major changes: increasing spatial resolution, generating monthly estimates on three time periods of survey data, and dividing the study area into five discrete regions. This most recent update—model version 9 for North Atlantic right whales—was undertaken with the following objectives (Roberts *et al.*, 2020):

- To account for recent changes to right whale distributions, the model should be based on survey data that extend through 2018, or later if possible. In addition to updates from existing collaborators, data should be solicited from two survey programs not used in prior model versions:
  - Aerial surveys of the Massachusetts and Rhode Island Wind Energy Areas led by New England Aquarium (Kraus *et al.*, 2016), spanning 2011-2015 and 2017-2018.
  - Recent surveys of New York waters, either traditional aerial surveys initiated by the New York State Department of Environmental Conservation in 2017, or digital aerial surveys initiated by the New York State Energy Research and Development Authority in 2016, or both.
- To reflect a view in the right whale research community that spatiotemporal patterns in right whale density changed around the time the species entered a decline in approximately 2010, consider basing the new model only on recent

years, including contrasting “before” and “after” models that might illustrate shifts in density, as well as a model spanning both periods, and specifically consider which model would best represent right whale density in the near future.

- To facilitate better application of the model to near-shore management questions, extend the spatial extent of the model farther in-shore, particularly north of New York.
- Increase the resolution of the model beyond 10 kilometers (km), if possible.

All of these objectives were met in developing the most recent update to the North Atlantic right whale density model. The commenters do not cite this most recent report, and the comments suggest that the aforementioned data collected by the New England Aquarium is not reflected in the model. Therefore, it is unclear whether the commenters are aware of the most recently available data, which is used herein.

As noted above, NMFS has determined that the Roberts *et al.* suite of density models represent the best available scientific information, and we specifically note that the 2020 version of the North Atlantic right whale model may address some of the specific concerns provided by the commenters. (Note that there has been an additional minor model update affecting predictions for Cape Cod Bay in the month of December, which is not relevant to the location of this survey off of Delaware and New Jersey.) However, NMFS acknowledges that there will always be additional data that is not reflected in the models and that may inform our analyses, whether because the data were not made available to the model authors or because the data is more recent than the latest model version for a specific taxon. NMFS will review any recommended data sources to evaluate their applicability in a quantitative sense (*e.g.*, to an estimate of take numbers) and, separately, to ensure that relevant information is considered qualitatively when assessing the impacts of the specified activity on the affected species or stocks and their

habitat. NMFS will continue to use the best available scientific information, and we welcome future input from interested parties on data sources that may be of use in analyzing the potential presence and movement patterns of marine mammals, including North Atlantic right whales, in U.S. Atlantic waters.

The ENGOs cited several additional sources of information that are not reflected in currently available density models, including sightings databases and passive acoustic monitoring (PAM) efforts. However, no specific recommendations were made with regard to use of this information in informing the take estimates. Rather, the commenters reference a disparate array of data sources (some which are indeed reflected in the most recent models) and suggest that NMFS should “collate and integrate these and more recent data sets to more accurately reflect marine mammal presence for future IHAs and other work.” NMFS would welcome in the future constructive suggestions as to how these objectives might be more effectively accomplished. NMFS used the best scientific information available at the time the analyses for the proposed IHA were conducted, and has considered all available data, including sources referenced by the commenters, in reaching its determinations in support of issuance of the IHA requested by Garden State.

*Comment 2:* The ENGOs noted that the Roberts *et al.* model does not differentiate between species of pilot whale or seal or between stocks of bottlenose dolphin. The ENGOs express concern that, as a result, NMFS may not conduct the appropriate species- or stock-specific negligible impact analysis. The ENGOs also imply that use of these models may produce inaccurate take numbers by stating that “[m]iscalculation of take levels based on incomplete data could have serious implications for the future conservation of these species and stocks.”

*Response:* The MMPA requires that species- or stock-specific negligible impact determinations be made, and NMFS has done so. In this case, NMFS has authorized take numbers specific to each affected species or stock. As a general matter, NMFS is

unaware of any available density data which differentiates between species of pilot whales or seals, or stocks of bottlenose dolphins. However, lack of such data does not preclude the requisite species- or stock-specific findings. In the event that an amount of take is authorized at the guild or species level only, *e.g.*, for pilot whales or bottlenose dolphins, respectively, NMFS may adequately evaluate the effects of the activity by conservatively assuming (for example) that all takes authorized for the guild or species would accrue to each potentially affected species or stock. In this case, NMFS has apportioned the overall take number for bottlenose dolphins according to stock, as described in the Estimated Take section and, for pilot whales, has assigned take on the basis of an assumed group size of 10 for each potentially affected species. NMFS does not agree that use of these models is likely to result in miscalculation of take levels, and the commenters do not provide support for this statement.

*Comment 3:* The ENGOs assert that NMFS has not acknowledged the use of areas south of Nantucket and Martha's Vineyard as important habitat for foraging and social behavior for North Atlantic right whales, but rather that NMFS believes the areas are important solely as a migratory pathway. The commenters also asserted that NMFS is overly reliant on the description of biologically important areas (BIA) provided in LaBrecque *et al.* (2015), stating that "NMFS should not rely on the North Atlantic right whale migratory corridor BIA as the sole indicator of habitat importance for the species."

*Response:* The specified activity associated with the IHA addressed herein is located off of Delaware and New Jersey. Therefore, this comment is not relevant to issuance of this IHA. However, as a general matter, NMFS disagrees with the commenters' assertion. Although NMFS has in other notices discussed at length the use of the referenced area as a migratory pathway (and recognition of such use through the area's description as a BIA for right whales), we have also acknowledged the more recent data and its implications for the use of the referenced area (85 FR 63508; December 7,

2018; 86 FR 11930; March 1, 2021). Similarly, NMFS does not agree with the assertion that our understanding of important habitat for marine mammals stems solely from existing, described BIAs. NMFS concurs with the statement that BIAs are not comprehensive and are intended to be periodically reviewed and updated and we routinely review newly available information to inform our understanding of important marine mammal habitat. In this case, the specified geographical region does not include important habitat other than that described as being the migratory pathway for right whales.

*Comment 4:* The ENGOs commented that the waters off Cape Hatteras, North Carolina, have high marine mammal biodiversity and that marine mammals occur at unusually high densities off Cape Hatteras compared to other areas along the East Coast. The ENGOs asserted that this area demands special attention from NMFS.

*Response:* NMFS concurs with the commenters regarding the importance of deepwater areas off of Cape Hatteras. However, the specific activity associated with the IHA addressed herein does not occur off of Cape Hatteras and, in general, the site characterization surveys conducted in support of wind energy development that are the subject of the ENGO comment letter occur in shallow water (not the area of high biodiversity and density referenced by commenters). When appropriate, NMFS has accorded special attention to the development of additional mitigation for activities conducted in that location (83 FR 63268; December 7, 2018). NMFS uses the best available scientific information when analyzing potential impacts to marine mammals and in developing prescribed mitigation sufficient to meet the MMPA's "least practicable adverse impact" standard, and has done so in this case.

*Comment 5:* The ENGOs asserted that NMFS must analyze cumulative impacts to North Atlantic right whales and other marine mammal species and stocks and ensure appropriate mitigation of these cumulative impacts. The ENGOs express particular

concern about the cumulative impacts of survey activities off Rhode Island and Massachusetts on North Atlantic right whales. They further recommended that NMFS develop programmatic incidental take regulations applicable to site characterization activities. DNREC noted that an IHA was recently issued to Skipjack for take of marine mammals incidental to marine site characterization surveys offshore of Delaware (86 FR 18943; April 12, 2021) and recommended that NMFS consider the potential cumulative impacts of Skipjack and Garden State surveys prior to issuing an IHA to Garden State.

*Response:* Neither the MMPA nor NMFS' codified implementing regulations call for consideration of other unrelated activities and their impacts on populations. The preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989) states in response to comments that the impacts from other past and ongoing anthropogenic activities are to be incorporated into the negligible impact analysis via their impacts on the baseline. Consistent with that direction, NMFS has factored into its negligible impact analysis the impacts of other past and ongoing anthropogenic activities via their impacts on the baseline, *e.g.*, as reflected in the density/distribution and status of the species, population size and growth rate, and other relevant stressors. The 1989 implementing regulations also addressed public comments regarding cumulative effects from future, unrelated activities. There NMFS stated that such effects are not considered in making findings under section 101(a)(5) concerning negligible impact. In this case, both this IHA, as well as other IHAs currently in effect or proposed within the specified geographic region, are appropriately considered an unrelated activity relative to the others. The IHAs are unrelated in the sense that they are discrete actions under section 101(a)(5)(D), issued to discrete applicants. Therefore, the IHA issued to Skipjack for take associated with marine site characterization surveys is considered discrete from and unrelated to Garden State's IHA.

Section 101(a)(5)(D) of the MMPA requires NMFS to make a determination that the take incidental to a “specified activity” will have a negligible impact on the affected species or stocks of marine mammals. NMFS’ implementing regulations require applicants to include in their request a detailed description of the specified activity or class of activities that can be expected to result in incidental taking of marine mammals. 50 CFR 216.104(a)(1). Thus, the “specified activity” for which incidental take coverage is being sought under section 101(a)(5)(D) is generally defined and described by the applicant. Here, Garden State was the applicant for the IHA, and we are responding to the specified activity as described in that application (and making the necessary findings on that basis).

Through the response to public comments in the 1989 implementing regulations, we also indicated (1) that NMFS would consider cumulative effects that are reasonably foreseeable when preparing a NEPA analysis, and (2) that reasonably foreseeable cumulative effects would also be considered under section 7 of the ESA for ESA-listed species. In this case, cumulative impacts have been adequately addressed under NEPA in prior environmental analyses that form the basis for NMFS’ determination that this action is appropriately categorically excluded from further NEPA analysis. Regarding activities in the Mid- and South Atlantic region, in 2018 NMFS signed a Record of Decision that (1) adopted the Bureau of Ocean Energy Management’s 2014 Final Programmatic Environmental Impact Statement that evaluated the direct, indirect, and cumulative impacts of geological and geophysical survey activities on the Mid- and South Atlantic Outer Continental Shelf to support NMFS’ analysis associated with issuance of incidental take authorizations pursuant to sections 101(a)(5)(A) or (D) of the MMPA and the regulations governing the taking and importing of marine mammals (50 CFR Part 216), and (2) in accordance with 40 CFR 1505.2, announced and explained the basis for our decision to review and potentially issue incidental take authorizations under the MMPA

on a case-by-case basis, if appropriate. Separately, NMFS has previously written Environmental Assessments (EA) that addressed cumulative impacts related to substantially similar activities, in similar locations, *e.g.*, 2019 Ørsted EA for survey activities offshore southern New England; 2019 Avangrid EA for survey activities offshore North Carolina and Virginia; 2018 Deepwater Wind EA for survey activities offshore Delaware, Massachusetts, and Rhode Island.

Separately, cumulative effects were analyzed as required through NMFS' required intra-agency consultation under section 7 of the ESA, which determined that NMFS' action of issuing the IHA is not likely to adversely affect listed marine mammals or their critical habitat.

Finally, the ENGOs suggested that NMFS should promulgate programmatic incidental take regulations for site characterization activities. Although NMFS is open to this approach, we have not received a request for such regulations. The ENGOs do not explain their apparent position that NMFS may advance regulations absent a requester.

*Comment 6:* The ENGOs state that NMFS should not adjust estimated take numbers for large whales on the basis of assumed efficacy of mitigation requirements, and assert that NMFS' assumptions regarding effectiveness of mitigation requirements are unfounded.

*Response:* In this case, NMFS did not propose to adjust downward any estimated take number based on proposed mitigation measures, and has not done so in the issued IHA. Therefore, the comment is not relevant to this specific action. Generally, NMFS does not agree with the apparent contention that it is never appropriate to reduce estimated take numbers based on anticipated implementation and effectiveness of mitigation measures, and will continue to evaluate the appropriateness of doing so on a case-specific basis.



While we acknowledge the commenters' concerns regarding unfounded assumptions concerning the effectiveness of mitigation requirements in reducing actual take, it is important to also acknowledge the circumstances of a particular action. In most cases, the maximum estimated Level B harassment zone associated with commonly-used acoustic sources is approximately 150 meters (m), whereas the typically-required shutdown zone for North Atlantic right whales is 500 m. For North Atlantic right whales, NMFS expects that this requirement will indeed be effective in reducing actual take below the estimated amount, which typically does not account for the beneficial effects of mitigation.

*Comment 7:* The ENGOs state that NMFS must require mitigation measures that meet the least practicable adverse impact standard, imply that the requirements prescribed by NMFS have not met that standard, and recommend various measures that the commenters state NMFS should require.

The ENGOs first state that NMFS should prohibit site assessment and characterization activities involving equipment with noise levels that the commenters assert could cause injury or harassment to North Atlantic right whales during periods of highest risk, which the commenters define as times of highest relative density of animals during their migration, and times when mother-calf pairs, pregnant females, surface active groups, or aggregations of three or more whales are, or are expected to be, present. The commenters additionally state that NMFS should require that work commence only during daylight hours and good visibility conditions to maximize the probability that marine mammals are detected and confirmed clear of the exclusion zone before activities begin. If the activity is halted or delayed because of documented or suspected North Atlantic right whale presence in the area, the commenters state that NMFS should require operators to wait until daylight hours and good visibility conditions to recommence.

*Response:* NMFS acknowledges the limitations inherent in detection of marine mammals at night. However, no injury is expected to result even in the absence of mitigation, given the characteristics of the sources planned for use (supported by the very small estimated Level A harassment zones). The ENGOs do not provide any support for the apparent contention that injury is a potential outcome of these activities. Regarding Level B harassment, any potential impacts would be limited to short-term behavioral responses, as described in greater detail herein. The commenters establish that the status of North Atlantic right whales in particular is precarious. NMFS agrees in general with the discussion of this status provided by the commenters. NMFS also agrees with the commenters that certain recommended mitigation requirements, *e.g.*, avoiding impacts in places and times of greatest importance to marine mammals, limiting operations to times of greatest visibility, would be effective in reducing impacts. However, the commenters fail entirely to establish that Garden State's specified site assessment and characterization survey activities—or site assessment and characterization survey activities in general—would have impacts on North Atlantic right whales (or any other species) such that operational limitations would be warranted. In fact, NMFS considers this category of survey operations to be near de minimis, with the potential for Level A harassment for any species to be discountable and the severity of Level B harassment (and, therefore, the impacts of the take event on the affected individual), if any, to be low. In that context, there is no need for more restrictive mitigation requirements, and the commenters offer no justification to the contrary.

Restricting surveys in the manner suggested by the commenters may reduce marine mammal exposures by some degree in the short term, but would not result in any significant reduction in either intensity or duration of noise exposure. Vessels would also potentially be on the water for an extended time introducing noise into the marine environment. The restrictions recommended by the commenters could result in the

surveys spending increased time on the water, which may result in greater overall exposure to sound for marine mammals; thus the commenters have not demonstrated that such a requirement would result in a net benefit. Furthermore, restricting the applicant to begin operations only during daylight hours would have the potential to result in lengthy shutdowns of the survey equipment, which could result in the applicant failing to collect the data they have determined is necessary and, subsequently, the need to conduct additional surveys the following year. This would result in significantly increased costs incurred by the applicant. Thus, the restriction suggested by the commenters would not be practicable for the applicant to implement. Finally, NMFS is requiring the use of night vision equipment (night vision goggles with thermal clip-ons and infrared/thermal imaging technology) to facilitate detection of marine mammals approaching and within the exclusion zones during pre-start clearance and active survey operations during nighttime operations. In consideration of the likely effects of the activity on marine mammals absent mitigation, potential unintended consequences of the measures as proposed by the commenters, practicability of the recommended measures for the applicant, and required use of night vision equipment, NMFS has determined that restricting operations as recommended is not warranted or practicable in this case.

*Comment 8:* The ENGOs recommended that NMFS establish an exclusion zone (EZ) of 1,000-m around each vessel conducting activities with noise levels that they assert could result in injury or harassment to North Atlantic right whales, and a minimum EZ of 500 m for all other large whale species and strategic stocks of small cetaceans.

*Response:* NMFS disagrees with this recommendation, and has determined that the EZs included here are sufficiently protective. We note that the 500-m EZ for North Atlantic right whales exceeds the modeled distance to the largest Level B harassment isopleth distance (141 m) by a factor of more than three. The commenters do not provide

any justification for the contention that the existing EZs are insufficient, and do not provide any rationale for their recommended alternatives (other than that they are larger).

*Comment 9:* The ENGOs stated that NMFS' requirements related to visual monitoring are inadequate. The commenters specifically noted their belief that a requirement for one Protected Species Observer (PSO) to be on duty during daylight hours is insufficient, and recommended that NMFS require the use of infrared equipment to support visual monitoring by PSOs during periods of darkness. DNREC also recommended that infrared equipment be used to support visual monitoring by PSOs during periods of darkness.

*Response:* NMFS typically requires that a single PSO must be stationed at the highest vantage point and engaged in general 360-degree scanning during daylight hours only. Although NMFS acknowledges that the single PSO cannot reasonably maintain observation of the entire 360-degree area around the vessel, it is reasonable to assume that the single PSO engaged in continual scanning of such a small area (*i.e.*, 500-m EZ, which is greater than the maximum 141-m harassment zone) will be successful in detecting marine mammals that are available for detection at the surface. The monitoring reports submitted to NMFS have demonstrated that PSOs active only during daylight operations are able to detect marine mammals and implement appropriate mitigation measures. As far as visual monitoring at night, we have not historically required visual monitoring at night because available information demonstrated that such monitoring should not be considered effective. However, as night vision technology has continued to improve, NMFS has adapted its practice, and two PSOs are required to be on duty at night. Moreover, as previously noted, NMFS has included a requirement in the final IHA that night-vision equipment (*i.e.*, night-vision goggles with thermal clip-ons and infrared/thermal imaging technology) must be available for use.

Regarding specific technology cited by the ENGOs, NMFS appreciates the suggestion and agrees that relatively new detection platforms have shown promising results. Following review of the ENGO's letter, we considered these and other supplemental platforms as suggested. However, to our knowledge, there is no clear guidance available for operators regarding characteristics of effective systems, and the detection systems cited by the commenters are typically extremely expensive, and are therefore considered impracticable for use in most surveys. The commenters do not provide specific suggestions with regard to recommended systems or characteristics of systems. NMFS does not generally consider requirements to use systems such as those cited by the commenters to currently be practicable.

*Comment 10:* The ENGOs recommended that NMFS should require PAM at all times, both day and night, to maximize the probability of detection for North Atlantic right whales, and other species and stocks. DNREC also recommended the combined use of visual monitoring and PAM, especially during nighttime operations, to minimize impacts on protected species.

*Response:* The foremost concern expressed by the ENGOs in making the recommendation to require use of PAM is with regard to North Atlantic right whales. However, the commenters do not explain why they expect that PAM would be effective in detecting vocalizing mysticetes. It is generally well-accepted fact that, even in the absence of additional acoustic sources, using a towed passive acoustic sensor to detect baleen whales (including right whales) is not typically effective because the noise from the vessel, the flow noise, and the cable noise are in the same frequency band and will mask the vast majority of baleen whale calls. Vessels produce low-frequency noise, primarily through propeller cavitation, with main energy in the 5-300 Hertz (Hz) frequency range. Source levels range from about 140 to 195 decibel (dB) re 1  $\mu$ Pa (micropascal) at 1 m (NRC, 2003; Hildebrand, 2009), depending on factors such as ship

type, load, and speed, and ship hull and propeller design. Studies of vessel noise show that it appears to increase background noise levels in the 71-224 Hz range by 10-13 dB (Hatch *et al.*, 2012; McKenna *et al.*, 2012; Rolland *et al.*, 2012). PAM systems employ hydrophones towed in streamer cables approximately 500 m behind a vessel. Noise from water flow around the cables and from strumming of the cables themselves is also low-frequency and typically masks signals in the same range. Experienced PAM operators participating in a recent workshop (Thode *et al.*, 2017) emphasized that a PAM operation could easily report no acoustic encounters, depending on species present, simply because background noise levels rendered any acoustic detection impossible. The same workshop report stated that a typical eight-element array towed 500 m behind a vessel could be expected to detect delphinids, sperm whales, and beaked whales at the required range, but not baleen whales, due to expected background noise levels (including seismic noise, vessel noise, and flow noise).

There are several additional reasons why we do not agree that use of PAM is warranted for 24-hour HRG surveys. While NMFS agrees that PAM can be an important tool for augmenting detection capabilities in certain circumstances, its utility in further reducing impact during HRG survey activities is limited. First, for this activity, the area expected to be ensonified above the Level B harassment threshold is relatively small (a maximum of 141 m)—this reflects the fact that, to start with, the source level is comparatively low and the intensity of any resulting impacts would be lower level and, further, it means that inasmuch as PAM will only detect a portion of any animals exposed within a zone, the overall probability of PAM detecting an animal in the harassment zone is low—together these factors support the limited value of PAM for use in reducing take with smaller zones. PAM is only capable of detecting animals that are actively vocalizing, while many marine mammal species vocalize infrequently or during certain activities, which means that only a subset of the animals within the range of the PAM

would be detected (and potentially have reduced impacts). Additionally, localization and range detection can be challenging under certain scenarios. For example, odontocetes are fast moving and often travel in large or dispersed groups which makes localization difficult.

Given that the effects to marine mammals from the types of surveys authorized in this IHA are expected to be limited to low level behavioral harassment even in the absence of mitigation, the limited additional benefit anticipated by adding this detection method (especially for right whales and other low frequency cetaceans, species for which PAM has limited efficacy), and the cost and impracticability of implementing a full-time PAM program, we have determined the current requirements for visual monitoring are sufficient to ensure the least practicable adverse impact on the affected species or stocks and their habitat.

*Comment 11:* The ENGOs recommended that NMFS require applicants to use the lowest practicable source level.

*Response:* Wind energy developers selected the equipment necessary during HRG surveys to achieve their objectives. As part of the analysis for all HRG IHAs, NMFS evaluated the effects expected as a result of use of this equipment, made the necessary findings, and imposed mitigation requirements sufficient to achieve the least practicable adverse impact on the affected species and stocks of marine mammals. It is not within NMFS' purview to make judgments regarding what constitutes the "lowest practicable source level" for an operator's survey objectives.

*Comment 12:* The ENGOs recommended that NMFS require all offshore wind energy related project vessels operating within or transiting to/from survey areas, regardless of size, to observe a 10-knot speed restriction during the entire survey period.

*Response:* NMFS does not concur with these measures. NMFS has analyzed the potential for ship strike resulting from various HRG activities and has determined that the

mitigation measures specific to ship strike avoidance are sufficient to avoid the potential for ship strike. These include: a requirement that all vessel operators comply with 10 knot (18.5 km/hour) or less speed restrictions in any established dynamic management area (DMA) or seasonal management area (SMA); a requirement that all vessel operators reduce vessel speed to 10 knots (18.5 km/hour) or less when any large whale, mother/calf pairs, pods, or large assemblages of non-delphinid cetaceans are observed within 100 m of an underway vessel; a requirement that all survey vessels maintain a separation distance of 500 m or greater from any sighted North Atlantic right whale; a requirement that, if underway, vessels must steer a course away from any sighted North Atlantic right whale at 10 knots or less until the 500 m minimum separation distance has been established; a requirement that all vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales; and a requirement that all vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel). We have determined that the ship strike avoidance measures are sufficient to ensure the least practicable adverse impact on species or stocks and their habitat. Furthermore, no documented vessel strikes have occurred for any marine site characterization survey activities which were issued IHAs from NMFS.

*Comment 13:* The ENGOs recommend that NMFS work with relevant experts and stakeholders towards developing a robust and effective near real-time monitoring and mitigation system for North Atlantic right whales and other endangered and protected species (*e.g.*, fin, sei, minke, and humpback whales) during offshore wind energy development.

*Response:* NMFS is generally supportive of this concept. A network of near real-time baleen whale monitoring devices are active or have been tested in portions of New



England and Canadian waters. These systems employ various digital acoustic monitoring instruments which have been placed on autonomous platforms including slocum gliders, wave gliders, profiling floats and moored buoys. Systems that have proven to be successful will likely see increased use as operational tools for many whale monitoring and mitigation applications. The ENGOS cited the NMFS publication “Technical Memorandum NMFS-OPR-64: North Atlantic Right Whale Monitoring and Surveillance: Report and Recommendations of the National Marine Fisheries Service's Expert Working Group” which is available at: <https://www.fisheries.noaa.gov/resource/document/north-atlantic-right-whale-monitoring-and-surveillance-report-and-recommendations>. This report summarizes a workshop NMFS convened to address objectives related to monitoring North Atlantic right whales and presents the Expert Working Group's recommendations for a comprehensive monitoring strategy to guide future analyses and data collection. Among the numerous recommendations found in the report, the Expert Working Group encouraged the widespread deployment of auto-buoys to provide near real-time detections of North Atlantic right whale calls that visual survey teams can then respond to for collection of identification photographs or biological samples.

*Comment 14:* The ENGOS state that NMFS must not issue renewal IHAs, and assert that the process is contrary to statutory requirements.

*Response:* NMFS' IHA renewal process meets all statutory requirements. All IHAs issued, whether an initial IHA or a renewal IHA, are valid for a period of not more than one year. And the public has at least 30 days to comment on all proposed IHAs, with a cumulative total of 45 days for IHA renewals. The notice of the proposed IHA published in the **Federal Register** on April 27, 2021 (86 FR 22160) made clear that the agency was seeking comment on both the initial proposed IHA and the potential issuance of a renewal for this project. Because any renewal (as explained in the **Comments and Responses** section) is limited to another year of identical or nearly identical activities in

the same location (as described in the **Description of Specified Activity** section) or the same activities that were not completed within the 1-year period of the initial IHA, reviewers have the information needed to effectively comment on both the immediate proposed IHA and a possible 1-year renewal, should the IHA holder choose to request one in the coming months.

While there will be additional documents submitted with a renewal request, for a qualifying renewal these will be limited to documentation that NMFS will make available and use to verify that the activities are identical to those in the initial IHA, are nearly identical such that the changes would have either no effect on impacts to marine mammals or decrease those impacts, or are a subset of activities already analyzed and authorized but not completed under the initial IHA. NMFS will also confirm, among other things, that the activities will occur in the same location; involve the same species and stocks; provide for continuation of the same mitigation, monitoring, and reporting requirements; and that no new information has been received that would alter the prior analysis. The renewal request will also contain a preliminary monitoring report, in order to verify that effects from the activities do not indicate impacts of a scale or nature not previously analyzed. The additional 15-day public comment period provides the public an opportunity to review these few documents, provide any additional pertinent information and comment on whether they think the criteria for a renewal have been met. Between the initial 30-day comment period on these same activities and the additional 15 days, the total comment period for a renewal is 45 days.

*Comment 15:* The ENGOs expressed concern about past instances where NMFS has modified issued IHAs in response to preliminary monitoring data indicating that certain species of marine mammal were being encountered more frequently than anticipated.

*Response:* No modifications are included as part of this action and, therefore, this comment is not relevant to this IHA.

*Comment 16:* DNREC recommended that NMFS require the implementation of seasonal restrictions on site characterization activities that have the potential to injure or harass the North Atlantic right whale from November 1 through April 30.

*Response:* NMFS is concerned about the status of the North Atlantic right whale, given that a UME has been in effect for this species since June of 2017 and that there have been a number of recent mortalities. NMFS appreciates the value of seasonal restrictions under some circumstances. However, in this case, we have determined seasonal restrictions are not warranted. NMFS is requiring Garden State to comply with restrictions associated with identified SMAs and they must comply with DMAs, if any DMAs are established near the project area. Furthermore, we have established a 500-m shutdown zone for North Atlantic right whales, which is more than three times as large as the greatest Level B harassment isopleth calculated for the specified activities for this IHA. The largest behavioral isopleth is 141 m associated with the Applied Acoustics Dura-Spark UHD and GeoMarine Geo-Source sparkers. Take estimation conservatively assumes that these acoustic sources will operate on all survey days although it is probable that Garden State will only use sparkers on a subset of survey days, and on the remaining days utilize HRG equipment with considerably smaller Level B harassment isopleths. Therefore, the number of Level B harassment takes is likely an overestimate. Finally, significantly shortening Garden State's work season is impracticable given the number of survey days planned for the specified activity for this IHA.

*Comment 17:* DNREC noted that NMFS published an extension of emergency measures to address fishery observer coverage during the COVID-19 coronavirus pandemic, providing NMFS with continued authority under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to waive observer coverage

requirements when such action is necessary due to the COVID-19 public health emergency (85 FR 17285; March 27, 2020). DNREC's understanding is that this emergency action is not related to the PSO requirement under the MMPA, and that NMFS does not have any intention of waiving the PSO requirement for Garden State's marine site characterization surveys.

*Response:* DNREC is correct in its understanding that the extension of emergency measures providing NMFS with the authority to waive fishery observer coverage under the MSA does not apply to required PSO coverage under an issued MMPA IHA.

### **Changes from the Proposed IHA to Final IHA**

NMFS has clarified that night vision equipment PSOs will be required to use during nighttime survey operations will include night vision goggles with thermal clip-ons and infrared/thermal imagery.

### **Description of Marine Mammals in the Area of Specified Activities**

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs;

*<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about these species (e.g., physical and behavioral descriptions) may be found on NMFS' website (<https://www.fisheries.noaa.gov/find-species>).*

Table 2 lists all species or stocks for which take is authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, NMFS follows the Committee on Taxonomy

(2020). PBR is 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 (as described in NMFS’ SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS’ stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS’ U.S. Atlantic and Gulf of Mexico SARs. All values presented in Table 2 are the most recent available at the time of publication and are available in the 2019 SARs (Hayes *et al.*, 2020) and draft 2020 SRS available (except as otherwise noted) at:

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports>.

**Table 2—Marine Mammal Species Likely to Occur near the Project Area That May be Affected by Garden State’s Activity**

Common name	Scientific name	Stock	ESA/MMP A status; Strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR	Annual M/SI <sup>3</sup>
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale <sup>4</sup>	<i>Eubalaena glacialis</i>	Western North Atlantic	E/D; Y	368 (0; 356; 2020)	0.8	18.6
Family Balaenopteridae (rorquals)						

Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	-/-; Y	1,393 (0; 1,375; 2016)	22	58
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic	E/D; Y	6,802 (0.24; 5,573; 2016)	11	2.35
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	E/D; Y	6,292 (1.015; 3,098)	6.2	1.2
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coast	-/-; N	21,968 (0.31; 17,002; 2016)	170	10.6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae						
Sperm whale	<i>Physeter macrocephalus</i>	NA	E; Y	4,349 (0.28;3,451)	3.9	0
Family Delphinidae						
Long-finned pilot whale	<i>Globicephala melas</i>	Western North Atlantic	-/-; N	39,215 (0.30; 30,627)	306	21
Short finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Atlantic	-/-;Y	28,924 (0.24; 23,637)	236	160
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic Offshore	-/-; N	62,851 (0.23; 51,914)	519	28
		W.N.A. Northern Migratory Coastal	-/-;Y	6,639 (0.41,4 ,759, 2016)	48	12.2-21.5
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	-/-; N	172,947 (0.21; 145,216; 2016)	1,452	399
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	Western North Atlantic	-/-; N	93,233 (0.71; 54,443)	544	26
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic	-/-; N	39,921 (0.27; 32,032; 2012)	320	0
Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic	-/-; N	35,493 (0.19; 30,289)	303	54.3
Family Phocoenidae (porpoises)						

Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	-/-; N	95,543 (0.31; 74,034)	851	217
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Gray seal <sup>5</sup>	<i>Halichoerus grypus</i>	Western North Atlantic	-/-; N	27,131 (0.19; 23,158, 2016)	1,389	4,729
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic	-/-; N	75,834 (0.15; 66,884, 2018)	2,006	350

<sup>1</sup> 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 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.

<sup>2</sup> NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.

<sup>3</sup> These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

<sup>4</sup> Abundance source is Pace (2021). PBR and Annual M/SI source is draft 2020 SAR (Hayes et al. 2020). Because PBR is based on the minimum population estimate, we anticipate it will be slightly lower than what is presented here given the Pace (2021) abundance; however, the 2020 SARs are not yet finalized. Regardless of final numbers, NMFS recognizes the NARW stock is critically endangered with a low PRB and high annual M/SI rate due primarily to ship strikes and entanglement.

<sup>5</sup> The NMFS stock abundance estimate applies to U.S. population only, however the actual stock abundance is approximately 451,431.

As indicated above, all 16 species (with 17 managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur and has been authorized by NMFS. In addition to what is included in Sections 3 and 4 of the application, the SARs, and NMFS' website, further detail informing the baseline for select species (i.e., information regarding current Unusual Mortality Events (UME) and important habitat areas) was provided in the notice of the proposed IHA (86 FR 22160; April 27, 2021) and is not repeated here. Except for the updated North Atlantic right whale abundance (Pace 2021), no additional new relevant information is available since publication of that notice.

### *Marine Mammal Hearing*

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all

marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 dB threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

**Table 3—Marine Mammal Hearing Groups (NMFS, 2018)**

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i> )	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite ( <i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an



extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Sixteen marine mammal species (14 cetacean and 2 pinniped (both phocid) species) have the reasonable potential to co-occur with the planned survey activities. Please refer to Table 2. Of the cetacean species that may be present, five are classified as low-frequency cetaceans (*i.e.*, all mysticete species), eight are classified as mid-frequency cetaceans (*i.e.*, all delphinid species and the sperm whale), and one is classified as a high-frequency cetacean (*i.e.*, harbor porpoise).

### **Potential Effects of Specified Activities on Marine Mammals and their Habitat**

The notice of proposed IHA included a summary of the ways that Garden State's specified activity may impact marine mammals and their habitat (86 FR 22160; April 27, 2021). Detailed descriptions of the potential effects of similar specified activities have been provided in other recent **Federal Register** notices, including for survey activities using the same methodology, over a similar amount of time, and occurring within the same specified geographical region (*e.g.*, 82 FR 20563, May 3, 2017; 85 FR 36537, June 17, 2020; 85 FR 37848, June 24, 2020; 85 FR 48179, August 10, 2020; 86 FR 26465; May 14, 2021). No significant new information is available, and NMFS refers the reader to the notice of proposed IHA and to these documents rather than repeating the details here. The **Estimated Take** section includes a quantitative analysis of the number of individuals that are expected to be taken by Garden State's activity. The **Negligible Impact Analysis and Determination** section considers the potential effects of the specified activity, the **Estimated Take** section, and the **Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact

marine mammal species or stocks. The notice of proposed IHA also provided background information regarding active acoustic sound sources and acoustic terminology, which is not repeated here.

The potential effects of Ocean Wind's specified survey activity are expected to be limited to Level B behavioral harassment. No permanent or temporary auditory effects, or significant impacts to marine mammal habitat, including prey, are expected.

### **Estimated Take**

This section provides an estimate of the number of incidental takes authorized through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Level B behavioral harassment is the only type of take expected to result from these activities. 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 behavioral harassment).

Authorized takes are by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to noise from certain HRG acoustic sources. Based on the characteristics of the signals produced by the acoustic sources planned for use, Level A harassment is neither anticipated, even absent mitigation, nor authorized. Consideration of the anticipated effectiveness of the mitigation measures (*i.e.*, exclusion zones and shutdown measures), discussed in detail below in the **Mitigation** section, further strengthens the conclusion that Level A harassment is not a reasonably anticipated outcome of the survey activity. As described

previously, no serious injury or mortality is anticipated, even absent mitigation, or authorized for this activity.

Generally speaking, NMFS estimates take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. NMFS notes that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, NMFS describes the factors considered here in more detail and present the take estimate.

#### *Acoustic Thresholds*

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

*Level B Harassment* – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed (*i.e.*, Level B harassment) when exposed to underwater anthropogenic noise above received levels of 160 dB re 1  $\mu$ Pa (rms) for the

impulsive sources (*i.e.*, boomers, sparkers) and non-impulsive, intermittent sources (*e.g.*, CHIRP SBPs) evaluated here for Garden State's survey activities.

*Level A harassment* – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). For more information, see NMFS' 2018 Technical Guidance, which may be accessed at [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance).

Garden State's activity includes the use of impulsive (*i.e.*, sparkers and boomers) and non-impulsive (*e.g.*, CHIRP SBP) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise through use of the sources Garden State plans to use, and the potential for Level A harassment is not evaluated further in this document. Please see Garden State's application for details of a quantitative exposure analysis exercise (*i.e.*, calculated Level A harassment isopleths and estimated Level A harassment exposures). Maximum estimated Level A harassment isopleths were less than 3 m for all sources and hearing groups with the exception of an estimated 37 m zone and 17 m zone calculated for high-frequency cetaceans during use of the GeoPulse 5430 CHIRP SBP and the TB CHIRP III, respectively (see Table 1 for source characteristics). Garden State did not request authorization of take by Level A harassment, and no take by Level A harassment is authorized by NMFS.

#### *Ensonified Area*

NMFS has developed a user-friendly methodology for estimating the extent of the Level B harassment isopleths associated with relevant HRG survey equipment (NMFS,

2020). This methodology incorporates frequency and directionality to refine estimated ensonified zones. For acoustic sources that operate with different beamwidths, the maximum beamwidth was used, and the lowest frequency of the source was used when calculating the frequency-dependent absorption coefficient (Table 1).

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and, therefore, recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to harassment thresholds. In cases when the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends that either the source levels provided by the manufacturer be used, or, in instances where source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 1 shows the HRG equipment types that may be used during the planned surveys and the sound levels associated with those HRG equipment types.

Results of modeling using the methodology described above indicated that, of the HRG survey equipment planned for use by Garden State that has the potential to result in Level B harassment of marine mammals, the Applied Acoustics Dura-Spark UHD and GeoMarine Geo-Source sparkers would produce the largest Level B harassment isopleth (141 m; please see Table 4 of Garden State's application). Estimated Level B harassment isopleths associated with the boomer and CHIRP SBP systems planned for use are estimated as 25 and 36 m, respectively. Although Garden State does not expect to use sparker sources on all planned survey days, it assumed for purposes of analysis that the sparker would be used on all survey days. This is a conservative approach, as the actual sources used on individual survey days may produce smaller harassment distances.

In this section, NMFS provides information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016, 2017, 2018, 2020) represent the best available information regarding marine mammal densities in the planned survey area. The density data presented by Roberts *et al.* (2016, 2017, 2018, 2020) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at [seamap.env.duke.edu/models/Duke-EC-GOM-2015/](http://seamap.env.duke.edu/models/Duke-EC-GOM-2015/). Marine mammal density estimates in the survey area (animals/km<sup>2</sup>) were obtained using the most recent model results for all taxa (Roberts *et al.*, 2016, 2017, 2018, 2020). The updated models incorporate additional sighting data, including sightings from the NOAA Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

For the exposure analysis, density data from Roberts *et al.* (2016, 2017, 2018, 2020) were mapped using a geographic information system (GIS). Density grid cells that included any portion of the planned survey area were selected for all survey months (see Figure 3 in Garden State's application).

Densities from each of the selected density blocks were averaged for each month available to provide monthly density estimates for each species (when available based on the temporal resolution of the model products), along with the average annual density. Please see Tables 7 and 8 of Garden State's application for density values used in the

exposure estimation process for the Lease Area and the potential ECRs, respectively.

Note that no density estimates are available for the portion of the ECR area in Delaware Bay, so the marine mammal densities from the density models of Roberts *et al.* (2016, 2017, 2018, 2020) were assumed to apply to this area. Additional data regarding average group sizes from survey effort in the region was considered to ensure adequate take estimates are evaluated.

#### *Take Calculation and Estimation*

Here NMFS describes how the information provided above is brought together to produce a quantitative take estimate. In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in harassment, radial distances to predicted isopleths corresponding to Level B harassment thresholds are calculated, as described above. The maximum distance (*i.e.*, 141 m distance associated with sparkers) to the Level B harassment criterion and the estimated trackline distance traveled per day by a given survey vessel (*i.e.*, 70 km) are then used to calculate the daily ensonified area, or zone of influence (ZOI) around the survey vessel.

The ZOI is a representation of the maximum extent of the ensonified area around a sound source over a 24-hr period. The ZOI for each piece of equipment operating below 200 kHz was calculated per the following formula:

$$\text{ZOI} = (\text{Distance/day} \times 2r) + \pi r^2$$

Where *r* is the linear distance from the source to the harassment isopleth.

ZOIs associated with all sources with the expected potential to cause take of marine mammals are provided in Table 6 of Garden State's application. The largest daily ZOI (19.8 km<sup>2</sup>), associated with the various sparkers planned for use, was applied to all planned survey days.

Potential Level B harassment exposures are estimated by multiplying the average annual density of each species within either the Lease Area or potential ECR area by the

daily ZOI. That product is then multiplied by the number of operating days expected for the survey in each area assessed, and the product is rounded to the nearest whole number. These results are shown in Table 4.

**Table 4—Summary of Authorized Take Numbers.**

Species	Abundance	Level B Takes <sup>1</sup>	Max Percent Population	
Low-Frequency Cetaceans				
Fin whale	6,802	9	0.13	
Sei whale	6,292	0 (1)	0.02	
Minke whale	21,968	3	0.01	
Humpback whale	1,393	4	0.29	
North Atlantic right whale	412	14	3.40	
Mid-Frequency Cetaceans				
Sperm whale <sup>3</sup>	4,349	0 (3)	0.07	
Atlantic white-sided dolphin	93,233	15	0.00	
Atlantic spotted dolphin	39,921	9	0.00	
Common bottlenose dolphin <sup>2</sup>	Offshore Stock	62,851	437	0.21
	Migratory Stock	6,639	1,192	7.77
Pilot Whales <sup>3</sup>	Short-finned pilot whale	28,924	3 (10)	0.03
	Long-finned pilot whale	39,215	3 (10)	0.03
Risso's dolphin	35,493	0 (30)	0.08	
Common dolphin	172,974	112	0.06	
High-Frequency Cetaceans				
Harbor porpoise	95,543	98	0.03	
Pinnipeds				
Seals <sup>4</sup>	Gray seal	451,431	9	0.00
	Harbor seal	75,834	9	0.01

<sup>1</sup>Parenthesis denote changes from calculated take estimates. Increases from calculated values are based on assumed average group size for the species; sei whale, Kenney and Vigness-Raposa, 2010; sperm whale and Risso's dolphin, Barkaszi and Kelly, 2018.

<sup>2</sup>Roberts *et al.* (2016) does not provide density estimates for individual stocks of common bottlenose dolphins; therefore, stock densities were delineated using the 20-m isobath.

<sup>3</sup>Roberts (2018) only provides density estimates for "generic" pilot whales; therefore, an equal potential for takes has been assumed either for each species.

<sup>4</sup>Roberts (2018) only provides density estimates for "generic" seals; therefore, densities were split evenly between the two species.

The take numbers shown in Table 4 are those requested by Garden State, with the exception of the two pilot whale species. Garden State requested 3 takes by Level B harassment for each pilot whale species (*i.e.*, short-finned and long-finned pilot whales). However, the requested number of takes is below the mean group size for each of these species; therefore, NMFS increased to 10 (from 3, proposed by Garden State) the number of takes by Level B harassment for each of these species, based on published mean group sizes (Kenney and Vigness-Raposa, 2010). For all other species, NMFS concurs with the take numbers requested by Garden State and has authorized them.



## **Mitigation**

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). 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 the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, NMFS carefully considers two primary factors:

(1) 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, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations.

### *Mitigation for Marine Mammals and their Habitat*

NMFS has prescribed the following mitigation measures to be implemented during Garden State's marine site characterization surveys.

### *Marine Mammal Exclusion Zones*

Marine mammal EZs must be established around the HRG survey equipment and monitored by PSOs:

- 500 m EZ for North Atlantic right whales during use of all acoustic sources; and
- 100 m EZ for all marine mammals, with certain exceptions specified below, during operation of impulsive acoustic sources (boomer and/or sparker).

If a marine mammal is detected approaching or entering the EZs during the HRG survey, the vessel operator must adhere to the shutdown procedures described below to minimize noise impacts on the animals. These stated requirements will be included in the site-specific training to be provided to the survey team.

### *Pre-Start Clearance of the Exclusion Zones*

Garden State must implement a 30-minute pre-start clearance period of the EZs prior to the initiation of ramp-up of HRG equipment. During this period, the EZ will be monitored by the PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective EZ. If a marine mammal is observed within an EZ during the pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective EZ or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for all other species).

### *Ramp-Up of Survey Equipment*

When technically feasible, a ramp-up procedure must be used for HRG survey equipment capable of adjusting energy levels at the start or restart of survey activities. The ramp-up procedure must be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the survey area by allowing

them to vacate the area prior to the commencement of survey equipment operation at full power.

A ramp-up must begin with the powering up of the smallest acoustic HRG equipment at its lowest practical power output appropriate for the survey. When technically feasible, the power will then be gradually turned up and other acoustic sources would be added.

Ramp-up activities will be delayed if a marine mammal(s) enters its respective exclusion zone. Ramp-up will continue if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals and 30 minutes for all other species).

Activation of survey equipment through ramp-up procedures may not occur when visual observation of the pre-start clearance zone is not expected to be effective (*i.e.*, during inclement conditions such as heavy rain or fog).

#### *Shutdown Procedures*

An immediate shutdown of the impulsive HRG survey equipment will be required if a marine mammal is sighted entering or within its respective exclusion zone. The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed (*i.e.*, 30 minutes for all other species).

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone (36 m, non-impulsive; 141 m impulsive), shutdown must occur.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again without ramp-up if PSOs have maintained constant observation and no detections of any marine mammal have occurred within the respective EZs. If the acoustic source is shut down for a period longer than 30 minutes and PSOs have maintained constant observation, then pre-start clearance and ramp-up procedures will be initiated as described in the previous section.

The shutdown requirement will be waived for small delphinids of the following genera: *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops* and seals. Specifically, if a delphinid from the specified genera or a pinniped is visually detected approaching the vessel (*i.e.*, to bow ride) or towed equipment, shutdown is not required. Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid or pinniped detected in the exclusion zone and belongs to a genus other than those specified.

#### *Vessel Strike Avoidance*

Garden State will ensure that vessel operators and crew maintain a vigilant watch for cetaceans and pinnipeds and slow down or stop their vessels to avoid striking these species. Survey vessel crew members responsible for navigation duties will receive site-specific training on marine mammals sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures must include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and

regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal;

- All vessels, regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes including SMAs and DMAs when in effect;
- All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 knots or less while transiting to and from Project Area;
- All vessels must reduce their speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel;
- All vessels must maintain a minimum separation distance of 500 m from right whales. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action;
- All vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales;
- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an

understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel);

- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained;

- These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

Members of the monitoring team will consult NMFS North Atlantic right whale reporting system and Whale Alert, as able, for the presence of North Atlantic right whales throughout survey operations, and for the establishment of a DMA. If NMFS should establish a DMA in the Project Area during the survey, the vessels will abide by speed restrictions in the DMA.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has determined that the required mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

### **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 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 planned action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*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 marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

### *Monitoring Measures*

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Garden State would employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task and/or have demonstrated experience in the role of an independent PSO during an HRG survey. At least one PSO aboard each acoustic source vessel must have a minimum of 90 days at-sea experience working as a PSO during a geophysical survey, with no more than 18 months elapsed since the conclusion of the at-sea experience. On a case-by-case basis, non-independent observers may be approved by NMFS for limited, specific duties in support of approved, independent PSOs on smaller vessels with limited crew capacity operating in nearshore waters.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including EZs, during all



HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established EZs during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) would ensure 360° visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least two hours between watches and may conduct a maximum of 12 hours of observation per 24-hour period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to EZs. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared/thermal imaging technology would be used to facilitate detection of marine mammals approaching and within the EZs during pre-start clearance and active survey operations. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs would also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team. Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances).

#### *Reporting Measures*

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Esch@noaa.gov*. The report must contain at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;

- Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
- Vessel location (latitude/longitude) when survey effort begins and ends, vessel location at beginning and end of visual PSO duty shifts;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;
- Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and
- Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-start clearance survey, ramp-up, shutdown, end of operations, etc.).

If a marine mammal is sighted, the following information should be recorded:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
- PSO who sighted the animal;
- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;

- Estimated distance to the animal and its heading relative to vessel at initial sighting;
- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;
- Estimated number of animals (high/low/best);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other); and
- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Garden State must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16.

In the event that Garden State personnel discover an injured or dead marine mammal, Garden State will report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, Garden State must report the incident to the NMFS OPR and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);
- Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;

- Estimated size and length of animal that was struck;
- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s).

### **Negligible Impact Analysis and Determination**

NMFS has defined negligible impact 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 (50 CFR 216.103). 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 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 harassment, NMFS considers 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 effects on habitat, and the likely effectiveness of the mitigation. NMFS also assesses the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’ implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 4, given that NMFS expects the anticipated effects of the planned survey to be similar in nature. Where there are meaningful differences between species or stocks - as is the case of the North Atlantic right whale - they are included as separate subsections below. NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is anticipated or authorized. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section of the notice of the proposed IHA (86 FR 22160; April 27, 2021), non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described above, Level A harassment is not expected to occur given the nature of the operations and the estimated small size of the Level A harassment zones.

In addition to being temporary, the maximum expected harassment zone around a survey vessel is 141 m. Therefore, the ensounded area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the

availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the survey area and there are no feeding areas known to be biologically important to marine mammals within the survey area. There is no designated critical habitat for any ESA-listed marine mammals in the survey area.

#### *North Atlantic Right Whales*

The status of the North Atlantic right whale population is of heightened concern and, therefore, merits additional analysis. As discussed in the notice of the proposed IHA (86 FR 22160; April 27, 2021), elevated North Atlantic right whale mortalities began in June 2017 and there is an active UME. Overall, preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of right whales. As noted previously, the survey area overlaps a migratory corridor Biologically Important Area (BIA) for North Atlantic right whales. Due to the fact that the survey activities are temporary and the spatial extent of sound produced by the survey would be very small relative to the spatial extent of the available migratory habitat in the BIA, right whale migration is not expected to be impacted by the survey. Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations. Required vessel strike avoidance measures will also decrease risk of ship strike during migration; no ship strike is expected to occur during Garden State's planned activities. Additionally, only very limited take by Level B harassment of North Atlantic right whales has been requested and is being authorized by NMFS as HRG survey operations are required to maintain a 500 m EZ and shutdown if a North Atlantic right whale is sighted at or within the EZ. The 500 m shutdown zone for right whales is conservative, considering the Level B harassment



isopleth for the most impactful acoustic source (*i.e.*, GeoMarine Geo-Source 400 tip sparker) is estimated to be 141 m, and thereby minimizes the potential for behavioral harassment of this species. As noted previously, Level A harassment is not expected due to the small Level A harassment zones associated with HRG equipment types planned for use. NMFS does not anticipate that North Atlantic right whales taken resulting from Garden State's activities would impact annual rates of recruitment or survival. Thus, any takes that occur would not result in population level impacts.

*Other Marine Mammal Species with Active UMEs*

As discussed in the notice of the proposed IHA (86 FR 22160; April 27, 2021), there are several active UMEs occurring in the vicinity of Garden State's survey area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

Elevated numbers of harbor seal and gray seal mortalities were first observed in July 2018 and have occurred across Maine, New Hampshire, and Massachusetts. Based on tests conducted so far, the main pathogen found in the seals is phocine distemper virus, although additional testing to identify other factors that may be involved in this UME are underway. The UME does not yet provide cause for concern regarding

population-level impacts to any of these stocks. For harbor seals, the population abundance is over 75,000 and annual mortality/serious injury (M/SI; 350) is well below PBR (2,006) (Hayes *et al.*, 2020). The population abundance for gray seals in the United States is over 27,000, with an estimated abundance, including seals in Canada, of approximately 450,000. In addition, the abundance of gray seals is likely increasing in the U.S. Atlantic exclusive economic zone as well as in Canada (Hayes *et al.*, 2020).

The required mitigation measures are expected to reduce the number and/or severity of takes for all species listed in Table 4, including those with active UMEs to the level of least practicable adverse impact. In particular they would provide animals the opportunity to move away from the sound source throughout the survey area before HRG survey equipment reaches full energy, thus preventing them from being exposed to sound levels that have the potential to cause injury (Level A harassment) or more severe Level B harassment. No Level A harassment is anticipated, even in the absence of mitigation measures, or authorized.

NMFS expects that takes would be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (if such activity was occurring) — reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or authorized;

- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or authorized;
- Foraging success is not likely to be significantly impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the planned survey to avoid exposure to sounds from the activity;
- Take is anticipated to be primarily Level B behavioral harassment consisting of brief startling reactions and/or temporary avoidance of the survey area;
- While the survey area is within areas noted as a migratory BIA for North Atlantic right whales, the activities will occur in such a comparatively small area such that any avoidance of the survey area due to activities would not affect migration. In addition, mitigation measures to shutdown at 500 m to minimize potential for Level B behavioral harassment would limit any take of the species; and
- The required mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals.

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, NMFS finds that the total marine mammal take from the activity will have a negligible impact on all affected marine mammal species or stocks.

### **Small Numbers**

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military

readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is less than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS has authorized incidental take of 16 marine mammal species (with 17 managed stocks.) The total amount of takes authorized relative to the best available population abundance is less than 8 percent for one stock (bottlenose dolphin northern coastal migratory stock) and less than 4 percent of all other species and stocks, which NMFS finds are small numbers of marine mammals relative to the estimated overall population abundances for those stocks (see Table 4).

Based on the analysis contained herein of the planned activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

### **Unmitigable Adverse Impact Analysis and Determination**

There are no relevant subsistence uses of the affected marine mammal stocks or species 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**

Section 7(a)(2) of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out

is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever NMFS proposes to authorize take for endangered or threatened species, in this case with NMFS Greater Atlantic Regional Fisheries Office (GARFO).

The NMFS OPR is authorizing the incidental take of four species of marine mammals which are listed under the ESA: North Atlantic right, fin, sei, and sperm whales. The OPR requested initiation of Section 7 consultation with NMFS GARFO on April 19, 2021, for the issuance of the IHA. On June 1, 2021, NMFS GARFO determined that issuance of the IHA to Garden State is not likely to adversely affect the North Atlantic, fin, sei, or sperm whale or result in take of any marine mammals that would violate the ESA.

### **National Environmental Policy Act**

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which NMFS have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

### **Authorization**

NMFS has issued an IHA to Garden State for the potential harassment of small numbers of 16 marine mammal species (with 17 managed stocks) incidental to conducting marine site characterization surveys offshore of Delaware and New Jersey in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0482) and along potential export cable routes to landfall locations in Delaware and New Jersey, provided the previously mentioned mitigation, monitoring, and reporting requirements are followed.

Dated: June 14, 2021.

Catherine Marzin,

Acting Director, Office of Protected Resources,

National Marine Fisheries Service.

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