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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RTID 0648-XF505

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Construction Activities Associated with the Raritan Bay Pipeline

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Transcontinental Gas Pipe Line Company, LLC (Transco), a subsidiary of Williams Partners L.P., to incidentally harass, by Level A and Level B harassment, marine mammals incidental to construction activities associated with the Raritan Bay Pipeline.

DATES: This authorization is valid from May 1, 2021 through April 30, 2022.

FOR FURTHER INFORMATION CONTACT: Jordan Carduner, Office of Protected Resources, NMFS, (301) 427-8401. 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: 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 such 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 such 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 February 7, 2019, NMFS received a request from Transco for an IHA to take marine mammals incidental to construction activities associated with the Raritan Bay Loop pipeline offshore of New York and New Jersey. Transco submitted a revised version of the application on May 23, 2019, and this application was deemed adequate and complete. Transco's request is for take of 10 species of marine mammals by harassment. Neither Transco nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of the Proposed Activity

Overview

Transco, a subsidiary of Williams Partners L.P., is proposing to expand its existing interstate natural gas pipeline system in Pennsylvania and New Jersey and its existing offshore natural gas pipeline system in New Jersey and New York waters. The Northeast Supply Enhancement Project would consist of several components, including offshore pipeline facilities in New Jersey and New York. The proposed offshore pipeline facilities would include the Raritan Bay Loop pipeline, which would be located primarily in Raritan Bay, as well as parts of the Lower New York Bay and the Atlantic Ocean.

Construction of the Raritan Bay Loop pipeline would require pile installation and removal, using both impact and vibratory pile driving, which may result in the incidental take of marine mammals. Transco would install and remove a total of 163 piles, which would range in size from 10 to 60 inches in diameter, using a vibratory device and/or diesel impact hammer. These piles would be temporary; they would remain in the water only for the duration of each related offshore construction activity. Once offshore construction of the project is complete, all piles installed by Transco would be removed.

In-water construction is anticipated to occur between the 2nd quarter of 2020 and the 4th quarter of 2020. Pile installation and removal activities are planned to occur from June through August 2020, however the timeframe for pile removal may occur in fall 2020. Pile installation and removal activities are expected to take a total of 65.5 days. Transco's proposed activity would occur in the waters of Raritan Bay, the Lower New York Bay, and the Atlantic Ocean (see Figure 1 in the IHA application).

A detailed description of Transco's planned activities is provided in the notice of proposed IHA (84 FR 45955; September 9, 2019). Since that time, no changes have been made to the activities. Therefore, a detailed description is not provided here. Please refer to that notice for the detailed description of the specified activity. 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 proposed IHA was published in the Federal Register on September 9, 2019 (84 FR 45955). During the 30-day public comment period, NMFS received a comment letter from the Marine Mammal Commission (Commission) and one comment from a member of the general public. NMFS has posted the comments online at:

www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable.

A summary of the public comments received and NMFS' responses to those comments are below.

Comment 1: A member of the general public asked several questions including whether Transco demonstrated prior cooperation with NOAA for any previously-issued

authorizations; whether Transco qualifies and trains the PSOs that will be responsible for marine mammal; what kind of reporting NOAA will receive regarding Transco's activities; how the environmental review for the proposed project is being handled to ensure that pipeline leakages and vibrational noise from operations are addressed; and the definition of "take".

NMFS response: The answers to the commenter's questions are provided in the IHA application the notice of proposed IHA (84 FR 45955; September 9, 2019). The commenter does not provide any substantive recommendations regarding the IHA therefore we have not made any revisions to the IHA in response to the comment.

Comment 2: The Commission recommended that NMFS revise the numbers of authorized takes for gray and harbor seals by: estimating a daily sightings rate (versus a monthly sightings rate); relying on observational data from Sandy Hook Bay as opposed to Cupsogue Beach Park; and, using the total estimated take of harbor seals to inform the number of gray seal takes (rather than being reduced by the number of gray seal takes). The Commission recommended that NMFS authorize 833 Level B harassment takes and at least 14 Level A harassment takes of gray seals and that we authorize at least 1,593 Level A harassment takes and 6,136 Level B harassment takes of harbor seals.

NMFS response: We agree with the Commission's recommendations to revise harbor and gray seal takes by estimating a daily sightings rate as opposed to a monthly sightings rate, and to use the total estimated takes of harbor seals to inform the number of gray seal takes, rather than reducing the number of harbor seal takes by the estimated number of gray seal takes; we have taken both of these steps in estimating revised take numbers in the final IHA. We do not agree with the Commission's recommendation to

rely on observational data from Sandy Hook Bay as opposed to Cupsogue Beach Park for harbor seal take estimates because, while Sandy Hook Bay is closer to the project location, we do not consider the data from Sandy Hook Bay to be reliable for estimating a take estimate. The data from Sandy Hook Bay is based on a much smaller sample size (only 24 data points over a period of 10 years for Sandy Hook Bay compared with 32 surveys from 2018-2019 for Cupsogue Beach Park) and is based on citizen science alone, as opposed to the data available from Cupsogue Beach Park which is based on systematic data collected over multiple years by the Coastal Research and Education Society of Long Island, which conducts research on marine mammals in the project area. We have authorized 1,535 Level B harassment takes and 399 Level A harassment takes of gray seals, and 4,264 Level B harassment takes and 1,107 Level A harassment takes of harbor seals. Please see the “Estimated Take” section below for further details on the methods for determining the take estimates for harbor and gray seals.

Comment 3: The Commission recommended that NMFS revise the numbers of authorized takes of humpback whales, specifically by obtaining the most recent 2018 and 2019 sightings data from Gotham Whale and using a daily sightings rate to estimate take, and including a sufficient number of Level A harassment takes of humpback whales based on 14 days of impact pile driving.

NMFS response: We agree with the Commission’s recommendations regarding the methods for estimating takes of humpback whales and have obtained the 2018 and 2019 sightings data from Gotham Whale, used a daily sightings rate to estimate take, and increased the number of authorized takes by Level A harassment based on 14 days of impact pile driving. We have authorized 35 Level B harassment takes and 14 Level A

harassment takes of humpback whales. Please see the “Estimated Take” section below for further details on the methods for determining the take estimates for humpback whales.

Comment 4: The Commission recommended that NMFS increase the number of Level B harassment takes of North Atlantic right whales from two to at least three based on average group size.

NMFS response: The Commission refers to authorized take numbers of right whales in three previously issued IHAs as justification for increasing group size from two to at least three North Atlantic right whales in this IHA. One previously-issued IHA cited by the Commission (NMFS, 2015; 80 FR 27635) authorized three takes of right whales apparently to account for group size; however, a review of that IHA shows the citation relied upon for that group size estimate, which summarized right whale sightings during vessel-based surveys offshore New Jersey from 2008–2009, reported group size ranged from one to two whales (Whitt *et al.*, 2013). Another previously-issued IHA cited by the Commission (NMFS, 2014; 79 FR 57538) authorized the take of five right whales; however, a review of that IHA shows that the authorized take number was based on the actual modeled number of takes, not on an estimate of mean group size. The third previously-issued IHA cited by the Commission (NMFS, 2014; 79 FR 52121) authorized the take of three right whales; however, a review of that IHA shows that the citation for mean group size, the Bureau of Land Management’s Cetacean and Turtle Assessment Program (CeTAP), reported a mean group size of 2.6 right whales (CeTAP, 1982), but CeTAP surveys included areas of known feeding aggregations which would result in higher mean group size estimates. While larger group sizes of right whales are known to occur in areas of importance for feeding, the project area is not an important feeding area,

therefore any right whales in the area would be expected to be migrating through the area. An average group size of two represents the best estimate for right whales that are migrating, and this is supported by sightings near the project area off New Jersey from 2008-2009 (Whitt *et al*, 2013). We have therefore not revised the number of authorized Level B harassment takes of North Atlantic right whales.

Comment 5: The Commission recommended that NMFS include a requirement for Skipjack to provide marine mammal observational datasheets or raw sightings data in its draft and final monitoring report.

Response: NMFS agrees with the Commission's recommendation and has incorporated this requirement in the IHA.

Comment 6: The Commission recommended that NMFS include a requirement to estimate the total takes by extrapolating Level A and B harassment takes to the proportion of the zones that are not visible by PSOs and ensure that Transco keeps a running tally of the total takes for each species while the project is underway.

Response: NMFS agrees with the Commission's recommendation and has incorporated this requirement in the IHA.

Comment 7: The Commission recommended that NMFS include the number and location of PSOs in the final IHA rather than referencing the application.

Response: NMFS agrees with the Commission's recommendation and has incorporated this requirement in the IHA.

Changes from the Proposed IHA to Final IHA

As described above, revisions have been made to the take estimates for harbor seals, gray seals and humpback whales. These changes are also described in greater detail in the “Estimated Take” section below.

Description of Marine Mammals in the Area of Specified Activity

Sections 3 and 4 of the IHA 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; 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’ web site (www.fisheries.noaa.gov/find-species).

We expect that the species listed in Table 1 will potentially occur in the project area and will potentially be taken as a result of the proposed project. Table 1 summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2018). 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 is included here as a gross indicator 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 SARs. All values presented in Table 1 are the most recent available at the time of publication and are available in the 2018 Atlantic SARs (Hayes *et al.*, 2019) available online at: www.fisheries.noaa.gov/action/2018-draft-marine-mammal-stock-assessment-reports-available.

Table 1–Marine Mammals Known to Occur in the Project Area That May be Affected by the Specified Activity

Common Name (Scientific Name)	Stock	MMPA and ESA Status; Strategic (Y/N) ¹	Stock Abundance (CV, N _{min} , most recent abundance survey) ²	Predicted abundance (CV) ³	PBR ⁴	Annual M/SI ⁴	Occurrence and seasonality in project area
Toothed whales (Odontoceti)							
Bottlenose dolphin (<i>Tursiops truncatus</i>)	W. North Atlantic, Offshore	--; N	77,532 (0.40; 56,053; 2011)	97,476 (0.06) ⁵	561	39.4	Rare in summer; absent in winter
	W. North Atlantic Coastal Migratory	--; N	6,639 (0.41; 4,759; 2015)		48	unknown	Common year round
Common dolphin ⁶ (<i>Delphinus delphis</i>)	W. North Atlantic	--; N	173,486 (0.55; 55,690; 2011)	86,098 (0.12)	557	406	Common year round
Harbor porpoise (<i>Phocoena phocoena</i>)	Gulf of Maine/Bay of Fundy	--; N	79,833 (0.32; 61,415; 2011)	45,089 (0.12)*	706	255	Common year round
Baleen whales (Mysticeti)							
North Atlantic right whale (<i>Eubalaena glacialis</i>)	W. North Atlantic	E; Y	451 (0; 455; n/a)	535 (0.45)*	0.9	56	Year round in continental shelf and slope waters,

							occur seasonally
Humpback whale ⁷ (<i>Megaptera novaeangliae</i>)	Gulf of Maine	--; N	896 (0.42; 239; n/a)	1,637 (0.07)*	14.6	9.8	Common year round
Minke whale ⁶ (<i>Balaenoptera acutorostrata</i>)	Canadian East Coast	--; N	20,741 (0.3; 1,425; n/a)	2,112 (0.05)*	14	7.5	Year round in continental shelf and slope waters, occur seasonally
Earless seals (Phocidae)							
Gray seal ⁸ (<i>Halichoerus grypus</i>)	W. North Atlantic	--; N	27,131 (0.10; 25,908; n/a)		1,389	5,688	Common year round
Harbor seal (<i>Phoca vitulina</i>)	W. North Atlantic	--; N	75,834 (0.15; 66,884; 2012)		2,006	345	Common year round
Harp seal (<i>Pagophilus groenlandicus</i>)	W. North Atlantic	--; N	7,411,000 (unk.; unk; 2014)		unk	225,687	Rare

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

2 Stock abundance as reported in NMFS marine mammal stock assessment reports (SAR) except where otherwise noted. SARs available online at: www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments. CV is coefficient of variation; N_{\min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For certain stocks, abundance estimates are actual counts of animals and there is no associated CV. The most recent abundance survey that is reflected in the abundance estimate is presented; there may be more recent surveys that have not yet been incorporated into the estimate. All values presented here are from the 2018 draft Atlantic SARs.

3 This information represents species- or guild-specific abundance predicted by recent habitat-based cetacean density models (Roberts *et al.*, 2016, 2017, 2018). These models provide the best available scientific information regarding predicted density patterns of cetaceans in the U.S. Atlantic Ocean, and we provide the corresponding abundance predictions as a point of reference. Total abundance estimates were produced by computing the mean density of all pixels in the modeled area and multiplying by its area. For those species marked with an asterisk, the available information supported development of either two or four seasonal models; each model has an associated abundance prediction. Here, we report the maximum predicted abundance.

4 Potential biological removal, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population size (OSP). Annual M/SI, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, subsistence hunting, ship strike). Annual M/SI values often cannot be determined precisely and is in some cases presented as a minimum value. All M/SI values are as presented in the draft 2018 SARs.

5 Abundance estimates are in some cases reported for a guild or group of species when those species are difficult to differentiate at sea. Similarly, the habitat-based cetacean density models produced by Roberts *et al.* (2016) are based in part on available observational data which, in some cases, is limited to genus or guild in terms of taxonomic definition. Roberts *et al.* (2016) produced a density model for bottlenose dolphins that does not differentiate between offshore and coastal stocks.

6 Abundance as reported in the 2007 Canadian Trans-North Atlantic Sighting Survey (TNASS), which provided full coverage of the Atlantic Canadian coast (Lawson and Gosselin, 2009). Abundance estimates from TNASS were corrected for perception and availability bias, when possible. In general, where the TNASS survey effort provided superior coverage of a stock's range (as compared with NOAA shipboard survey effort), the resulting abundance estimate is considered more accurate than the current NMFS abundance estimate (derived from survey effort with inferior coverage of the stock range). NMFS stock abundance estimate for the common dolphin is 70,184. NMFS stock abundance estimate for the fin whale is 1,618. NMFS stock abundance estimate for the minke whale is 2,591.

7 2018 U.S. Atlantic draft SAR for the Gulf of Maine feeding population lists a current abundance estimate of 896 individuals. However, we note that the estimate is defined on the basis of feeding location alone (*i.e.*, Gulf of Maine) and is therefore likely an underestimate.

8 NMFS stock abundance estimate applies to U.S. population only, actual stock abundance is approximately 505,000.

Two marine mammal species that are listed under the Endangered Species Act (ESA) may be present in the project area and may be taken incidental to the proposed activity: the North Atlantic right whale and fin whale.

A detailed description of the of the species likely to be affected by Transco's activities, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the notice of proposed IHA (84 FR 45955; September 9, 2019); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that notice for these descriptions. Please also refer to NMFS' web site (www.fisheries.noaa.gov/find-species) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from Transco's construction activities have the potential to result in behavioral harassment of marine mammals in the vicinity of the survey area. The notice of proposed IHA (84 FR 45955; September 9, 2019) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from Skipjack's survey activities on marine mammals and their habitat. That information and analysis is incorporated by reference into this final IHA determination and is not repeated here; please refer to the notice of proposed IHA (84 FR 45955; September 9, 2019).

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.

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 harassment).

Authorized takes would primarily be by Level B harassment, as noise from pile driving has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result. The mitigation and monitoring measures are expected to minimize the severity

of such taking to the extent practicable. The mitigation and monitoring measures are expected to minimize the severity of such taking to the extent practicable.

As described previously, no mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate 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. We note 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, we describe the factors considered here in more detail and present the take estimate.

Acoustic Thresholds

Using the best available science, NMFS has developed 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). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, 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 in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 μ Pa (rms) for impulsive and/or intermittent sources (*e.g.*, impact pile driving) and 120 dB rms for continuous sources (*e.g.*, vibratory driving). Transco's proposed activity includes the use of intermittent sources (impact pile driving) and continuous sources (vibratory driving), therefore use of the 120 and 160 dB re 1 μ Pa (rms) thresholds are applicable.

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). The components of Transco's proposed activity that may result in the take of marine mammals include the use of impulsive and non-impulsive sources.

These thresholds are provided in Table 2 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at:

www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.

Table 2–Thresholds identifying the onset of Permanent Threshold Shift

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	<i>Cell 10</i> $L_{E,OW,24h}$: 219 dB
<p>* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.</p> <p><u>Note:</u> Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1 μPa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (<i>i.e.</i>, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.</p>		

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

Sound Propagation – Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth,

water chemistry, and bottom composition and topography. The general formula for underwater TL is:

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

B = transmission loss coefficient (assumed to be 15)

R₁ = the distance of the modeled SPL from the driven pile, and

R₂ = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source ($20 * \log(\text{range})$). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source ($10 * \log(\text{range})$). As is common practice in coastal waters, here we assume practical spreading loss (4.5 dB reduction in sound level for each doubling of distance). Practical spreading is a compromise that is often used under conditions where water depth increases as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions.

Sound Source Levels – The intensity of pile driving sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the

activity takes place. Acoustic measurements of pile driving at the project area are not available. Therefore, to estimate sound levels associated with the proposed project, representative source levels for installation and removal of each pile type and size were identified using the compendium compiled by the California Department of Transportation (Caltrans, 2015). The information presented in Caltrans (2015) is a compilation of SPLs recorded during various in-water pile driving projects in California, Oregon, Washington, and Nebraska. The compendium is a commonly used reference document for pile driving source levels when analyzing potential impacts on protected species, including marine mammals, from pile driving activities.

The proposed project would include impact and vibratory installation and vibratory removal of 0.25-m (10-in), 0.61-m (24-in), 0.86-m (34-in), 0.91-m (36-in), 0.91- to 1.2-m (36- to 48-in), and 1.5-m (60-in)-diameter steel pipe piles. Reference source levels from Caltrans (2015) were determined using data for piles of similar sizes, the same pile driving method as that proposed for the project, and at similar water depths (Table 3). While the pile sizes and water depths chosen as proxies do not exactly match those for the proposed project, they represent the closest matches available. It is assumed that the source levels shown in Table 3 are the most representative for each pile type and associated pile driving method. To be conservative, the representative sound source levels were based on the largest pile expected to be driven/removed at each potential in-water construction site. For example, where Transco may use a range of pile sizes (i.e., 0.91 to 1.2 m (36 to 48 in)), the largest potential pile size (1.2 m (48 in)) was used in the modeling.

Table 3—Modeled Pile Installation and Removal Source Levels

Pile Diameter (in)	RMS (dB)		SEL	
	Impact	Vibratory	Impact	Vibratory
Installation				
	Impact	Vibratory	Impact	Vibratory
10	-	150	-	150
24	-	160	-	160
34	193	168	183	168
36	193	168	183	168
48	-	170	-	170
60	195	170	185	170
Removal				
	Impact	Vibratory	Impact	Vibratory
10	-	150	-	150
24	-	160	-	160
34	-	168	-	168
36	-	168	-	168
48	-	170	-	170
60	-	170	-	170

Since there would be many piles at each of the construction sites within close proximity to one another, it was not practical to estimate zones of influence (ZOIs) for each individual pile, and results would have been nearly identical for all similarly sized piles at each construction location. In order to simplify calculations, a representative pile site was selected for eight separate pile locations (Table 4) (See Figure 8 in the IHA application for the representative locations).

Table 4—Representative Pile Sites Selected for Modeling

Location/Mile Post (MP)	Pile Size (inches)
HDD Morgan Offshore (MP 12.59)	24
	36
	48
Neptune Power Cable Crossing (MP 13.84)	10
MP 14.5 to MP 16.5	24
MP 28.0 to MP 29.36	34

HDD Ambrose West Side (MP 29.4)	24
	36
	48
	60
HDD Ambrose East Side (MP 30.48)	24
	36
	48
	60
MP 34.5 to MP 35.04	34
Neptune Power Cable Crossing (MP 35.04)	10

For strings where only a single pile type would be installed or removed (i.e., Neptune Power Cable Crossing MP13.84 and MP35.04, MP14.5 to MP16.5, MP28.0 to MP29.36, and MP34.5 to MP35.04), the representative pile location was selected in the middle of the string. For the HDD Morgan Offshore string site, the location closest to the platform installation was selected as the representative pile location as it represents the area with the largest pile sizes. The HDD Ambrose West Side and HDD Ambrose East Side representative pile locations were selected based on the entry and exit pits. The HDD Ambrose East Side is the entry pit and the HDD Ambrose West Side is the exit pit. This would also represent the outer limit of the HDD Ambrose string, and is therefore the most conservative modeling option.

Distances to isopleths associated with Level A and Level B harassment thresholds were calculated for each pile size, for vibratory and impact installation and removal activities, at the representative pile locations (Table 4). When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or

occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as pile driving from the proposed project the NMFS Optional User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would incur PTS. Inputs used in the Optional User Spreadsheet, and the resulting isopleths, are reported below. The "Impact Pile Driving" and "Non-Impulse-stationary-continuous" tabs of the Optional User Spreadsheet were used to calculate isopleth distances to the Level A harassment thresholds for impact and vibratory driving, respectively.

The updated acoustic thresholds for impulsive sounds (such as pile driving) contained in the Technical Guidance (NMFS, 2018) were presented as dual metric acoustic thresholds using both SEL_{cum} and peak sound pressure level metrics. As dual metrics, NMFS considers onset of PTS (Level A harassment) to have occurred when either one of the two metrics is exceeded (*i.e.*, metric resulting in the largest isopleth). The SEL_{cum} metric considers both level and duration of exposure, as well as auditory weighting functions by marine mammal hearing group. Isopleth distances to relevant Level A harassment thresholds were calculated, for both the SEL_{cum} and peak sound pressure level metrics, for all pile sizes at the representative pile driving locations as

described above. The largest modeled isopleth distance to harassment thresholds based on the peak SPL metric was 34.1 m which was modeled based on 60 inch piles for the high frequency functional hearing group (threshold of 202 dB re 1 μ Pa). Calculation of isopleth distances to relevant Level A harassment thresholds for all pile sizes and all marine mammal functional hearing groups resulted in greater modeled distances associated with the SEL_{cum} metric than the peak sound pressure level metric, thus the modeled distances associated with the SEL_{cum} metric were carried forward in the exposure analysis to be conservative. It should be noted that this method likely results in a conservative estimate of Level A exposures because the SEL_{cum} metric assumes continuous exposure to the total duration of pile driving anticipated for a given day, which represents an unlikely scenario given that there is likely both some temporal and spatial separation between pile driving operations within a day (when multiple piles are driven), and that marine mammals are mobile and would be expected to move away from a sound source before it reached a level that would have the potential to result in auditory injury. Inputs to the Optional User Spreadsheet are shown in Tables 5 and 6. The resulting isopleth distances to Level A harassment thresholds are shown in Tables 7 and 8.

Table 5–Inputs to NMFS Optional User Spreadsheet (NMFS, 2018) to Calculate Isopleth Distances to Level A Harassment Thresholds for Vibratory Driving and Removal

Pile size (representative pile location)	Source Level (RMS SPL)	Pile Driving Duration (hours) within 24-hour Period	Pile Removal Duration (hours) within 24-hour Period	Weighting Factor Adjustment (kHz)	Propagation (xLogR)	Distance of source level measurement (m)
10 in. (Neptune Power Cable Crossing (MP 13.84))	150	1.0	1.0	2.5	15	10

10 in. (Neptune Power Cable Crossing MP 35.04)	150	0.5	0.5	2.5	15	10
24 in. (Ambrose East MP 30.48)	160	1.25	5.5	2.5	15	10
24 in. (Ambrose West MP 29.4)	160	1.5	0.5	2.5	15	10
24 in. (Morgan Offshore MP 12.59)	160	1.0	0.3	2.5	15	10
24 in. (MP 14.5)	160	1.25	2.75	2.5	15	10
36 in. (Morgan Offshore MP 12.59)	168	1.0	4	2.5	15	10
36 in. (Ambrose East MP 30.48)	168	0.75	0.75	2.5	15	10
36 in. (Ambrose West MP 29.4)	168	0.5	0.75	2.5	15	10
48 in. (Ambrose East MP 30.48)	170	2.0	2.0	2.5	15	10
48 in. (Ambrose West MP 29.4)	170	1.0	2.0	2.5	15	10
48 in. (Morgan Offshore MP 12.59)	170	1.0	0.75	2.5	15	10
60 in. (Ambrose East MP 30.48)	170	0.25	0.25	2.5	15	10
60 in. (Ambrose West MP 29.4)	170	0.5	4.0	2.5	15	10

Note: Tab A (“Non Impulsive Static Continuous”) in the NMFS Optional User Spreadsheet (NMFS, 2018) was used for all calculations for vibratory installation of piles.

Table 6–Inputs to NMFS Optional User Spreadsheet (NMFS, 2018) to Calculate Isoleth Distances to Level A Harassment Thresholds for Impact Driving

Pile size (representative pile location)	Source Level (RMS SPL)	Number of strikes per pile	Number of piles per day	Weighting Factor Adjustment (kHz)	Propagation (xLogR)	Distance of source level measurement (m)
36 in. (Morgan Offshore MP 12.59)	183	2,500	2 / 4*	2	15	10
60 in. (Ambrose West)	185	3,382	2	2	15	10

*The number of piles driven per day will vary based on the construction schedule, thus both scenarios (i.e. 2 and 4 piles driven per day) were modeled.
Note: Tab E1 (“Impact Pile Driving”) in the NMFS Optional User Spreadsheet (NMFS, 2018) was used for all calculations for impact pile driving.

NMFS has established Level B harassment thresholds of 160 dB re1 μ Pa (rms) for impulsive sounds (*e.g.*, impact pile driving) and 120 dB re1 μ Pa (rms) for non-impulsive sounds (*e.g.*, vibratory driving and removal). Based on the predicted source levels associated with various pile sizes (Table 3) the distances from the pile driving/removal equipment to the Level B harassment thresholds were calculated, using the distance to the 160 dB threshold for the diesel impact hammer and the distance to the 120 dB threshold for the vibratory device, at the representative pile locations (Table 4). It should be noted that while sound levels associated with the Level B harassment threshold for vibratory driving/removal were estimated to propagate as far as 21,544 m (13 mi) from pile installation and removal activities based on modeling, it is likely that the noise produced from vibratory activities associated with the project would be masked by background noise before reaching this distance, as the Port of New York and New Jersey, which represents the busiest port on the east coast of the United States and the third busiest port in the United States, is located near the project area and sounds from the port and from vessel traffic propagate throughout the project area. However, take estimates conservatively assume propagation of project-related noise to the full extent of the modeled isopleth distance to the Level B harassment threshold. The modeled distances to isopleths associated with Level B harassment thresholds for impact and vibratory driving are shown in Tables 7 and 8.

Table 7—Modeled Isopleth Distances to Level A and Level B Harassment Thresholds for Impact and Vibratory Pile Installation

			Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Seals	Cetaceans and Phocids
	Impulsive		183 dB	185 dB	155 dB	185 dB	160 dB
	Non-Impulsive		199 dB	198 dB	173 dB	201 dB	120 dB
Location/Mile Post (MP)	Pile Size (inches)	Hammer Type	Distance to Level A Harassment Threshold (m)*				Distance to Level B Harassment Threshold (m)
HDD Morgan Offshore (MP 12.59)	24	Vibratory	5.9	0.5	8.7	3.6	4,641.6
	36	Vibratory	20.0	1.8	29.6	12.2	15,848.9
		Impact	4,635.2	164.9	5,521.3	2,480.6	1,584.9
	48	Vibratory	27.2	2.4	40.2	16.5	21,544.3
Neptune Power Cable Crossing (MP 13.84)	10	Vibratory	1.3	0.1	1.9	0.8	1,000.0
MP 14.5 to MP 16.5	24	Vibratory	6.8	0.6	10.1	4.1	4,641.6
MP 28.0 to MP 29.36	34	Vibratory	20.0	1.8	29.6	12.2	15,848.9
HDD Ambrose West Side (MP 29.4)	24	Vibratory	7.7	0.7	11.3	4.7	4,641.6
	36	Vibratory	12.6	1.1	18.6	7.7	15,848.9
	48	Vibratory	27.2	2.4	40.2	16.5	21,544.3
	60	Vibratory	17.1	1.5	25.3	10.4	21,544.3
		Impact	4,855.2	172.7	5,783.3	2,598.3	2,154.4
HDD Ambrose East Side (MP 30.48)	24	Vibratory	6.8	0.6	10.1	4.1	4,641.6
	36	Vibratory	16.5	1.5	24.4	10.0	15,848.9
	48	Vibratory	43.2	3.8	63.8	26.2	21,544.3
	60	Vibratory	10.8	1.0	16.0	6.6	21,544.3
MP 34.5 to MP 35.04	34	Vibratory	12.6	1.1	18.6	7.7	15,848.9
		Impact	2,920.0	103.9	3,478.2	1,562.7	1,584.9
Neptune Power Cable Crossing (MP 35.04)	10	Vibratory	0.8	0.1	1.2	0.5	1,000.0

*All distances shown are based on the SELcum metric. Distances to the peak SPL metric for impact driving were smaller than those for the SELcum metric for all pile sizes and scenarios.

Table 8—Modeled Isopleth Distances to Level A and Level B Harassment Thresholds for Vibratory Pile Removal

			Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Seals	Cetaceans and Phocids
	Non-Impulsive		199 dB	198 dB	173 dB	201 dB	120 dB
Location/Mile Post (MP)	Pile Size (inches)	Hammer Type	Distance to Level A Harassment Threshold (m)				Distance to Level B Harassment Threshold (m)
HDD Morgan Offshore (MP)	24	Vibratory	2.6	0.2	3.9	1.6	4,641.6
	36	Vibratory	50.4	4.5	74.5	30.6	15,848.9

12.59)	48	Vibratory	22.4	2.0	33.2	13.6	21,544.3
Neptune Power Cable Crossing (MP 13.84)	10	Vibratory	1.3	0.1	1.9	0.8	1,000.0
MP 14.5 to MP 16.5	24	Vibratory	11.5	1.0	17.0	7.0	4,641.6
MP 28.0 to MP 29.36	34	Vibratory	41.6	3.7	61.5	25.3	15,848.9
HDD Ambrose West Side (MP 29.4)	24	Vibratory	3.7	0.3	5.5	2.2	4,641.6
	36	Vibratory	16.5	1.5	24.4	10.0	15,848.9
	48	Vibratory	43.2	3.8	63.8	26.2	21,544.3
	60	Vibratory	68.5	6.1	101.3	41.6	21,544.3
HDD Ambrose East Side (MP 30.48)	24	Vibratory	18.3	1.6	27.0	11.1	4,641.6
	36	Vibratory	16.5	1.5	24.4	10.0	15,848.9
	48	Vibratory	43.2	3.8	63.8	26.2	21,544.3
	60	Vibratory	10.8	1.0	16.0	6.6	21,544.3
MP 34.5 to MP 35.04	34	Vibratory	12.6	1.1	18.6	7.7	15,848.9
Neptune Power Cable Crossing (MP 35.04)	10	Vibratory	0.8	0.1	1.2	0.5	1,000.0

Marine Mammal Occurrence

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

There are no marine mammal density estimates for Raritan Bay. The best available information regarding marine mammal densities in the project area is provided by habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016, 2017, 2018). These 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 model, is available online at: seamap.env.duke.edu/models/Duke-EC-GOM-2015/. In subsequent years, certain models have been updated on the basis of additional data as well as certain methodological improvements. Although these updated models (and a newly developed

seal density model) are not currently publicly available, our evaluation of the changes leads to a conclusion that these represent the best scientific evidence available. Marine mammal density estimates in the project area (animals/km²) were obtained using these model results (Roberts *et al.*, 2016, 2017, 2018). As noted, the updated models incorporate additional sighting data, including sightings from the NOAA Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys from 2010–2014 (NEFSC & SEFSC, 2011b, 2012, 2014a, 2014b, 2015, 2016). For each cetacean species, density data for summer (June – August) and fall (September, October, November) were used to generate source grids by averaging monthly densities (see Figure 15 in the IHA application for an example of one such source grid). Since the source density grids do not extend to Raritan Bay, the grids were extrapolated to cover the bay and values were pulled from the nearest grid cell to assign density values to those empty cells in order to approximate densities in Raritan Bay (see Figure 16 in the IHA application). The resulting density grid was used to calculate take estimates of marine mammals for pile installation and removal activities. It should be noted that this approach likely results in conservative estimates of cetacean density for the project area, as cetacean densities in Raritan Bay are expected to be lower than the densities in the areas of the Atlantic Ocean from which the densities were extrapolated (with the exception of humpback whales, as described below).

For harbor seals and gray seals, densities were first obtained from Roberts *et al.* (2018), as described above for cetacean densities. However, because the pinniped data used in the Roberts *et al.* (2018) density models were derived from offshore aerial and vessel surveys, the models did not accurately represent the densities of pinnipeds that

would be expected in Raritan Bay, as they underestimate densities that would be expected closer to shore which would be higher than those offshore due to closer proximity to haulouts. Thus, the extrapolation of pinniped densities from Roberts *et al.* (2018) to Raritan Bay resulted in exposure estimates that were not consistent with expectations of actual pinniped densities based on the number of opportunistic sightings reported in the project area. There have been no systematic studies focusing on seal populations within Raritan Bay, Lower New York Bay, or Sandy Hook Bay. Therefore, pinniped densities were estimated using systematic data collected by Coastal Research and Education Society of Long Island, Inc. (CRESLI) from November 18, 2018, to April 16, 2019, at Cupsogue Beach Park in Westhampton Beach, NY (CRESLI, 2019).

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate. The following steps were performed to estimate the potential numbers of marine mammal exposures above Level A and Level B harassment thresholds as a result of the proposed activity:

1. Distances to isopleths corresponding to Level A and Level B harassment thresholds were calculated for each pile size for vibratory and impact installation and removal activities at the representative pile locations within the Project area, as described above.
2. GIS analysis was then used, incorporating these distance values and a viewshed analysis (described below), to calculate resulting ZOIs.
3. Species density estimations were incorporated in the GIS analysis to determine estimated number of daily exposures.

4. Daily exposure estimates were multiplied by the duration (days) of the corresponding in-water construction activity (based on pile size and location).

As described above, the distances to isopleths associated with Level A and Level B harassment thresholds were calculated for each pile size for vibratory and impact installation and removal activities (Tables 7 and 8). These distances to relevant thresholds were then incorporated into a GIS analysis to analyze the relevant ZOIs within which take of marine mammals would be expected to occur.

Given that the proposed activity would occur in a semi-enclosed bay, the modeled distances to thresholds would in some cases be truncated by land (i.e., the sounds from the proposed activity would not propagate to the full modeled isopleth distances because of the presence of land, which in some cases is closer to the pile driving/removal location than the total distances). A viewshed analysis is a standard technique used in GIS to determine whether an area is visible from a specific location (Kim *et al.*, 2004). The analysis uses an elevation value of two points with direct line of sight to determine the likelihood of seeing the elevated point from the ground. Incorporating the viewshed analysis allowed GIS modeling of sound propagation to replicate how sound waves traveling through the water are truncated when they encounter land. GIS modeling used an artificial elevation model setting the water to zero (ground) and any land mass to 100 (elevated point) and focusing only on areas within the Project area where sound would propagate. Any land within direct 'line of sight' to the sound source would prevent the sound from propagating farther. This method was applied to each of the eight representative pile locations. This simple model does not account for diffusion, which would be minimal with large landmasses; therefore in the model no sound bends around

landmasses. See Figure 9 in the IHA application for an example of applying the viewshed analysis to a single representative pile location (HDD Morgan Offshore).

A custom Python script was developed to calculate potential cetacean takes due to pile installation and removal activities. The script overlays the species-specific Level A and Level B harassment ZOIs (each clipped by the viewshed) for each pile size and type at each of the representative pile locations (Table 4), over the density grid cells. The script then multiplies the total density value by the area of the ZOI, resulting in initial take estimate outputs. The following formulas were implemented by the script for each species at each representative pile location:

Initial Level A take estimate = $ZOI * d$

Initial Level B take estimate = $ZOI * d$

where:

ZOI = the ensonified area at or above the species-specific acoustic threshold, clipped by the viewshed.

d = density estimate for each species within the ZOI.

The initial take estimates were then multiplied by the duration (days) of the corresponding in-water construction activity (based on pile size and location). The following formulas demonstrate this method:

Level A take estimate = initial take estimate * X days of activity

Level B take estimate = initial take estimate * X days of activity

where:

X days of activity = number of days for which the corresponding in-water construction activity occurs.

These numbers were then totaled to provide estimates of the numbers of take by Level A and Level B harassment for each species. The exposure numbers were rounded to the nearest whole individual. As the construction schedule has not yet been finalized, the take calculations described above were performed for two scenarios: (1) all construction activities occurring during summer 2020, and (2) installation occurring during the summer and removal in fall of 2020. To be conservative, the higher take estimates calculated between the two scenarios were then carried forward in the analysis.

Note that for bottlenose dolphins, the density data presented by Roberts *et al.* (2016) does not differentiate between bottlenose dolphin stocks. Thus, the take estimate for bottlenose dolphins calculated by the method described above resulted in an estimate of the total of bottlenose dolphins expected to be taken, from all stocks (for a total of 6,331 takes by Level B harassment). However, as described above, both the Western North Atlantic Northern Migratory Coastal stock and the Western North Atlantic Offshore stock have the potential to occur in the project area. As the project area represents the extreme northern extent of the known range of the Western North Atlantic Northern Migratory Coastal stock, and as dolphins from the Western North Atlantic Northern Migratory Coastal stock have never been documented in Raritan Bay, we assume that 25 percent of bottlenose dolphins taken would be from the North Atlantic Northern Migratory Coastal stock and the remaining 75 percent of bottlenose dolphins taken will be from the Western North Atlantic Offshore stock. Thus, we allocated 75 percent of the total authorized bottlenose dolphin takes to the Western North Atlantic Offshore stock (total 4,748 takes by Level B harassment), and 25 percent to the Western

North Atlantic Northern Migratory Coastal stock (total 1,583 takes by Level B harassment) (Table 9).

For humpback whales and harbor, gray and harp seals, the methods used to estimate take were slightly different than the methodology described above. For humpback whales, the steps above resulted in zero exposures above the Level B harassment threshold. However, there are humpback whales known to occur in the project area, indicating that potential takes may occur and therefore should be accounted for. As the exposure estimate method described above resulted in zero exposures, other methods for calculating take were applied.

Humpback whale sightings data from Gotham Whale, a whale watching organization that collects data on marine mammals in and around New York harbor and Raritan Bay, represent the best available information on humpback whale abundance in the project area. Based on Gotham Whale's sightings data, an estimate of the number of humpback whales observed per day was estimated by dividing the number of humpback whale observations by the number of trips. As sightings data from 2011 through 2019 demonstrated an increasing trend in the number of sightings from 2011 through 2019, we used the number of sightings from 2019 (which represented the highest number of sightings per day of all years) to develop a conservative take estimate for humpback whales. The daily sightings rate in 2019 (0.54 whales per day) was multiplied by the number of days of construction activities (65.5) to come up with an estimate of total takes by Level B harassment (i.e., $0.54 * 65.5 = 35$ takes; Table 9). To calculate takes by Level A harassment, we conservatively estimated that one humpback whale may be taken by

Level A harassment during each day of impact pile driving (14 days); thus, we have authorized 14 takes of humpback whales by Level A harassment.

As described above, local survey data represents the best available information on abundance estimates for pinnipeds in the project area. Estimates of take by Level B harassment for harbor seals were calculated using systematic data collected by CRESLI from November 18, 2018 through April 28, 2019, where a total of 2,621 harbor seals were sighted at Cupsogue Beach Park. The total number of sightings was divided by the total number of survey days to come up with a daily sightings rate (82 seals per day). That number was then multiplied by the number of days of construction activities (65.5) to come up with an estimate of total takes by Level B harassment (i.e., $82 * 65.5 = 5,371$ takes). To calculate an estimate of takes by Level A harassment, the daily sightings rate was multiplied by the number of days of impact pile driving (14 days, for a total of 1,107 takes by Level A harassment).

Data on gray seals in the project area was not available; however, anecdotal information indicates gray seals are present in the project area and may be taken by Transco's proposed activities. Therefore, to come up with an estimate of gray seal takes, a ratio of gray seals to harbor seals was estimated. While the data presented by Roberts *et al.* (2018) represent the best available density estimates for pinnipeds in the project area, that data does not differentiate by seal species. Thus the best available information on the ratio of gray seals to harbor seals comes from the U.S. Navy's OPAREA density estimates (Halpin *et al.* 2009; Navy 2007, 2012). The OPAREA data indicate the ratio of gray seals to harbor seals is 36 percent to 64 percent, respectively. Thus, the estimated number of takes by Level A harassment and Level B harassment for harbor seals (1,107

and 5,371 respectively) were multiplied by 0.36 to come up with an estimate of total takes by Level A harassment and Level B harassment for gray seals (399 and 1,934 respectively).

Note that the take estimate methods described above for harbor seals, gray seals, and humpback whales have been revised from the methods proposed in the notice of proposed IHA (84 FR 45955; September 9, 2019) based on public comments received in response to the notice of proposed IHA, and authorized take numbers have also been revised from the numbers proposed in the notice of proposed IHA as result of these changes.

Due to lack of data and their rare occurrence in the Mid-Atlantic region, no densities for harp seals are available. However, harp seals have been documented along the southern coast of Long Island during the winter, and a recent pinniped UME has resulted in increased strandings of harp seals on the Atlantic coast. Because so few harp seals have been documented in the region of the project area, we estimate that up to four harp seals (the total number opportunistically observed at Cupsogue Beach (CRESLI, 2008) could enter the Level B harassment zone and be taken by Level B harassment. Authorized take numbers are shown in Table 9.

Table 9–Total Numbers of Potential Incidental Takes of Marine Mammals Authorized and Authorized Takes as a Percentage of Population

Species	Authorized takes by Level A harassment	Authorized takes by Level B harassment	Total authorized takes	Total authorized takes authorized as a percentage of stock taken*
Fin whale	0	5	5	0.1
Humpback Whale	14	35	49	3.0
Minke Whale	0	1	1	0.0
North Atlantic Right Whale	0	2	2	0.5
Bottlenose Dolphin - Western North Atlantic Northern Migratory Coastal stock	0	1,583	1,583	23.8

Bottlenose Dolphin – Western North Atlantic Offshore stock	0	4,748	4,748	6.1
Common Dolphin	0	95	95	0.1
Harbor porpoise	0	11	11	0.0
Gray seal	399	1,934	2,333	8.6
Harbor seal	1,107	5,371	6,478	8.5
Harp seal	0	4	4	0.0

*Calculations of percentage of stock taken are based on the best available abundance estimate as shown in Table 1. For North Atlantic right whales the best available abundance estimate is derived from the 2018 North Atlantic Right Whale Consortium 2018 Annual Report Card (Pettis *et al.*, 2018). For the pinniped species the best available abundance estimates are derived from the most recent NMFS Stock Assessment Reports. For all other species, the best available abundance estimates are derived from Roberts *et al.* (2016, 2017, 2018).

The take numbers authorized are considered conservative for the following

reasons:

- Density estimates assume are largely derived from adjacent grid-cells that likely overestimate density in the vicinity of the project area.
- Level A harassment take numbers do not account for the likelihood that marine mammals will avoid a stimulus when possible before that stimulus reaches a level that would have the potential to result in injury; and
- Level A harassment take numbers do not account for the effectiveness of mitigation and monitoring measures in reducing the number of takes.

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 such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (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 such 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, we carefully consider 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 and impact on operations.

The mitigation strategies described below are consistent with those required and successfully implemented under previous incidental take authorizations issued in association with in-water construction activities. Modeling was performed to estimate zones of influence (ZOI; see “Estimated Take”); these ZOI values were used to inform mitigation measures for pile driving activities to minimize Level A harassment and Level B harassment to the extent possible, while providing estimates of the areas within which Level B harassment might occur.

In addition to the specific measures described later in this section, Transco would conduct briefings for construction supervisors and crews, the marine mammal monitoring teams, and Transco staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.

Pre-Clearance Zones

Transco would use Protected Species Observers (PSOs) to establish pre-clearance zones around the pile driving equipment to ensure these zones are clear of marine mammals prior to the start of pile driving. The purpose of “clearance” of a particular zone is to prevent potential instances of auditory injury and potential instances of more severe behavioral disturbance as a result of exposure to pile driving noise (serious injury or death are unlikely outcomes even in the absence of mitigation measures) by delaying the activity before it begins if marine mammals are detected within certain pre-defined distances of the pile driving equipment. The primary goal in this case is to prevent auditory injury (Level A harassment), and the pre-clearance zones are larger than the modeled distances to the isopleths corresponding to Level A harassment (based on peak SPL) for all marine mammal functional hearing groups. These zones vary depending on species and are shown in Table 10. All distances to pre-clearance zones are the radius from the center of the pile being driven.

Table 10–Pre-Clearance Zones during Transco Pile Driving and Removal Activities

Species	Clearance Zone
North Atlantic right whale	Any distance
Fin and humpback whale	1,000 m
All other marine mammal species	100 m

If a marine mammal is observed approaching or entering the relevant pre-clearance zones prior to the start of pile driving operations, pile driving activity would be delayed until either the marine mammal has voluntarily left the respective clearance zone and been visually confirmed beyond that zone, or, 30 minutes have elapsed without re-detection of the animal.

Prior to the start of pile driving activity, the pre-clearance zones will be monitored for 30 minutes to ensure that they are clear of the relevant species of marine mammals. Pile driving would only commence once PSOs have declared the respective pre-clearance zones clear of marine mammals. Marine mammals observed within a pre-clearance zone will be allowed to remain in the pre-clearance zone (*i.e.*, must leave of their own volition), and their behavior will be monitored and documented. The pre-clearance zones (to a distance of 1,000 m) may only be declared clear, and pile driving started, when the entire pre-clearance zones are visible (*i.e.*, when not obscured by dark, rain, fog, etc.) for a full 30 minutes prior to pile driving.

Soft Start

The use of a soft start procedure is believed to provide additional protection to marine mammals by warning marine mammals or providing them with a chance to leave the area prior to the hammer operating at full capacity, and typically involves a requirement to initiate sound from the hammer at reduced energy followed by a waiting period. Transco will utilize soft start techniques for impact pile driving by performing an initial set of three strikes from the impact hammer at a reduced energy level followed by a thirty second waiting period. The soft start process would be conducted a total of three times prior to driving each pile (*e.g.*, three strikes followed by a thirty second delay, then

three additional single strikes followed by a thirty second delay, then a final set of three strikes followed by an additional thirty second delay). Soft start would be required at the beginning of each day's impact pile driving work and at any time following a cessation of impact pile driving of thirty minutes or longer.

Shutdown

The purpose of a shutdown is to prevent some undesirable outcome, such as auditory injury or behavioral disturbance of sensitive species, by halting the activity. If a marine mammal is observed entering or within the shutdown zones after pile driving has begun, the PSO will request a temporary cessation of pile driving. Transco has proposed that, when called for by a PSO, shutdown of pile driving would be implemented when feasible. However, if a shutdown is called for before a pile has been driven to a sufficient depth to allow for pile stability, then for safety reasons the pile would need to be driven to a sufficient depth to allow for stability and a shutdown would not be feasible until after that depth was reached. We therefore propose that shutdown would be implemented when feasible. If shutdown is called for by a PSO, and Transco determines a shutdown to be technically feasible, pile driving would be halted immediately. After shutdown, pile driving may be initiated once all clearance zones are clear of marine mammals for the minimum species-specific time periods, or, if required to maintain installation feasibility. For North Atlantic right whales, shutdown would occur when a right whale is observed by PSOs at any distance, and a shutdown zone of 85 m (279 ft) would be implemented for all other species (Table 11). The 500 m zone is a protective measure to avoid takes by Level A harassment, and potentially some takes by Level B harassment, of North Atlantic right whales. The 85 m zone was calculated based on the distance to the Level A

harassment threshold based on the peak sound pressure metric (202 dB re 1 μ Pa) for a 66-inch steel pile, plus an additional 50 m (164-ft) buffer. During in-water construction activities that do not entail pile driving (*e.g.*, excavating, dredging, and use of other heavy machinery), if a marine mammal comes within 10-m of the construction equipment, Transco must cease operations and reduce vessel speed to the minimum level required to maintain steerage and safe working conditions.

Table 11–Shutdown Zones during Transco Pile Driving and Removal Activities

Species	Shutdown Zone
North Atlantic right whale	Any distance
All other marine mammal species	85 m

Visibility Requirements

All in-water construction and removal activities would be conducted during daylight hours, no earlier than 30 minutes after sunrise and no later than 30 minutes before sunset. Pile driving would not be initiated at night, or, when the full extent of all relevant clearance zones cannot be confirmed to be clear of marine mammals, as determined by the lead PSO on duty. The clearance zones may only be declared clear, and pile driving started, when the full extent of all clearance zones are visible (*i.e.*, when not obscured by dark, rain, fog, etc.) for a full 30 minutes prior to pile driving.

Monitoring Protocols

Monitoring would be conducted before, during, and after pile driving activities. In addition, observers will record all incidents of marine mammal occurrence, regardless of distance from the construction activity, and monitors will document any behavioral reactions in concert with distance from piles being driven. Observations made outside the shutdown zones will not result in delay of pile driving; that pile segment may be

completed without cessation, unless the marine mammal approaches or enters the shutdown zone, at which point pile driving activities would be halted when practicable, as described above. Pile driving activities include the time to install a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

The following additional measures apply to visual monitoring:

- (1) A minimum of two PSOs would be on duty at all times during pile driving and removal activity;
 - (2) Monitoring must be conducted by qualified, trained PSOs. One PSO must be stationed on an escort boat and the other either on the construction barge or another vessel during impact and vibratory pile installation and removal. The escort boat location may shift depending on work location, but will be a minimum of 100 to 200 m (328 to 656 ft) from the pile-driving location, depending on the site and the ensonification area associated with that specific pile-driving scenario;
 - (3) PSOs may not exceed four consecutive watch hours (PSOs may conduct duties not related to marine mammal observation beyond four consecutive hours); must have a minimum two-hour break between watches; and may not exceed a combined watch schedule of more than 12 hours in a 24-hour period;
 - (4) Monitoring will be conducted from 30 minutes prior to commencement of pile driving, throughout the time required to drive a pile, and for 30 minutes following the conclusion of pile driving;
 - (5) PSOs will have no other construction-related tasks while conducting monitoring;
- and

(6) PSOs would have the following minimum qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to document observations including, but not limited to: the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury of marine mammals from construction noise within a defined shutdown zone; and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

PSOs employed by Transco in satisfaction of the mitigation and monitoring requirements described herein must meet the following additional requirements:

- Independent observers (*i.e.*, not construction personnel) are required during all pile driving and removal activities (during non-pile driving construction

activities (*e.g.*, excavating, dredging, and use of other heavy machinery), construction personnel may act as observers for the 10-m exclusion zone described above.

Construction personnel acting as observers for the 10-m exclusion zone must have no other construction-related responsibilities during times of marine mammal monitoring);

- At least one observer must have prior experience working as an observer;
- Other observers may substitute education (degree in biological science or related field) or training for experience;
- One observer will be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as an observer; and
- NMFS will require submission and approval of observer CVs.

Vessel Strike Avoidance

Vessel strike avoidance measures will include, but are not limited to, the following, except under circumstances when complying with these measures would put the safety of the vessel or crew at risk:

- All vessel operators and crew must maintain vigilant watch for cetaceans and pinnipeds, and slow down or stop their vessel to avoid striking these protected species;
- All vessels must travel at 10 knots (18.5 km/hr) or less within any designated Dynamic Management Area (DMA) for North Atlantic right whales;
- All vessels greater than or equal to 65 ft (19.8 m) in overall length will comply with 10 knot (18.5 km/hr) or less speed restriction in any Seasonal Management Area (SMA) for North Atlantic right whales per the NOAA ship strike reduction rule (73 FR 60173; October 10, 2008);

- All vessel operators will reduce vessel speed to 10 knots (18.5 km/hr) or less when any large whale, any mother/calf pairs, pods, or large assemblages of non-delphinoid cetaceans are observed near (within 100 m (330 ft)) an underway vessel;
- All survey vessels will maintain a separation distance of 500 m (1640 ft) or greater from any sighted North Atlantic right whale;
- If underway, vessels must steer a course away from any sighted North Atlantic right whale at 10 knots (18.5 km/hr) or less until the 500 m (1640 ft) minimum separation distance has been established. If a North Atlantic right whale is sighted in a vessel's path, or within 500 m (330 ft) to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. Engines will not be engaged until the right whale has moved outside of the vessel's path and beyond 500 m. If stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 500 m;
- All vessels will maintain a separation distance of 100 m (330 ft) or greater from any sighted non-delphinoid cetacean. If sighted, the vessel underway must reduce speed and shift the engine to neutral, and must not engage the engines until the non-delphinoid cetacean has moved outside of the vessel's path and beyond 100 m. If a vessel is stationary, the vessel will not engage engines until the non-delphinoid cetacean has moved out of the vessel's path and beyond 100 m;
- All vessels will maintain a separation distance of 50 m (164 ft) or greater from any sighted delphinoid cetacean, with the exception of delphinoid cetaceans that voluntarily approach the vessel (*i.e.*, bow ride). Any vessel underway must remain parallel to a sighted delphinoid cetacean's course whenever possible, and avoid excessive speed or abrupt changes in direction. Any vessel underway must reduce vessel speed to

10 knots (18.5 km/hr) or less when pods (including mother/calf pairs) or large assemblages of delphinoid cetaceans are observed. Vessels may not adjust course and speed until the delphinoid cetaceans have moved beyond 50 m and/or the abeam of the underway vessel;

- All vessels will maintain a separation distance of 50 m (164 ft) or greater from any sighted pinniped; and
- All vessels underway will not divert or alter course in order to approach any whale, delphinoid cetacean, or pinniped. Any vessel underway will avoid excessive speed or abrupt changes in direction to avoid injury to the sighted cetacean or pinniped.

Transco will ensure that vessel operators and crew maintain a vigilant watch for marine mammals by slowing down or stopping the vessel to avoid striking marine mammals. Project-specific training will be conducted for all vessel crew prior to the start of the construction activities. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet.

We have carefully evaluated Transco's proposed mitigation measures and considered a range of other measures in the context of ensuring that we prescribed the means of effecting the least practicable adverse impact on the affected marine mammal species and stocks and their habitat. Based on our evaluation of these measures, we have determined that the mitigation measures provide the means of effecting the least practicable adverse impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for subsistence uses.

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 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.

Visual Marine Mammal Observations

Transco will collect sighting data and behavioral responses to pile driving activity for marine mammal species observed in the region of activity during the period of activity. All observers will be trained in marine mammal identification and behaviors and are required to have no other construction-related tasks while conducting monitoring. PSOs would monitor all clearance zones at all times. PSOs would also monitor Level B harassment zones and would document any marine mammals observed within these zones, to the extent practicable (noting that some distances to these zones are too large to fully observe). Transco would conduct monitoring before, during, and after pile driving and removal, with observers located at the best practicable vantage points.

Transco would implement the following monitoring procedures:

- A minimum of two PSOs will maintain watch at all times when pile driving or removal is underway;
- PSOs would be located at the best possible vantage point(s) to ensure that they are able to observe the entire clearance zones and as much of the Level B harassment zone as possible;
- During all observation periods, PSOs will use binoculars and the naked eye to search continuously for marine mammals;
- If the clearance zones are obscured by fog or poor lighting conditions, pile driving will not be initiated until clearance zones are fully visible. Should such conditions

arise while impact driving is underway, the activity would be halted when practicable, as described above; and

- The clearance zones will be monitored for the presence of marine mammals before, during, and after all pile driving activity.

Individuals implementing the monitoring protocol will assess its effectiveness using an adaptive approach. PSOs will use their best professional judgment throughout implementation and seek improvements to these methods when deemed appropriate. Any modifications to the protocol will be coordinated between NMFS and Transco.

Data Collection

We require that observers use standardized data forms. Among other pieces of information, Transco will record detailed information about any implementation of delays or shutdowns, including the distance of animals to the pile and a description of specific actions that ensued and resulting behavior of the animal, if any. We require that, at a minimum, the following information be collected on the sighting forms:

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

- Type of construction activity (*e.g.*, impact or vibratory driving/removal)

when marine mammals are observed.

- Description of implementation of mitigation measures (*e.g.*, delay or shutdown).
- Locations of all marine mammal observations; and
- Other human activity in the area.

Transco would note behavioral observations, to the extent practicable, if an animal has remained in the area during construction activities.

Reporting

A draft report would be submitted to NMFS within 90 days of the completion of monitoring for each installation's in-water work window. The report would include marine mammal observations pre-activity, during-activity, and post-activity during pile driving days, and would also provide descriptions of any behavioral responses to construction activities by marine mammals. The report would detail the monitoring protocol, summarize the data recorded during monitoring including an estimate of the number of marine mammals that may have been harassed during the period of the report, and describe any mitigation actions taken (*i.e.*, delays or shutdowns due to detections of marine mammals, and documentation of when shutdowns were called for but not implemented and why). A final report must be submitted within 30 days following resolution of comments on the draft report.

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. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’s 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).

Pile driving and removal activities associated with the proposed project, as described previously, have the potential to disturb or temporarily displace marine mammals. Specifically, the specified activities may result in take, in the form of Level A harassment (potential injury) or Level B harassment (potential behavioral disturbance) from underwater sounds generated from pile driving and removal. Potential takes could occur if individual marine mammals are present in the ensonified zone when pile driving and removal is occurring. To avoid repetition, the our analyses apply to all the species

listed in Table 1, given that the anticipated effects of the proposed project on different marine mammal species and stocks are expected to be similar in nature.

Impact pile driving has source characteristics (short, sharp pulses with higher peak levels and sharper rise time to reach those peaks) that are potentially injurious or more likely to produce severe behavioral reactions. However, modeling indicates there is limited potential for injury even in the absence of the mitigation measures, with most species predicted to experience no Level A harassment based on modeling results. In addition, the potential for injury is expected to be greatly minimized through implementation of the mitigation measures including soft start and the implementation of clearance zones that would facilitate a delay of pile driving if marine mammals were observed approaching or within areas that could be ensonified above sound levels that could result in auditory injury. Given sufficient notice through use of soft start, marine mammals are expected to move away from a sound source that is annoying prior to its becoming potentially injurious or resulting in more severe behavioral reactions.

We expect that any exposures above the Level A harassment threshold would be in the form of slight PTS, *i.e.* minor degradation of hearing capabilities within regions of hearing that align most completely with the energy produced by pile driving (*i.e.* the low-frequency region below 2 kHz), not severe hearing impairment. If hearing impairment occurs, it is most likely that the affected animal would lose a few decibels in its hearing sensitivity, which in most cases is not likely to meaningfully affect its ability to forage and communicate with conspecifics. However, given sufficient notice through use of soft start, marine mammals are expected to move away from a sound source that is annoying

prior to its becoming potentially injurious or resulting in more severe behavioral reactions.

Additionally, the numbers of exposures above the Level A harassment authorized are very low for all marine mammal stocks and species: for 9 of 11 stocks, we authorize no takes by Level A harassment; for the remaining two stocks we authorize no more than 12 takes by Level A harassment of a low level that would not be expected to impact reproduction or survival of any individuals.. No serious injury or mortality of any marine mammal stocks are anticipated or authorized. Serious injury or mortality as a result of the proposed activities would not be expected even in the absence of the mitigation and monitoring measures.

Repeated exposures of individuals to relatively low levels of sound outside of preferred habitat areas are unlikely to significantly disrupt critical behaviors. Thus, in this case, 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. Instances of more severe behavioral harassment are expected to be minimized by mitigation and monitoring measures. Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.*, Thorson and Reyff, 2006; HDR, Inc., 2012; Lerma, 2014). Most likely, individuals will simply move away from the sound source and temporarily avoid the area where pile driving is occurring. Therefore, we expect that animals disturbed by project sound would

simply avoid the area during pile driving in favor of other, similar habitats. We expect that any avoidance of the project area by marine mammals would be temporary in nature and that any marine mammals that avoid the project area during construction activities would not be permanently displaced.

Feeding behavior is not likely to be significantly impacted, as prey species are mobile and are broadly distributed throughout the project area; therefore, marine mammals that may be temporarily displaced during construction 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 areas of notable biological significance for marine mammal feeding known to exist in the project area. In addition, there are no rookeries, mating areas, calving areas or migratory areas known to be biologically important to marine mammals within the proposed project area.

NMFS concludes that exposures to marine mammals due to the proposed project would result in only short-term effects to individuals exposed. Marine mammals may temporarily avoid the immediate area but are not expected to permanently abandon the area. Impacts to breeding, feeding, sheltering, resting, or migration are not expected, nor are shifts in habitat use, distribution, or foraging success. NMFS does not anticipate the marine mammal takes that would result from the proposed project would impact annual rates of recruitment or survival.

As described above, north Atlantic right, humpback, and minke whales, and gray, harbor and harp seals are experiencing ongoing UMEs. For North Atlantic right whales, as described above, no injury as a result of the proposed project is expected or authorized, and Level B harassment takes of right whales are expected to be in the form of avoidance of the immediate area of construction. In addition, the number of exposures above the Level B harassment threshold are minimal (i.e., 2). As no injury or mortality is expected or authorized, and Level B harassment of North Atlantic right whales will be reduced to the level of least practicable adverse impact through use of mitigation measures, the authorized takes of right whales would not exacerbate or compound the ongoing UME in any way. For minke whales, although the ongoing UME is under investigation (as occurs for all UMEs), this event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales. Even though the PBR value is based on an abundance for U.S. waters that is negatively biased and a small fraction of the true population abundance, annual M/SI does not exceed the calculated PBR value for minke whales. With regard to humpback whales, 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 distinct population segment (DPS)) remains healthy. The West Indies DPS, which consists of the whales whose breeding range includes the Atlantic margin of the Antilles from Cuba to northern Venezuela, and whose feeding range primarily includes the Gulf of Maine, eastern Canada, and western Greenland, was delisted. The status review identified harmful algal blooms, vessel collisions, and fishing gear entanglements as relevant threats for this DPS, but noted that all other threats are considered likely to have

no or minor impact on population size or the growth rate of this DPS (Bettridge *et al.*, 2015). As described in Bettridge *et al.* (2015), the West Indies DPS has a substantial population size (*i.e.*, approximately 10,000; Stevick *et al.*, 2003; Smith *et al.*, 1999; Bettridge *et al.*, 2015), and appears to be experiencing consistent growth.

With regard to gray seals, harbor seals and harp seals, although the ongoing UME is under investigation, 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 M/SI (345) is well below PBR (2,006) (Hayes *et al.*, 2018). For gray seals, the population abundance is over 27,000, and abundance is likely increasing in the U.S. Atlantic EEZ and in Canada (Hayes *et al.*, 2018). For harp seals, the current population trend in U.S. waters is unknown, as is PBR (Hayes *et al.*, 2018), however the population abundance is over 7 million seals, suggesting that the UME is unlikely to result in population-level impacts (Hayes *et al.*, 2018).

Authorized takes by Level A harassment for all species are very low (*i.e.*, no more than 12 takes by Level A harassment authorized for any of these species) and as described above, any Level A harassment would be expected to be in the form of slight PTS, *i.e.* minor degradation of hearing capabilities which is not likely to meaningfully affect the ability to forage or communicate with conspecifics. No serious injury or mortality is expected or authorized, and Level B harassment of North Atlantic right, humpback and minke whales and gray, harbor and harp seals will be reduced to the level of least practicable adverse impact through use of mitigation measures. As such, the authorized takes of North Atlantic right, humpback and minke whales and gray, harbor and harp seals would not exacerbate or compound the ongoing UMEs in any way.

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;
- The anticipated impacts of the proposed activity on marine mammals would be temporary behavioral changes due to avoidance of the project area and limited instances of Level A harassment in the form of a slight PTS for two marine mammal stocks;
- Potential instances of exposure above the Level A harassment threshold are expected to be zero for most species and relatively low for others; any PTS incurred is expected to be of a low level.;
- Total authorized takes as a percentage of population are low for all species and stocks (*i.e.*, less than 24 percent for one stock and less than 7 percent for the remaining 10 stocks);
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the project area during the proposed project to avoid exposure to sounds from the activity;
- Effects on species that serve as prey species for marine mammals from the proposed project are expected to be short-term and are not expected to result in significant or long-term consequences for individual marine mammals, or to contribute to adverse impacts on their populations.;
- There are no known important feeding, breeding, calving or migratory areas in the project area.

- The mitigation measures, including visual and acoustic monitoring, clearance zones, and soft start, 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 proposed 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. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

We are authorizing the incidental take of 11 marine mammal stocks. The total amount of taking authorized is less than 24 percent for one of these stocks, and less than 9 percent for all remaining stocks (Table 9), which we consider to be relatively small percentages and we find are small numbers of marine mammals relative to the estimated overall population abundances for those stocks.

Based on the analysis contained herein of the proposed 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 all 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.

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 evaluate our proposed action (*i.e.*, the promulgation of regulations and subsequent issuance of incidental take authorization) and alternatives with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 of the Companion Manual for NAO 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the proposed action qualifies to be categorically excluded from further NEPA review.

Endangered Species Act (ESA)

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, in this case with the NMFS Greater Atlantic Regional Fisheries Office (GARFO), whenever we propose to authorize take for endangered or threatened species.

The NMFS Office of Protected Resources Permits and Conservation Division is authorizing the incidental take of two species of marine mammals which are listed under the ESA: the North Atlantic right whale and fin whale. We requested initiation of consultation under Section 7 of the ESA with NMFS GARFO on August 14, 2019, for the issuance of this IHA. On February 25, 2020, NMFS GARFO determined our issuance of the IHA to Transco was not likely to adversely affect any ESA-listed species or result in the take of any marine mammals in violation of the ESA.

Authorization

NMFS has issued an IHA to Transco for conducting construction activities in Raritan Bay for a period of one year, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: March 11, 2020.

Donna Wieting,
Director, Office of Protected Resources,
National Marine Fisheries Service.

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