Transcontinental Gas Pipe Line Company, LLC

Request for an Incidental Harassment Authorization Under the Marine Mammal Protection Act

Rockaway Delivery Lateral Offshore Pipeline Route

October 2013

Submitted to:

National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910

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List of Acronyms

µ	micro
AEP	auditory evoked potential
CeTAP	Cetaceans and Turtle Assessment Program
dB	decibel
DGPS	differential global positioning system
DON	(U.S.) Department of the Navy
DP	dynamic positioning
DSM	density surface model
DSV	diving support vessel
ECMON	ecosystem monitoring program
EEZ	exclusive economic zone
ESA	Endangered Species Act
FHWG	Fisheries Hydroacoustic Working Group
GNRA	Gateway National Recreation Area
HDD	horizontal directional drilling
Hz	hertz
ICES	International Council for the Exploration of the Seas
IHA	Incidental Harassment Authorization
LNYBL	Lower New York Bay Lateral
M&R	meter and regulating
MARMAP	marine resources monitoring, assessment, and prediction
MDth/d	thousand dekatherms per day
mg/L	milligrams per liter
MMPA	Marine Mammal Protection Act

NEFSC	Northeast Fisheries Science Center
NMFS	National Marine Fisheries Service (now NOAA Fisheries Service)
NOAA	National Oceanic and Atmospheric Administration
NODE	Navy OPAREA density estimate
OSP	Optimum Sustainable Population
Pa	Pascal
PBR	potential biological removal
ppm	parts per million
PTS	permanent threshold shift
RFMRP	Riverhead Foundation for Marine Research and Preservation
RMS	root-mean-squared
SAS	sighting advisory system
SEL	sound exposure level
SMA	seasonal management area
SPL	sound pressure level
SPUE	sightings per unit effort
TL	transmission loss
Transco	Transcontinental Gas Pipe Line Company, LLC
TTS	temporary threshold shift
USCG	U.S. Coast Guard
WCNE	Whale Center of New England
YoNAH	Years of the North Atlantic Humpback
ZOI	zone of Influence

1.0 DESCRIPTION OF THE ACTIVITY

A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals

1.1 PROPOSED INTRODUCTION

Transcontinental Gas Pipe Line Company, LLC (Transco) is proposing to expand its pipeline system to meet both the immediate and future demand for natural gas in the New York City market area. This project, the Rockaway Delivery Lateral Project (Project), would provide an additional delivery point to National Grid's local distribution companies—Brooklyn Union Gas Company (doing business as National Grid NY) and KeySpan Gas East Corporation—collectively referred to here as National Grid. The Project would provide firm delivery lateral service[1] of 647 thousand dekatherms per day (Mdth/d)[2] of natural gas to National Grid's system in Brooklyn, New York, giving National Grid the flexibility to shift existing natural gas supplies from the existing Long Beach delivery point to the new delivery point, significantly enhancing the security and reliability of supply for the National Grid system. While this new lateral would have a total capacity of 647 Mdth/d, only 100 Mdth/d is incremental (i.e., an addition) to the National Grid system. The remaining 547 Mdth/d of capacity would enable National Grid to shift delivery of existing volumes from the Long Beach delivery point to this new lateral to address reliability and shifting usage patterns within National Grid's system. The Project area is shown on Figure 1.

The Project would consist of two main components, a 26-inch diameter natural gas pipeline (the Rockaway Delivery Lateral) and a meter and regulating (M&R) facility with associated equipment. Transco would be responsible for constructing both components. The Rockaway Delivery Lateral would extend approximately 3.20 miles from a proposed offshore interconnect with Transco's existing 26-inch diameter Lower New York Bay Lateral (LNYBL) in the Atlantic Ocean to an onshore delivery point for the National Grid pipeline system on the Rockaway Peninsula in Queens County, New York (*see* Figure 2). Transco is also proposing to construct the M&R Facility in the southernmost historic airplane hangar complex at Floyd Bennett Field, designated as Hangars 1 and 2, in Kings County, New York. Floyd Bennett Field is part of the Gateway National Recreation Area (GNRA), which is managed by the U.S.

[1] Under firm delivery lateral service a shipper, or shippers, have firm transportation rights to the full capacity of the lateral. At this time, Transco has binding agreements with two National Grid entities—Brooklyn Union Gas Company for 354 Mdth/d and KeySpan Gas East Corporation for 293 Mdth/d. The total provided under the FDLS service is 647 Mdth/d, as noted above.

[2] 647 MDth/d is equivalent to approximately 625 million cubic feet per day, assuming 1,035 British thermal units (Btus) per cubic foot.

Department of the Interior, National Park Service (NPS). National Grid would be responsible for constructing a new pipeline between the M&R Facility and the proposed Transco pipeline. This interconnect, referred to as the "tie-in point," would be located immediately south of the Marine Parkway Bridge interchange on the Rockaway Peninsula, on Tri-Borough Bridge and Tunnel Authority (TBTA) property. For the purposes of this Incidental Harassment Authorization (IHA) request, the discussion focuses on the in-water pipeline portion of the Project because the M&R Facility would be located on land and therefore is outside the scope of an IHA request.

The in-water portion of the Project would occur in waters that support several marine mammal species. The Marine Mammal Protection Act (MMPA) of 1972 prohibits the taking of marine mammals, which is defined as to "harass, hunt, capture, kill, or attempt to harass, hunt capture or kill," except under certain situations. Section 101(a)(5)(D) allows the issuance of an IHA, provided an activity results in negligible impacts on marine mammals and would not adversely affect subsistence use of these animals. The timing and specific activities associated with the Project (such as pile driving) may result in incidental taking by acoustical harassment (Level B take) of marine mammals protected under the MMPA. Transco is requesting an IHA for seven of the 13 marine mammal species that may occur in the Project region throughout the year.

1.2 PROJECT PURPOSE AND NEED

The purpose of the Project is to address current and future customer service needs. The Project would provide National Grid with the flexibility to redirect all or some of its system capacity, currently contracted to their existing Long Beach delivery point, to a new delivery point in Brooklyn during peak demand periods. In addition to this flexibility, the Project would allow National Grid to increase the overall capacity on their system by 100 MDth/d. Increasing the flexibility of delivery and overall volume during peak demand periods would reduce gas supply constraints, allowing existing dual-fuel power plants and customers with interruptible service in the area to continue using natural gas rather than switching to their alternative oil-burning systems. On peak days, demand has historically increased as much as 60% above average (NYC Energy Policy Task Force 2004). Service is expected to begin in November 2014.

Proposed M&R Facility

Proposed Pipeline Route

Existing 26" Lower NY Bay Lateral

Source: ESRI 2010

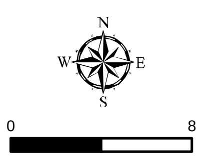

Figure 1
Rockaway Delivery Lateral Project
Project Vicinity

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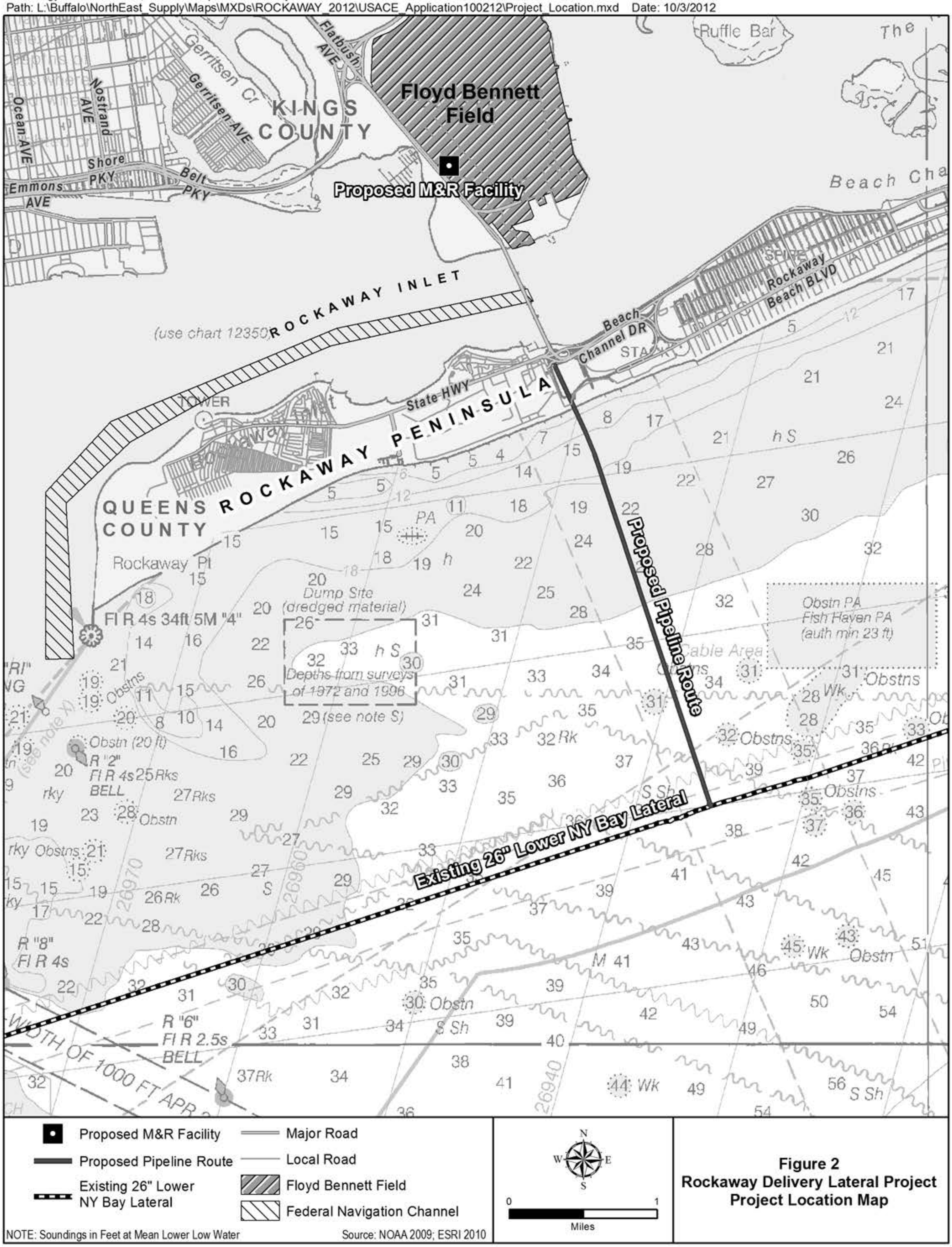

Figure 2
Rockaway Delivery Lateral Project
Project Location Map

1.3 PROJECT SETTING AND LOCATION

The Project would be located mostly in nearshore waters (within approximately 3 miles [approximately 4.8 kilometers]) of the Atlantic Ocean southeast of the Rockaway Peninsula. In order to avoid surface impacts on lands within the Gateway National Recreation Area (GNRA) and other nearshore areas, the pipeline would be installed using a combination of construction techniques, including conventional offshore pipe lay and horizontal directional drilling (HDD). Pipe for the project would be shipped by rail to a pipe yard in Elizabeth, New Jersey, where it would be placed on vessels for transport to the offshore construction site.

A linear segment of underwater land measuring approximately 2.15 miles (approximately 3.46 kilometers) (see Table 1) would be required for offshore pipe lay and trenching activities from the interconnect with Transco's LNYBL pipeline to the proposed HDD exit point in the nearshore area, seaward of Jacob Riis Park (see Figure 1). The Project area is located within the greater New York Bight region, with construction occurring within approximately 2.86 miles (approximately 4.6 kilometers) from the shoreline of Jacob Riis Park. Vessels associated with the Project would travel between the pipe yard in Elizabeth, New Jersey, to the offshore construction site. The Project area, therefore, is described as the waters between the pipe yard and construction site and the waters offshore of Jacob Riis Park where in-water construction would occur (Figures 3 and 4).

Table 1
Offshore Pipeline Segment Lengths

Segment Description	Mileposts (MP)	Distance (miles)
Offshore Dual Hot-tap, Subsea Manifold , and Tie-in Spools	MP P0.00 – MP P0.04	0.04
Offshore Pipeline Section (Flange at Tie-in Spool to Offshore HDD Exit Point)	MP 0.0 – MP 2.15	2.15
HDD Pipeline Section (0.67 Miles Offshore and 0.37 miles Onshore)	MP 2.15 – MP 3.15	1.00
Project Total		**2.86**
Note: MP 0.00 would be approximately 234 feet from the existing LNYBL pipeline, at the same location as MP P0.04. The dual hot-tap assembly, subsea manifold, and tie-in spools would be located between the existing LNYBL pipeline and MP 0.00.		

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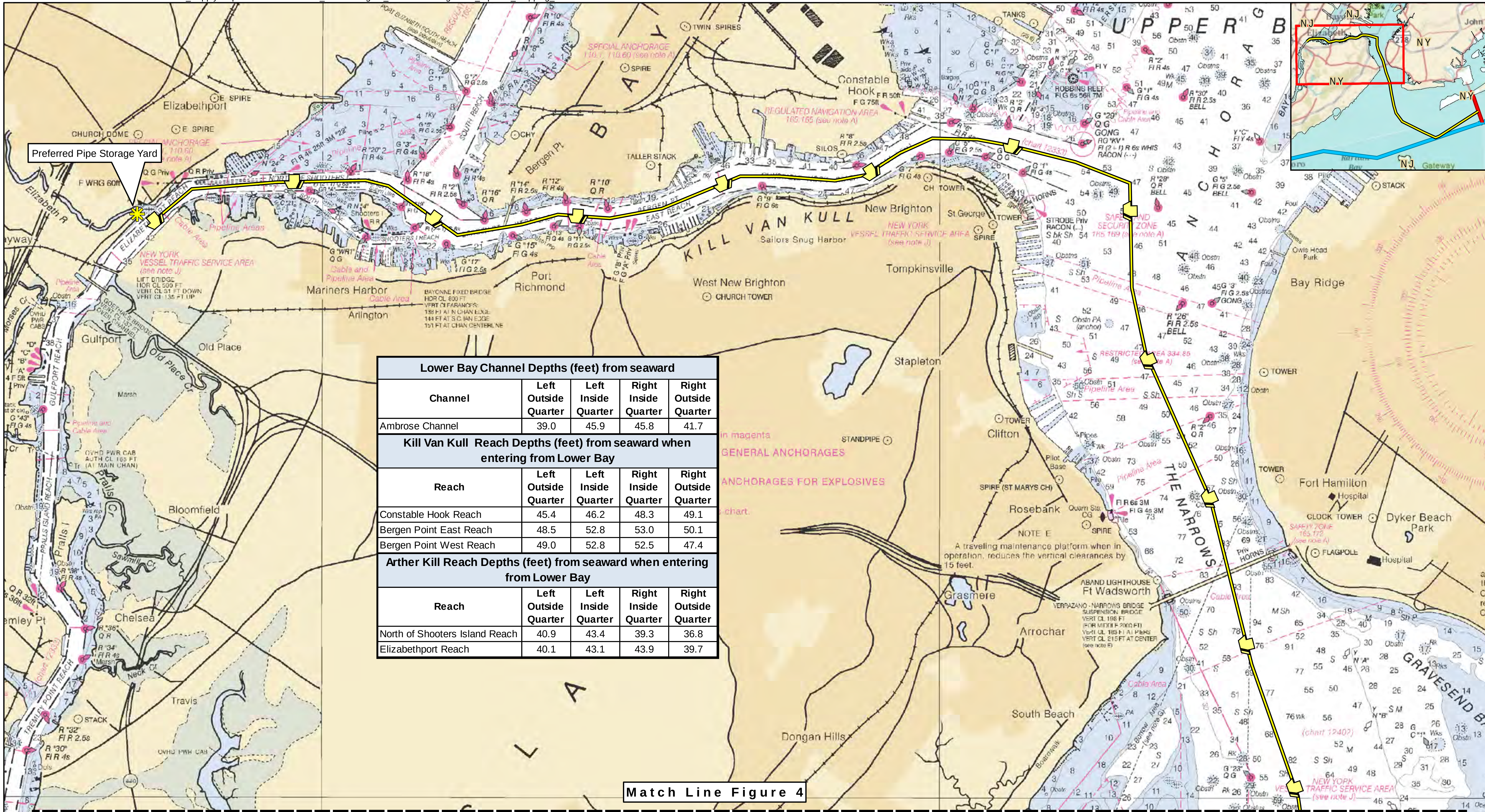
Source: ESRI 2010 Path: L:\Buffalo\NorthEast_Supply\Maps\MXDs\ROCKAWAY_2012\Biological_Assessment\Fig3and4_Pipeline_Shipping_Route.mxd



Lower Bay Channel Depths (feet) from seaward				
Channel	Left Outside Quarter	Left Inside Quarter	Right Inside Quarter	Right Outside Quarter
Ambrose Channel	39.0	45.9	45.8	41.7

Kill Van Kull Reach Depths (feet) from seaward when entering from Lower Bay				
Reach	Left Outside Quarter	Left Inside Quarter	Right Inside Quarter	Right Outside Quarter
Constable Hook Reach	45.4	46.2	48.3	49.1
Bergen Point East Reach	48.5	52.8	53.0	50.1
Bergen Point West Reach	49.0	52.8	52.5	47.4

Arther Kill Reach Depths (feet) from seaward when entering from Lower Bay				
Reach	Left Outside Quarter	Left Inside Quarter	Right Inside Quarter	Right Outside Quarter
North of Shooters Island Reach	40.9	43.4	39.3	36.8
Elizabethport Reach	40.1	43.1	43.9	39.7

Preferred Pipe Storage Yard
Preferred Pipeline Route
HDD Exit
Preferred Pipeline Construction Materials Shipping Route (24.8 miles)
Existing 26" Lower NY Bay Lateral

NOTE: Soundings in feet
Source: ESRI 2010, NOAA 2009

0 1 Miles

Figure 3
Rockaway Delivery Lateral Project
Action Area (1 of 2)

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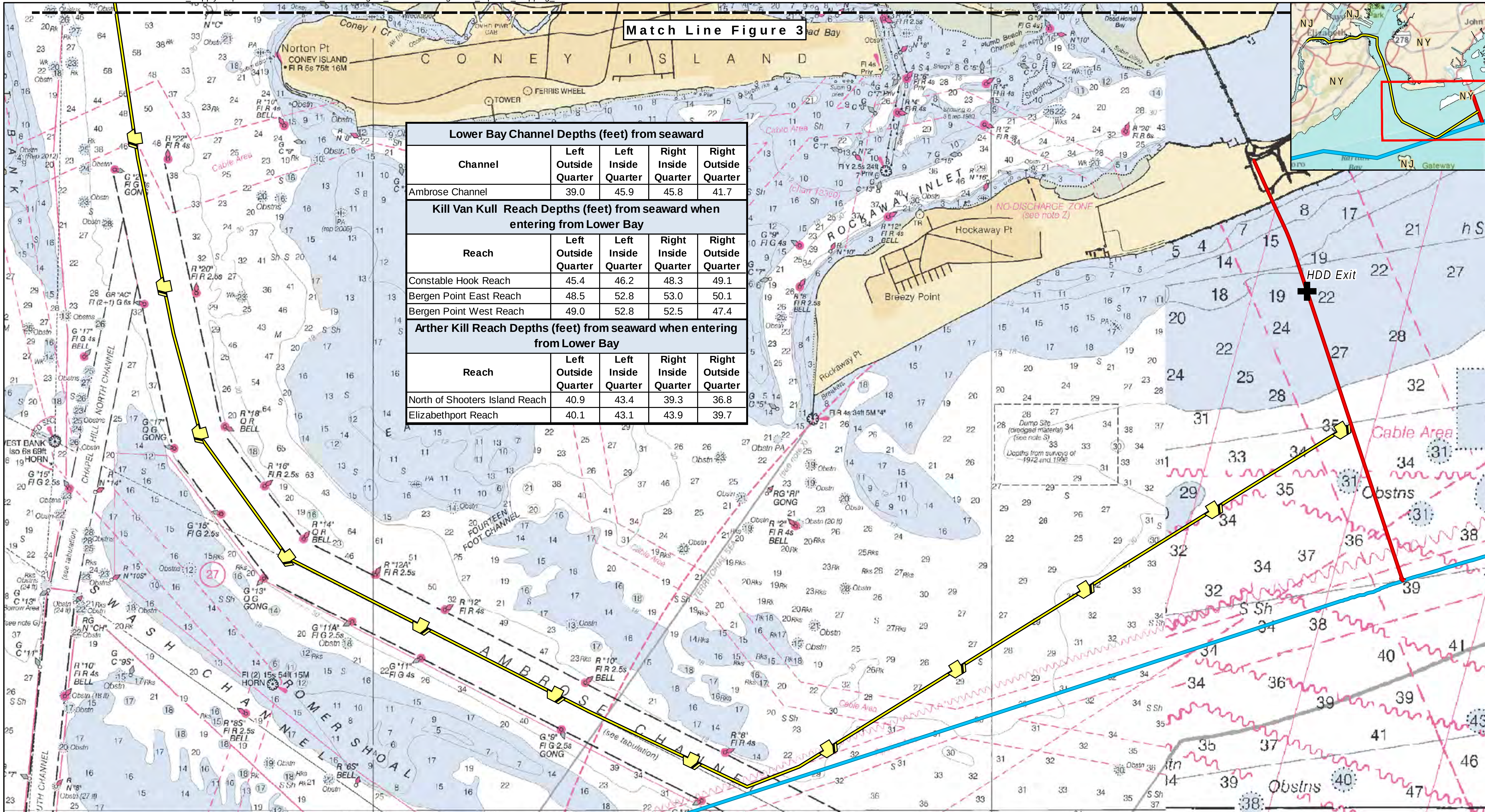
Source: ESRI 2010 Path: L:\Buffalo\NorthEast_Supply\Maps\MXDs\ROCKAWAY_2012\Biological_Assessment\Fig3and4_Pipeline_Shipping_Route.mxd



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Preferred Pipeline Route
HDD Exit
Preferred Pipeline Construction Materials Shipping Route (24.8 miles)
Existing 26" Lower NY Bay Lateral

NOTE: Soundings in feet
Source: ESRI 2010, NOAA 2009

N S E W
0 1
Miles

Figure 4
Rockaway Delivery Lateral Project
Action Area (2 of 2)

1.4 SPECIFIC PROJECT ACTIVITIES

The specific Project activity is to install a subsea natural gas pipeline extending from the existing LNYBL in the Atlantic Ocean to an onshore delivery point for the National Grid pipeline system on the Rockaway Peninsula in Queens County, New York. The work would include the following:

- *Horizontal Directional Drilling (HDD)*
  - Beginning onshore and exiting offshore
  - Includes excavation of the HDD exit pit (via clamshell dredge) and vibratory hammer installation and removal of piles
- *Offshore Construction and Support Vessels*
  - Various vessels would be used throughout the in-water work
- *Subsea Dual Hot-tap installation at the existing LNYBL*
  - Includes use of diver-controlled hand-jetting to clear sediment around the existing LNYBL
- *Offshore Pipeline Construction*
  - Includes offshore pipe laying and subsea jet-sled trenching
- *Anode Bed installation and Cable Crossing*
  - Includes use of divers and hand-jetting to clear sediment around the locations of the anode bed and existing power cable crossing
- *Hydrostatic Test Water Withdrawal and Discharge*
  - Would occur four times during the course of in-water construction
- *Post-Installation and Final (As-Built) Hydrographic Survey*
  - Includes the use of a multibeam echo sounder and high resolution side scan sonar
- *Subsea Trench and HDD Exit Pit Backfill*
  - Includes the use of a small-scale crane-supported suction dredge for the trench
  - Includes the use of diver-controlled hand jetting and/or clamshell dredge for the HDD exit pit
- *Operation and Maintenance*

In-water construction was planned to take place between January 2014 and May 2014. However, the construction window is likely to be shifted to occur between April 2014 and August 2014 based on the Federal Energy Regulatory Commission’s Notice of Schedule of Environmental Review for the Project that was released in August 2013. Therefore, this application analyzes potential takes that could occur between January 2014 and August 2014. The in-water work would last approximately four to six months, with actual pile installation and removal taking place approximately 10% of that time. More specifically, pile installation is expected to take place over the course of one week and removal would also take place over the course of one week. However, during that time period, pile driving will not occur continuously. All the work would occur in water depths between 25 feet (7.6 meters) and 50 feet (15.24 meters).

Construction Sequence and Schedule

Transco proposes to construct the Rockaway Delivery Lateral from winter of 2014 to spring of 2014 (January – May 2014); however, it is likely that the schedule will shift to spring 2014 through the late summer of 2014 (April – August 2014). The Project has an anticipated November 2014 in-service date. Construction of the pipeline is expected to last approximately four to six months. The following major construction activities are anticipated:

- The HDD equipment and clamshell barge would be mobilized to excavate the offshore HDD exit pit to approximately 21 feet (6 meters) below the sea floor, beginning in early 2014. The excavation of the HDD exit pit would result in the disturbance of 6.08 acres and 15,300 cubic yards (cy) of sediment. The sediment would not be removed from the system, however.

- A jack-up barge would then be mobilized to the HDD exit point location and five sets of temporary goal posts (i.e., 10 individual piles) and up to 60 temporary dolphin/fender piles (all 14- to 16-inch [0.36 to 0.40 meters] steel pipe piles) would be installed using two vibratory hammers (one for the goal posts and one for the dolphin/fender piles) located on the clamshell barge and the jack-up barge. Five goal posts would be installed along the pipeline route seaward of the HDD exit pit. The goal posts would guide and support the HDD pipe as it is pulled into the exit pit such that a smooth, controlled transition is made from the seabed to the HDD hole. Fender piles would be installed around the jack-up barge to protect it from incidental contact with other vessels while offshore construction is under way. Both the goal posts and the dolphin/fender piles would be installed close to each other, at the mouth of the HDD exit pit.

- HDD equipment would be placed on the jack-up barge deck for supporting the drilling operation from the offshore location. No drilling would occur from the offshore HDD location.

- The assembly and temporary placement of the pipe strings on the seafloor (both HDD and offshore sections) would coincide with the HDD exit point activities described above.

- After laying the pipe strings, the pipe lay barge would lower the offshore pipe string using a jet sled (i.e., trenching).

- The temporary piles would be removed via vibratory pile driving following the completion of the pipe being pulled through the HDD hole.

- Divers would excavate the hot-tap location using hand-jetting equipment and would install the hot-tap assembly, the subsea manifold, and tie-in spool from the hot-tap assembly to subsea manifold.

- Once the hot-tap and subsea manifold are installed, the HDD pipe string would be pulled back from the HDD exit point to the onshore entry point and connected with the offshore pipe string seaward of the HDD exit point.

- The Rockaway Delivery Lateral would be hydrostatically tested prior to connection with the LNYBL.

- Following installation of the pipe, a hydrographic survey would be conducted to determine if the pipeline and other excavated areas have been sufficiently covered by sediment from jet sled discharge and natural processes.

- If the post-installation surveys indicate that the pipeline has not been buried to the required depth, targeted backfill of the trench would occur through the use of a diver operated small-scale suction dredge. Other excavated areas would likely be backfilled, as necessary, using diver-controlled hand jetting equipment and/or a clamshell dredge.
- Following all backfill activities, a final hydrographic survey will be performed to determine the as-built condition of the seafloor.

- Tie-in with the National Grid 26-inch (0.66-meter)-diameter pipeline on Tri-Borough Bridge and Tunnel Authority (TBTA) property would occur in fall 2014 to meet a November 2014 in-service date. Figure 5 shows the full pipeline construction sequence and schedule; the proposed in-water construction schedule for the Project is summarized in Table 2.

Table 2
Potential In-Water Construction Schedule

Task	Start Date	Completion Date
Excavate HDD exit pit	April 2014	May 2014
Offshore pipeline laying	April 2014	May 2014
HDD	May 2014	July 2014
26-inch hot-tap and subsea manifold installation	May 2014	July 2014
Offshore pipeline trenching	May 2014	June 2014
Post-installation survey and backfill as Needed*	August 2014	August 2014

Note: Dates estimated as of October 2013
*Includes top layer backfill for HDD exit pit (if necessary)

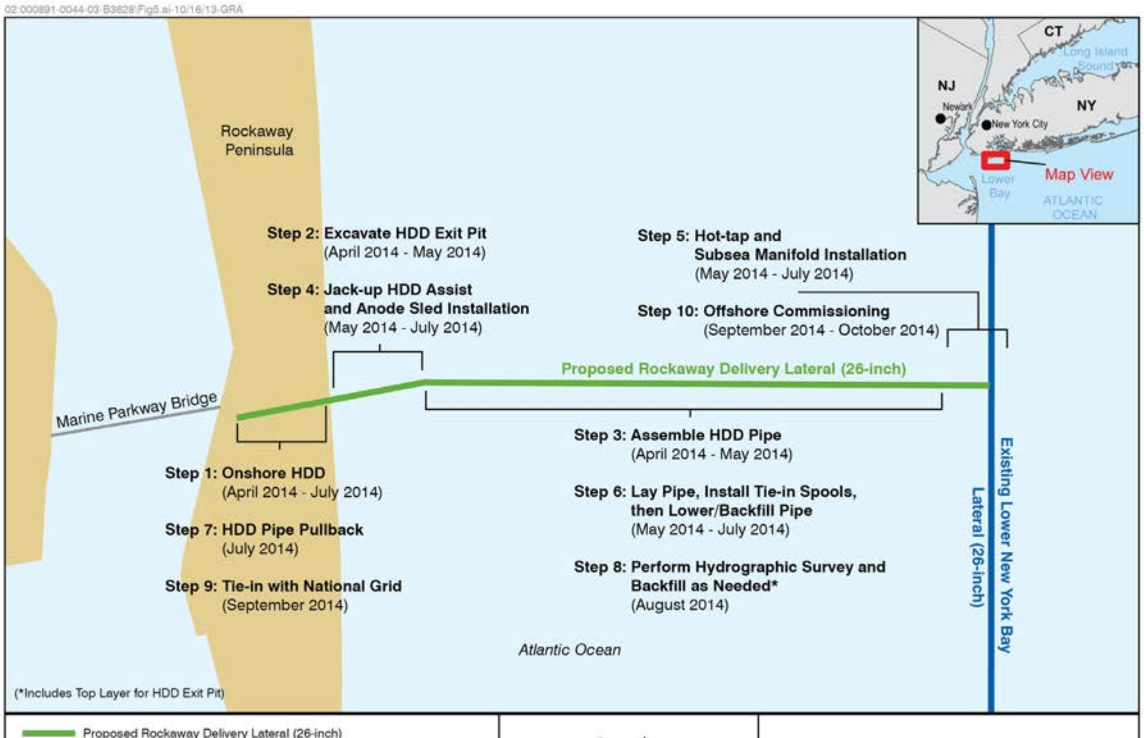

Figure 5
Rockaway Delivery Lateral Project
Potential Pipeline Construction Sequence

1.5 NOISE-PRODUCING PROJECT ELEMENTS

1. **Vibratory Hammer Installation and Removal**. Vibratory hammer installation consists of installing approximately 70 steel pipe piles. Following pile installation of pulling of the pipeline through the HDD hole, the same number of piles would be removed using the same vibratory hammer method. The approximately 70 piles would be temporary and remain in the water only during the course of the HDD offshore construction activities (three to four months) (see Figure 6).

2. **Vessel Operations.** Vessels of various sizes, ranging from small day-use workboats to larger supply vessels, pipeline construction vessels, and ocean-going tug boats, would be used throughout the course of the Project. No vessels would use dynamic positioning (DP), and only two boats (the crew boat and the escort boat) would make daily trips to the Project area from shore.

Figure 6 Typical Vibratory Hammer

3. **Clamshell dredging.** A clamshell dredge would be used to excavate the HDD exit pit (see Figure 7). The exit pit would be created by dredging approximately 15,300 cy of the seabed. The excavated material would be side cast within the work area around the exit point. The clamshell barge would be equipped with a clamshell attached to a crawler excavator, differential global positioning system (DGPS) survey equipment (for positioning), an echo sounder (for excavation monitoring), and other equipment needed to support dredging activities. Mooring for the clamshell barge would consist of three or four anchors placed at pre-selected locations by the support tug. The major concern from this activity is a temporary, localized increase in turbidity during excavation. Sound is not expected to be an issue associated with clamshell dredging because the dredge would be anchored in place and DP would not be used.

Figure 7 Clamshell Dredge

4. **Subsea Trenching - Jet Sled.** The offshore pipeline would be installed in a subsea trench such that the top of the pipeline is at least 4 feet (1.22 meters) below the seabed. The proposed method is to use a post-lay jet sled, where high-pressure water jets open a trench in the seabed underneath the pipeline after it has been laid on the seafloor (see Figure 8). A typical jet sled straddles the pipeline with water jets built into the claws. Immediately behind each claw, the material loosened by the jets is entrained by suction tubes and expelled to the side of the trench or behind the sled. The jets and the piping system are mounted on the jet sled, which is towed along the pipeline by cable or chain from the pipe lay barge, which provides the pressurized water and air for the system. Similar to the clamshell dredging of the exit pit, the major concern during this activity is temporary and localized turbidity. Sound is not a concern as the sled would be pulled along the bottom by the pipe-lay barge already in place, which itself would be moved by an eight-point mooring system of wire ropes and anchors that hold the lay barge on a precise heading.

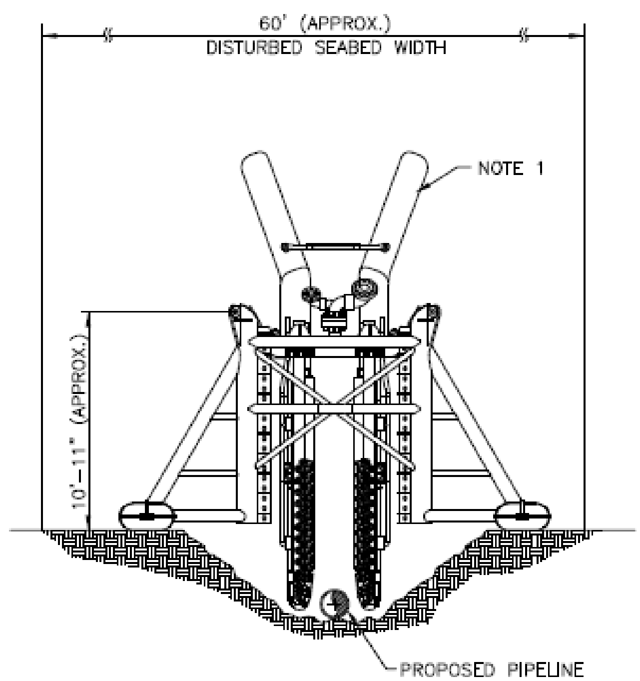

Figure 8 Typical Jet-Sled

5. **Anode Bed Installation and Cable Crossing**. To ensure appropriate cathodic protection of the pipeline against corrosion, Transco proposes to install an anode bed offshore in the area adjacent to the HDD exit pit. The anode bed installation would require approximately 4 days of offshore construction. The anode bed would consist of approximately 1,200 feet of anode cable installed perpendicular to the pipeline at the HDD pit. An anode sled, typically composed of several metallic rods attached to a corrosion-resistant frame approximately 10 feet wide by 10 feet long, would be connected at the terminus of the anode cable. Divers would hand jet the length of the cable to a depth of approximately 5 feet. Divers would then excavate a 6-foot deep area to install the anode sled. The anode bed installation would result in an impact area of approximately 1.63 acres. Once installed, the anode bed is expected to provide sufficient cathodic protection for at least 40 years without requiring any offshore maintenance. Sound is not a concern for this activity. Excavation would also be conducted by diver-controlled hand jetting at an existing (Neptune) power cable crossing prior to installation of the offshore pipeline. Concrete mats would be placed perpendicular to the proposed pipeline at the bottom of the excavated area, with a minimum of 1 foot of native sediment remaining over the cable. Approximately 0.28 acres would be disturbed during the cable crossing activities. The excavation depth at the cable crossing would be sufficient to allow for subsequent burial of the pipeline with a minimum of 4 feet cover over the top of the pipe.

6. **Hydrostatic Test Water Withdrawal and Discharge.** The HDD section would be tested before and after installation. Following installation of the offshore segment and connection with the HDD section, the Rockaway Delivery Lateral would be hydrostatically tested in its entirety. A total of 578,700 gallons of water would be withdrawn from and discharged back into the Project area. The major concern for this activity would be the effects on prey species through water quality and entrainment. Sound is not a concern for this activity.

7. **Post-Installation and Final (As-Built) Hydrographic Surveys.** Hydrographic survey would be conducted immediately following the hydrostatic tests and again after completion of any additional backfill activities described below. The hydrographic survey equipment used for the Project will consist of a multibeam echo sounder and high resolution side scan sonar. Both the multibeam echo sounder and the side scan sonar are considered pulsed noise sources. These noise sources, however, operate in very high frequency ranges. While each specific piece of equipment varies slightly, in general, the operating frequency of a multibeam echo sounder is reported as approximately 240 kilohertz (kHz) and greater (Bureau of Ocean Energy Management 2012; ESS Group, Inc. 2011). The generally preferred operating frequencies for side scan sonar are 445 and 900 kHz (ESS Group, Inc. 2011). In order for an animal to show a response or be affected by a sound source, that sound must be within the audible hearing range of that animal. This means that the frequency and sound pressure level of the sound must be within a range that can be perceived by the animal (Gotz et al. 2009). Therefore, as the operating frequencies of both pieces of equipment are outside of the functional hearing ranges of the marine mammals expected to be present (see Section 3 below), the sound associated with the post-installation hydrographic surveys is not of concern for this application.

8. **Subsea Trench and HDD Exit Pit Backfill.** Active backfill of excavated areas will depend on the results from the post-installation hydrographic surveys. Should the survey results indicate that 4 feet (1.22 meters) of cover has not been achieved along the pipeline, these areas will be backfilled using a small-scale crane-assisted suction dredge. The small-scale suction dredge will consist of dual water lift pipes that share one discharge pipe. To backfill

the subsea trench, additional fill material would be withdrawn from an area adjacent to the trench estimated to be approximately 4 feet (1.22-meters) wide and 1 foot (0.30-meter) deep per pass. The trench backfill activity is expected to take 1 to 2 weeks to complete. The HDD exit pit will also be backfilled if the post-installation surveys indicate that a sufficient layer of cover has not formed naturally over the exit pit and the drilling fluid. Should active backfilling be necessary, the exit pit and the drilling fluid within will be covered with an appropriate top layer of native material. The backfill method for the exit pit may include use of a clamshell dredge and/or diver-controlled hand jetting. This backfilling would occur approximately one month after completion of HDD activities, so substantial aggregation, settling and compaction of the clay-based material is expected to occur prior to the active backfill. If necessary, excavated locations other than the pipeline trench and HDD exit pit would likely be backfilled from the adjacent seabed by divers using hand-jets.

Only two Project construction elements involve noise as a concern for local marine mammals: vibratory pile driving associated with the HDD and vessel operations throughout the course of the Project. Each element is discussed below.

1.5.1 Vibratory Hammer Installation and Removal

Vibratory hammers are commonly used in steel pile installation and removal when the sediment conditions allow for this method. The model of vibratory hammer likely to be used for the project is the MKT V 52. The vibratory hammer is considered a continuous low-frequency noise source because the hammer continuously drives the pile into the substrate until the desired depth is reached. Vibratory hammers generally have 10 to 20 decibels (dB) lower source levels than impact hammers, so their use is considered a way to reduce underwater sound when pile driving is necessary for a project and the sediment conditions allow it (ICF Jones & Stokes and Illingworth and Rodkin, Inc. 2009). A vibratory hammer operates by using counterweights that spin to create a vibration. The vibration of the hammer causes the pile to vibrate at a high-speed. The vibrating pile then causes the soil underneath it to “liquefy” and allow the pile to move easily into or out of the sediment. The vibratory hammer would be used to install approximately 70 piles (10 goal posts and up to 60 fender piles). All the piles would be 14- to 16- inch-diameter (0.36 to 0.40 meters) steel pipe piles.

Two vibratory hammers would be used, with one hammer to install the goal posts and one hammer to install the fender piles. The anticipated time for installation of one individual pile would be approximately 1 to 2 seconds per foot of depth driven, with each pile being driven to a depth of approximately 25 to 30 feet (7.2 to 9.1 meters) below the seafloor. Therefore, it would take at least 60 seconds of continuous driving to install each individual pile. Total installation time for all the piles is estimated to total less than one day of operation spread out over approximately one week. The goal posts and fender piles would remain in the offshore environment only for the duration of the HDD portion of offshore construction (approximately 6 to 8 weeks). Total operating time of the vibratory hammer for the extraction of all piles at the end of the construction period is estimated to be similar to the installation time.

1.5.2 Vessel Operations

Various vessels would be operating within the Project area and transiting between the Project area and shore. The vessel types that would be used throughout the Project are listed in Table 3.

Table 3
Vessels Associated with the Project

Vessel Type	Number of Vessels	Positioning Method at Offshore Construction Site
Dive Support Vessel	1	Anchors with Mid-Line Buoys
Pre-commissioning and Commissioning Vessel	1	Anchors with Mid-Line Buoys
Clamshell Barge	1	Anchors
Jack-up Barge	1	Lift Legs
Pipe Lay Barge	1	Anchors with Mid-Line Buoys
Fuel Barge	1	Rafted beside Pipe Lay Barge, Jack-up Barge, Clamshell Dredge, and DSV[1]
Pipe Transport Barge	1	Rafted beside Pipe Lay Barge[1]
Crew Boat	1	Rafted beside Pipe Lay Barge[1]
Escort Boat	1	N/A
Tug Boat[2]	6	Rafted beside Pipe Lay Barge, Transport Barge, Clamshell Barge, and Fuel Barge[1]

Notes:
[1] When not under way.
[2] Tug boats would be used to support the barge activities. Two anchor handling tug boats would be used to support the pipe lay barge. Two tugs would be needed for each pipe transport barge trip. One tug would be used to haul the clamshell barge and assist with positioning each day the clamshell dredge is operating, and one tug would be needed to transport the fuel barge to the offshore work site once per week..

Only the crew boat and the escort ("picket") boat would make daily trips between shore and the offshore construction site throughout the offshore construction period. During pipe lay activities, the pipe transport barge would also be transported between the pipe yard and the offshore workspace approximately once or twice per day. While at the offshore construction site, the escort boat would operate as a security control vessel during installation of the pipeline. The DSV, clamshell barge, jack-up barge, and pipe lay barge would remain at the offshore construction site for the duration of their work associated with the Project. The fuel barge (and the two tug boats that support it) would travel once per week to the offshore construction site to refuel the lay barge, jack-up barge, clamshell dredge, and possibly the DSV. The pipe lay barge would spend the most time at the offshore construction site, approximately 83 days, whereas the clamshell barge is expected to spend the least amount of time, approximately 22 days. The tug boats that support the pipe lay barge would remain offshore as well. The pipe transport barge (and the two tug boats that support it) would travel between the pipe yard and the offshore construction site several times during the course of the Project. The larger vessels that would remain offshore throughout their portion of the Project (i.e., the pipe lay barge, clamshell barge, and jack-up barge) would not remain running while offshore and would either be anchored, lifted above the water, or moved by tug boats. No vessels associated with the Project would be positioned using DP.

Typically, DP systems are used for deep-water pipe lay operations where conventional positioning of the barge using drop-down anchors and cables becomes impractical. The minimum water depth for a pipe lay barge operating with dynamic positioning is approximately 100 feet (30.48 meters) and the associated barge draft would be approximately 30 feet (9.14 meters). The range of water depth for the Project's pipe lay operation is approximately 25 feet to 50 feet (7.6 meters to 15.24 meters), so the thrusters on a DP lay barge could not operate without excessive turbulence and disturbance of the seabed. Because of the water depths within the Project area, Transco plans to use pipe lay barges moored with pre-positioned anchors when installing the offshore section of the Rockaway Delivery Lateral.

Underwater noise associated with vessels is attributed to the low-frequency noise created by the reverberation of engines and their propellers. The low-frequency noise created by propeller movements is caused by bubbles created by the propeller as it moves through the water. As the bubbles collapse a low-frequency noise is produced, a process known as cavitation. Because propeller use by the larger vessels remaining in the Project area throughout the duration of the Project would be limited, the noise impacts from vessels are expected to be comparable to, if not less than, those generated by existing heavy vessel traffic in the vicinity of the Port of New Jersey and New York in the New York Harbor. The Project area is located in the precautionary area of the Port of New York and New Jersey shipping lanes. The Port of New York and New Jersey saw 4,534 port calls in 2010, making it the largest port on the U.S. east coast and third largest port in the U.S. (USDOT Maritime Administration 2011). Based on the proximity of the Project area to this major shipping center, it can be expected that the local background noise is dominated by large vessels (e.g., container ships) that produce source levels of 180 to 190 dB re 1 µ Pascal (Pa) $_{RMS}$ at frequencies between 200 and 500 hertz (Hz) (Thomsen et al. 2009; Jasney et al. 2005). Therefore, it is not expected that the 15 vessels associated with the Project would constitute a major noise source of concern relative to the already existing vessel noise and vessel traffic in the vicinity of the Project area.

1.6 SOUND LEVELS

1.6.1 Reference Vibratory Sound Source Levels

This project includes vibratory installation and removal of 14- to 16-inch (0.36- to 0.41-meter) steel pipe piles. No source levels were specifically available for 14- to 16–inch-diameter (0.36- to 0.41-meter-diameter) steel pipe piles at water depths of approximately 10 meters (32.81 feet). The most applicable source levels available are for 12-inch-diameter (0.30 meter) steel pipe piles in water depths of approximately 16.40 feet (5 meters). In-water measurements for the Mad River Slough Project in Arcata, CA, indicate that installation of a 12-inch (0.3-meters) steel pipe pile in ~ 16.40 feet (5 meters) of water measured at 32.81 feet (10 meters) from the source (ICF Jones & Stokes, and Illingworth and Rodkin, Inc. 2009) generated 155 dB re 1 $\mu Pa_{RMS.}$ Therefore, in order to account for the increased diameter of the piles planned for use during the Project, a change in water depth, and a different location than where the reference levels were recorded, the potential source levels were increased by 5 dB re 1 µPa (see Table 4). The 5 dB re 1 µPa increase was chosen due to an overall lack of current information available for reference levels of steel pipe piles of a similar size being driven with a vibratory hammer in similar water depths. Based on the available information, other steel pipe piles with reported reference levels showed a 20 dB re 1 µPa increase in source level (RMS) when comparing vibratory pile driving a 12-inch pile and a 36-inch pile both measured in approximately 5 meters (16.40 feet) of water. As the piles expected to be used for the Project would be a maximum of 16 inches in diameter and driven in water approximately 10 meters (32.81 feet) deep, a conservative assumption was used to increase the potential source level of 14- to 16-inch steel pipe piles by 5 dB re 1 µPa from the reference level to also account for other variations such as water depth, bottom composition, and water temperature that may be different from the locations where the reference levels were recorded. It is not expected that the source levels associated with the 14- to 16- inch steel pipe piles will fully increase by 5 dB re 1 µPa from the reference level; however, in the absence of better, more site specific and equipment specific information, it was assumed that it was best to be conservative. It is expected that this conservative increase of 5 dB re 1 µPa from the 12-inch steel pipe pile reference level has resulted in calculating ensonified zones greater than those that are actually expected to occur around each pile during installation and extraction.

Table 4
Expected Pile-Driving Source Levels
(Average Sound Pressure)

Vibratory Pile Driving (Near Source [10 meter] Unattenuated)			
	Peak	RMS	SEL[1]
12-inch steel pipe[2] (< 5 m)	171	155	155
14- to16 inch steel pipe (~ 10 m)[3]	176	160	160

[1] SEL (sound exposure level) for 1 second of continuous driving
[2] 12–inch-diameter pipe source levels from ICF Jones & Stokes, and Illingworth and Rodkin, Inc. 2009
[3] The 14- to 16-inch-diameter pipe source levels are estimated based on a 5dB increase from the 12-inch-diameter pipe to account for an increase in the diameter of the pipe expected to be used and a change in depth at the pile-driving site.

1.6.2 Background Noise

Background noise, or ambient noise, is noise that already exists in the environment prior to the introduction of another noise producing activity. Background noise can come from a number of sources, both natural and manmade. Natural sources of ambient/background noise include biological sources (i.e., various marine species), wind, waves, rain, or naturally occurring seismic activity (i.e., earthquakes) (Richardson et al. 1995). Human-generated sources can include vessel noise (i.e., commercial shipping/container vessels), seismic air guns, and marine construction. Various factors contribute to the background noise within the Rockaway Peninsula region. One of the major contributors to background noise would be the commercial shipping traffic near the Project area associated with the Port of New York and New Jersey shipping lanes precautionary area. The Port of New Jersey and New York saw 4,534 port calls in 2010, making it the largest port on the U.S. east coast and third largest port in the U.S. (USDOT Maritime Administration 2011). Based on the proximity of the Project area to this major shipping center, it can be expected that the background noise is dominated by large vessels (i.e., container ships) that produce source levels of 180 to 190 dB re 1 µPa $_{RMS}$ at frequencies between 200 and 500 Hz (Thomsen et al. 2009; Jasney et al. 2005). Individual vessels produce unique acoustic signatures; so it is difficult to determine exactly how their sound would travel in varying environments (Hildebrand 2009; Richardson et al. 1995).

Knowing the background noise of an area is important to understanding the overall impact that the introduction of more noise could have on the marine mammals present in the area. If background noise levels in the vicinity of the project exceed those of the National

Oceanic and Atmospheric (NOAA) Fisheries Service thresholds, i.e., 120 dB or greater, then marine mammals would not be affected by any sound less than the already existing dominant noise levels. For example, if the background noise levels average 140 dB, then animals would not be exposed to harassing levels of sound less than 140 dB. Any sounds less than 140 dB would become part of the background noise and would not be audible above the dominant background noise. However, there is no current information regarding measurements of background noise in the vicinity of the Project area. Therefore it can be assumed that while vessel noise associated with the Project would not add greatly to the already existing background vessel noise in the region, it cannot be assumed that the sound produced by vibratory pile driving would be completely masked by the vessel noise, especially close to the vibratory hammer.

1.6.3 Underwater Transmission Loss

To determine how noise could impact protected marine species in the Project area, it is important to understand how the sound can spread away from the noise source. As the sound moves away from the source, there is a loss of acoustic intensity with increasing distance from the source. This is known as transmission loss (TL). It is necessary to calculate the TL of a sound source in order to determine how much area around that sound source would encompass the noise threshold criteria. How a sound travels away from a source depends on a variety of factors, including the original source level, environmental factors such as local salinity and temperature, and physical factors such as water depth, currents, and composition of bottom sediments (when depth is a limiting factor). Transmission loss also varies based on the depth of the sound source and the receiver. Considering all these components can aid in better understanding of how the sound would travel away from the source; however it is not always possible to obtain all the information necessary to determine site-specific transmission loss.

An important factor in transmission loss is spreading loss, or how the sound spreads out away from the source. There are two types of spreading loss; *spherical spreading*, where the sound spreads out in spherical waves (6 dB loss per doubling distance), and *cylindrical spreading* loss, where the sound waves form a cylindrical wave away from the source (3 dB loss per doubling distance). These two types of spreading loss occur under different conditions. Spherical spreading occurs in a uniform medium, whereas cylindrical spreading occurs when the medium is not uniform (Richardson et al. 1995). Due to the complex nature of the marine environment, it is not expected the underwater sound would spread in a perfect spherical or cylindrical manner. Therefore, the National Oceanographic and Atmospheric Administration’s

(NOAA) National Marine Fisheries Service (NOAA Fisheries Service) recognizes the *practical spreading loss model* (which accounts for a 4.5 dB loss per doubling distance) as the best method to determine how sound travels away from a source if the site-specific environmental and physical information is not available. The practical spreading loss model was used to determine the approximate distance from the sound source where the NOAA Fisheries Service threshold criteria (*see* Table 5) are estimated to be reached (while driving an individual pile).

Practical Spreading Loss Model:

$$TL = 15_{log} (R_1/R_0)$$

where:

TL = Source Level – Noise Threshold Level

R_1 *= Range distance the noise criteria extends away from the source (in meters)*

R_0*= Reference range (i.e., @ 1 meter, @ 10 meters, etc.) (in meters)*

1.6.4 Attenuation to NOAA Fisheries Service Thresholds

To determine potential impacts on marine mammals from acoustic sources, NOAA Fisheries Service has established injury and harassment thresholds. These thresholds are used to determine impacts based on the root-mean-squared (RMS) metric, the peak sound pressure (SPL), or the sound exposure level (SEL). RMS is the most commonly used metric for marine mammals. The thresholds are then used to determine the ensonified area surrounding the acoustic source. The zone of influence (ZOI) is the ensonified area that exceeds each threshold level. Based on the source levels noted in Table 4, the distance between the marine mammal and the noise source for each threshold was calculated for the use of a vibratory hammer (see Table 5).

Based on the source levels reported in Table 4, vibratory pile driving would not produce 180 dB re $1\mu Pa_{RMS}$ or greater, therefore removing the potential for injury or physiological impacts such as permanent threshold shift (PTS) or temporary threshold shift (TTS). However, it is expected that behavioral disturbance levels of sound (120 re $1\mu Pa_{RMS}$ for a continuous noise source such as a vibratory hammer) could occur within at most 3 miles (approximately 4.6 kilometers) of the vibratory pile driving activity (Table 5) (assuming no external impedances or masking by background noise). It is likely that this estimate represents the most conservative and worst-case scenario and that the actual threshold distance (and associated ZOI) may be less than the 3 miles (4.6 kilometers) reported here due to actual spreading conditions and source levels. However, to be conservative, this will be the threshold distance carried forward in this analysis.

Table 5
Calculated In-Water Noise Zones Based on Expected Vibratory Pile-Driving Source Levels (Average Sound Pressure)

Marine Mammal Functional Hearing Group	Reference Injury Threshold	Reference Behavioral Disturbance Threshold	Distance to Vibratory Pile Driving Injury Threshold (meters)		Distance to Vibratory Pile Driving Behavioral Disturbance Threshold (meters)	
Cetacean	180 dB re 1µPa RMS[1]	120 dB re 1µPa RMS[1] (continuous source)	12-inch steel pipe	No Impact[2]	12-inch steel pipe	2,000
			14- to 16-inch steel pipe	No Impact[2]	14- to16- inch steel pipe	4,600
Pinnipeds (in water)	190 dB re 1µPa RMS[1]	120 dB re 1µPa RMS[1] (continuous source)	12-inch steel pipe	No Impact[2]	12-inch steel pipe	2,000
			14- to 16-inch steel pipe	No Impact[2]	14 to16- inch steel pipe	4,600

[1] Current NOAA Fisheries Service thresholds

[2] The source level of the vibratory hammer (12 inch: 155 dB RMS; 14 to 16 inch: 160dB RMS) is less than that of the injury threshold - 180dB RMS for cetaceans and 190 dB RMS for pinnipeds.

Note: The distance calculated represents the approximate distance the sound would propagate around a single pile assuming no external impedances.

Distances to marine mammal threshold criterion were calculated using the Practical Spreading Loss model.

2.0 DATES, DURATION, AND REGION OF ACTIVITY

The date(s) and duration of such activity and the specific geographical region where it will occur.

2.1 DATES

In-water construction was planned to take place between January 2014 and May 2014, however the construction window is likely to be shifted to occur between April 2014 and August 2014. Therefore, this application analyzes potential takes that could occur between January 2014 and August 2014 (see Table 2 for proposed times frames of individual in-water construction activities associated with the potentially shifted schedule).

2.2 DURATION

It is expected that it would take no more than one week to install and one week to remove approximately 70 temporary steel pipe pilings associated with the Project. The anticipated time to install one individual pile would take approximately 1 to 2 seconds per foot of depth driven, with each pile being driven to a depth of approximately 25 to 30 feet (7.2 to 9.1 meters) below the seafloor. Therefore, it would take up to 60 seconds of continuous vibratory driving to install each individual pile. The installation and removal of both pile types is shown in Table 6. While it appears that total pile-driving time would only take slightly more than one hour for installation and the same amount of time for removal, it should be noted that this time does not account for any potential issues that could occur during pile driving. Therefore, that total operating time of the vibratory hammer for pile installation is estimated to take less than a total of one day of continuous operation, which would be spread out over approximately one week. The goal posts and fender piles would remain in the offshore environment only for the duration of the HDD portion of offshore construction (approximately six to eight weeks, throughout the HDD activities). Total operating time of the vibratory hammer for the extraction of all piles at the end of the construction period is estimated to be similar to the installation time—less than a total of one day of operation spread out over a week's time.

Table 6
Estimated Pile Installation and Removal by Vibratory Hammer

Removal/Installed	Maximum Number of Piles	Time per Pile	Total Time
Goal Post Installation	10	60 seconds	10 minutes
Goal Post Removal	10	60 seconds	10 minutes
Fender Pile Installation	60	60 seconds	60 minutes
Fender Pile Removal	60	60 seconds	60 minutes

2.3 REGION OF ACTIVITY

The proposed Project would take place in the waters offshore of Jacob Riis Park, which is located on the Rockaway Peninsula in Queens County, New York (see Figures 1 and 2). The Project area is located in the greater New York Bight region, and it can be expected that habitat within the Project area is not unique and can be found elsewhere in the New York Bight. The New York Bight is a triangular-shaped area of the continental shelf generally bounded by Montauk Point on eastern Long Island, Cape May in southern New Jersey, and the open shallows of the Atlantic Ocean. The depth of water in the area averages about 90 feet (30 meters), except in the northwest-southeast–trending Hudson Canyon, which has depths in excess of 240 feet (80 meters) (Ketchem et al. 1951). The New York Bight, as described by Stoffer and Messina (1996), refers to the bend or curve in the shoreline of the open coast and great expanse of shallow ocean between Long Island and the New Jersey coast. Water depths can be expected to exceed 100 feet (30 meters) at about 50 miles (80 kilometers) offshore.

Various currents are prominent within the region. In the New York Bight, prevailing wave energy forces sand movement westward along the south shore of Long Island (Tanski 2007). The longshore currents near the Atlantic shoreline of the Rockaway Peninsula interact substantially with the Hudson-Raritan estuary, particularly along the Ambrose Channel entering New York Harbor (Bruno and Blumberg 2009). A second ocean current near the Project area that extends farther offshore and flows to the south is driven by the Hudson-Raritan plume. This brackish plume is prevalent during seasonal periods of peak river discharge and enters the ocean at the opening between Rockaway Point and Sandy Hook, New Jersey (Young and Hillard 1984). Local circulation patterns can run counter to this southerly current and cause it to slow down and reverse direction. Bottom substrate throughout the New York Bight and the Project area is generally sand.

3.0 SPECIES AND NUMBERS OF MARINE MAMMALS

The species and numbers of marine mammals likely to be found within the activity area.

While Section 3.0 requires a discussion of species and numbers of marine mammals within the area, Section 4.0 requires a discussion of the status and distribution of species or stocks. More specifically: ***A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals <u>likely to be affected by such activities.</u>***

Because of the number of marine mammals discussed and to make finding the relevant information easier, Section 3.0 has been combined with Section 4.0 in order to consolidate all species-specific information in one place. Each topic required in Section 4.0 (status, distribution, and seasonal distribution [when applicable]) is identified and addressed under subheadings in Section 3 below.

3.1 SPECIES PRESENT

Thirteen species of marine mammals can be found in the Atlantic Ocean south of Long Island, New York (Table 7) (Minton 2012). All species may be present in the area throughout the year; however, because these species prefer different habitat, it is not likely that all species will be present during the January 2014 to May 2014 in-water construction window or within the vicinity of the Project area.

Table 7
Marine Mammal Species Potentially in the Region of Rockaway Peninsula

Common Name	Scientific Name	Endangered Species Act Status	Marine Mammal Protection Act Status	Time of Year Expected in Northeast Region (1)	Presence in Project Area
Pinnipeds					
Gray Seal	*Halichoerus grypus*	-	-	September – May	Possible
Harbor Seal	*Phoca vitulina*	-	-	September - May	Possible
Harp Seal	*Phoca groenlandica*	-	-	January - May	Possible
Cetaceans					
Humpback Whale	*Megapera novaeangliae*	Endangered	Depleted	Year round	Uncommon
Fin Whale	*Balaenoptera physalus*	Endangered	Depleted	Year round	Uncommon
Minke Whale	*Balaenoptera acutorostrata*	-	-	Spring/Summer/ Fall	Uncommon
North Atlantic right whale	*Eubalaena glacialis*	Endangered	Depleted	November - April	Possible

Table 7
Marine Mammal Species Potentially in the Region of Rockaway Peninsula

Common Name	Scientific Name	Endangered Species Act Status	Marine Mammal Protection Act Status	Time of Year Expected in Northeast Region [(1)]	Presence in Project Area
Atlantic-White Sided Dolphin	*Lagenorhynchus acutus*	-	-	Year round	Uncommon
Bottlenose Dolphin (Western North Atlantic Northern Migratory Stock)	*Tursiops truncatus*	-	Depleted	July –September	Possible
Harbor Porpoise	*Phocoena phocoena*	-	-	January – March	Possible
Short-Beaked Common Dolphin	*Delphinus delphis*	-	-	mid-January –May	Possible
Short-Finned Pilot Whale	*Globicephala macrorhynchus*	-	-	N/A	Uncommon
Long-Finned Pilot Whale	*Globicephala melas*	-	-	NA	Uncommon

[(1)] Source: Waring et al. 2012

3.2 PINNIPEDS

There are three species of pinnipeds that could occur within the waters south of Rockaway Peninsula, Queens County, New York: the gray seal (*Halichoerus grypus*), harbor seal (*Phoca vitulina*), and harp seal (*Phoca groenlandica*). All three pinniped species are most likely to be found in the region during winter and early spring months.

3.2.1 Gray Seal

Gray seals are members of the true seal family (Phocidae). Adult gray seals are sexually dimorphic with males generally being larger than females. Adult males can reach up to 10 feet (3 meters) in length and weigh up to 880 pounds (400 kilograms) (NOAA Fisheries Service 2012a). Adult females can reach up to 7.5 feet (2.3 meters) in length and can weigh up to 550 pounds (250 kilograms) (NOAA Fisheries Service 2012a). This species, like other members of the Phocidae family lacks external ear flaps, and the rear flippers do not rotate. Gray seal appearance and coloration depends on their geographic location and differs between sexes. In general, adult females have a silver-grey coat with darker spots scattered over their body. Males can have similar color pattern, but they have a prominent, long-arched nose (NOAA Fisheries Service 2012a). Gray seals are opportunistic mammals that feed primarily on various species of crustaceans, squid, fish, and octopus (NOAA Fisheries Service 2012a). They consume between 4% and 6% of their body weight each day and will use the entire water column when hunting for prey. Also, they are often found in the same areas as harbor seals because their habitat and feeding preferences overlap (NOAA Fisheries Service 2012a). They are found primarily in coastal waters. However, they do venture into deeper water, as they have been known to dive up to 1,560 feet (475 meters) to capture prey during feeding (NOAA Fisheries Service 2012a).

Gray seals, along with 40 other pinniped species and subspecies, are capable of hearing in both air and water. In general, the estimated bandwidth for functional hearing for pinnipeds in water is 75 hertz (Hz) to 75 kHz, and in air is 75 Hz to 30 kHz (Southall et al. 2007). Pinnipeds are known to produce a wide variety of low frequency social sounds, with varying hearing capabilities in air and in water (Southall et al. 2007). Direct testing of hearing capabilities in water have been conducted on a variety of pinniped species, including both behavioral reactions to sounds and direct measurements of hearing through auditory evoked potential (AEP) methods (Southall et al. 2007).

The gray seal occurs on both sides of the North Atlantic and is split into three primary populations: (1) eastern Canada, (2) northwestern Europe, and (3) the Baltic Sea (Katona et al. 1993). Gray seals that comprise the eastern Canada population are considered the western North Atlantic stock when in U.S. exclusive economic zone (EEZ) waters (Waring et al. 2013). Gray seals in U.S. waters can be found year-round in the coastal waters of the Gulf of Maine, and year-round breeding of approximately 400 animals has been documented on areas of outer Cape Cod and Mukeget Island in Massachusetts (Waring et al. 2013).

3.2.1.1 Numbers

Current population estimates of the western North Atlantic gray seal are not available (Waring et al. 2013); however, estimates for portions of the total population are available for certain time periods (Waring et al. 2013). For instance, the gray seal population in Canada from 1993 through 2004 was estimated to be between 144,000 and 223,220 individuals, based on three separate surveys and also depending upon which population-estimation model was used (Mohn and Bowen 1996; Department of Fisheries and Oceans 2003; Trzcinski et al. 2005). Currently the total Canadian grey seal population estimate is 348,900, based on modeling gray seal population dynamics and available pup production data (Thomas et al. 2011 in Waring et al. 2013). Gray seals in the United States presently pup at three separate locations: Muskeget Island, Massachusetts (1), Green Island, Maine (2), and Seal Island, Maine (3). Populations show an increasing trend (*see* Table 8). For example, a minimum of 2,620 gray seal pups were born in the United States in 2008 (Wood LaFond 2009 in Waring et al. 2013). It is theorized that in addition to natural increases, the population increases in gray seals in the United States is partially due to immigration of individuals from Canadian populations (Waring et al. 2013).

Table 8
Single-day Counts of Gray Seal Pups Observed at Muskeget Island, Seal Island, and Green Island

Pupping Season	Muskeget Island	Seal Island	Green Island
2001 – 2002	883	-	34
2002 – 2003	509	147	-
2003 – 2004	824	150	26
2004 – 2005	992	365	33
2005 – 2006	868	239	43
2006 – 2007	1,704	364	57
2007 – 2008	2,095	466	59
Source: Waring et al. 2013			

Current data is insufficient to allow calculating the minimum population estimate for gray seals in United States waters. However, the Canada gray seal minimum population is estimated somewhere between 125,541 and 169,064 (Trzcinski et al. 2005). The potential biological removal (PBR) for the western North Atlantic gray seal in United States waters is currently unknown, but the maximum productivity rate is 0.12, which is the default number for pinnipeds established by NOAA Fisheries Service (Waring et al. 2013). Additionally, the recovery factor for the stock is 1.0, which is given to stocks of unknown status but which are known to be increasing (Waring et al. 2013).

3.2.1.2 Status

Gray seals are not categorized as depleted under the MMPA, are not listed as threatened or endangered under the Endangered Species Act (ESA), and are not state-listed in New York. Presently, the status of the western North Atlantic gray seal stock, relative to the optimum sustainable population (OSP) level, in the United States Atlantic EEZ is unknown; however, the stock population is increasing in both Canadian and United States waters (Waring et al. 2013). The level of human-induced mortality and serious injury in the United States Atlantic EEZ is currently unknown, but it is believed to be low relative to the stock size and is therefore not a strategic stock (Waring et al. 2013). Total United States fishery-related mortality and serious injury is low relative to the current population in Canadian and United States waters and is considered to be insignificant and approaching zero mortality and serious injury rate (Waring et al. 2013).

3.2.1.3 Distribution

The western North Atlantic stock of gray seals has an overall range of New York to Labrador (Katona et al. 1993; Lesage and Hammill 2001). This stock of gray seals generally occurs in New York waters from September through May; however, the majority of their populations occur farther north along the coasts and inshore habitats of Maine and Canada, where individuals may remain year-round (Waring et. al 2013). Gray seals have been observed farther south, outside of pupping season at Muskeget Island and Monomoy, where numbers of individuals reached a maximum count of 2,010 in April – May 1994 (Rough 1995). There are no known haul-out sites for harp seals in the vicinity of the Project. The closest two known haul-out sites for seals along the southern coast of Long Island are located approximately 10 miles (16 kilometers) to the west of the Project area and 15 miles (24 kilometers) to the east of the Project area.

Gray seals have been reported stranded along the New York coast in recent years. Between 2005 and 2009, 52 gray seals were reported stranded in New York, and of those 52 stranded gray seals, 30 were pups (Waring et al. 2013). Between June 2009 and May 2010, 26 gray seals were reported stranded along the Long Island coast (Riverhead Foundation for Marine Research and Preservation 2010). Of those strandings, all but four occurred between January and May. The remaining four occurred between June and September. These data, however, do not specify if those strandings in New York waters were along the southern coast of Long Island or within Long Island Sound. Thus, although it can be expected that gray seals could be found within the region of the Project during winter and early spring months, it is expected that their occurrence would be infrequent because the Project area is generally outside their range.

3.2.2 Harbor Seal

Harbor seals also are members of the true seal family (Phocidae). Adult harbor seals, like gray seals, are sexually dimorphic, with males generally being larger than females. Adult harbor seals can reach up to 5.6 feet to 6.3 feet (1.7 meters to 1.9 meters) in length and weigh up to 245 pounds (110 kilograms) (NOAA Fisheries Service 2012b). This species, like other members of the Phocidae family, lacks external ear flaps and the rear flippers do not rotate. Harbor seal coloration varies, but they commonly have a blue-gray color on their back with a speckling of both light and darker colors. They can be identified by their concave, dog-like snout and their “banana-like” position while hauled out (NOAA Fisheries Service 2012b).

Harbor seals are opportunistic hunters that feed on squid and schooling fish such as herring, alewife, flounder, cod, and hake. Much of their daily activities involve actively foraging in the water column and seabed (Reeves et al. 2002a). Their diving activities (assumed for foraging), are related to risk-reward models, where increased diving activity increases their overall likelihood or predator-related mortality (i.e., shark attacks); as a result, harbor seals experience relatively high mortality from predators. At Sable Island, Nova Scotia, shark-related mortality was as high as 45% of harbor seal pups in 1996 (Lucas and Stobo 2000). Haul-out sites effectively reduce predation by decreasing the total amount of time spent in the water and, therefore, the overall likelihood of predation by marine predators.

Harbor seals (similar to gray seals) are capable of hearing in both air and water. In general, the estimated bandwidth for functional hearing for pinnipeds in water is 75 Hz to 75 kHz, and in air is 75 Hz to 30 kHz (Southall et al. 2007).

Harbor seals can be identified in all nearshore waters of the North Atlantic and North Pacific Oceans above 30°N (Burns 2009). There are presently five recognized subspecies of harbor seal, two of which occur in the Atlantic Ocean, along the eastern United States; of these two subspecies, the western Atlantic harbor seal (*Phoca vitulina concolor*) is most likely to occur within the Project area. Studies of harbor seals mitochondrial DNA suggests that female harbor seals are regionally philopatric (Stanley et al. 1996); therefore, population and/or management units are on the scale of a few hundred kilometers (Waring et al. 2013). Despite a lack of understanding of the western North Atlantic population stock structure, it is theorized that all harbor seals along the eastern United States and Canada coasts represent one single population (Temte et al. 1991).

3.2.2.1 Numbers

Harbor seals are the most common seal species in New York State (NYSDEC 2012); therefore, the harbor seal is expected to be the most prevalent pinniped both within and in the vicinity of the Project area. There is no current population abundance estimate for harbor seals, as population estimates older than eight years are considered to be unreliable (Waring et al. 2013). However, a corrected population estimate of 99,340 individuals was made in 2001 based on radio-tagging survey results (Waring et al. 2013). An extrapolation of the 2001 population estimate at a growth rate of 0.093% annually (based on the average of Waring et al. 2012 and Gilbert et al. 2005 annual population growth estimates) and accounting for human-induced bycatch and stranding mortality (estimated), estimates the current 2012 harbor seal population at 194,902 individuals. It is important to note that this estimate is certainly an over-estimation because it does not account for predation, for which no data estimations are available. For the purposes of the IHA, the best available data (2001) suggests a population size of 99,340 (Waring et al. 2013). No minimum population estimate for this stock is available because of insufficient data.

3.2.2.2 Status

Harbor seals are not categorized as depleted under the MMPA, are not listed as threatened or endangered under the ESA, and are not state-listed in New York. Presently, the status of the western North Atlantic harbor seal stock, relative to the OSP level, in the U.S. Atlantic EEZ is unknown (Waring et al. 2013). Despite being unable to determine the PBR for this stock of harbor seal, it is believed that the level of human-induced mortality and serious injury in the U.S. Atlantic EEZ is low when compared with the total stock population, and it is therefore not considered a strategic stock; additionally, fishery-related mortality and serious injury is believed to be low relative to the current population in U.S. waters (Waring et al. 2013). Sufficient data on current population trends for this stock are not available, and the current and maximum net productivity rates are also currently unavailable for this stock.

3.2.2.3 Distribution

The western North Atlantic stock of harbor seal is primarily identified along the coastal and inshore regions of the northeastern United States and Canada, with the greatest concentrations occurring in coastal Maine, where they reside year-round (Katona et al. 1993; Waring et al. 2013). In the western North Atlantic, the harbor seal is distributed from the eastern Canadian Arctic and Greenland south to the southern extent of New England and New York State and, on more rare occasions, the Carolinas (Mansfield 1967; Baird 2001). Harbor seals occur year-round in the coastal waters of eastern Canada and Maine, where they generally reproduce (Waring et al. 2013). In general, harbor seals stay close to their home haul-out site (within a 160-foot [50-meter] radius), which allows for a more efficient escape from predators if necessary (Grigg et al. 2009). Their presence in the region of the Project area is limited to September through late May (Schroeder 2000 in Waring et al. 2013; deHart 2002 in Waring et al. 2013), when adults, sub-adults, and juveniles are expected to migrate south from Maine in late summer/early fall, returning north to the coastal waters of Maine and Canada in late spring (Katona et al. 1993; Gilbert et al. 2005; Waring et al. 2006).

Harbor seals would be expected to occur seasonally in the vicinity of the Project area from September through late May (Schroeder 2000 in Waring et al. 2013; deHart 2002 in Waring et al. 2013). Pupping season generally occurs from mid-May through June, primarily along the Maine Coast (Kenney 1994 in Waring et al. 2013; deHart 2002 in Waring et al. 2013) and to a much lesser extent at high-use haulout sites off of Manomet, Massachusetts (Waring et al. 2013). There are no known haul-out sites for harbor seals within the vicinity of the Project. The closest two known haul-out sites for seals along the southern coast of Long Island are located approximately 10 miles (16 kilometers) to the west of the Project area and 15 miles (24 kilometers) to the east of the Project area.

Harbor seals have been reported as stranded along the New York coast in recent years. Between 2005 and 2009, 63 harbor seals were reported stranded in New York, and of those 63 stranded harbor seals, 11 were pups (Waring et al 2013). Between June 2009 and May 2010, 21 harbor seals were reported as stranded along the Long Island coast (Riverhead Foundation for Marine Research and Preservation 2010). Of those strandings, all but 5 occurred between January and May. Those five strandings occurred between June and September. These data, however, do not specify if those strandings in New York waters were along the southern coast of Long Island, or within Long Island Sound. Despite this, it can be expected that harbor seals could be found within the Project area during winter, spring, and early summer months, based on known occurrence information, sighting data, and their known range.

3.2.3 Harp Seal

Harp seals are members of the true seal family (Phocidae). Adult harp seals reach between 5 feet and 6 feet (1.5 meters to 1 .8 meters) in length, and can weigh approximately 300 pounds (135 kilograms). This species, like other members of the Phocidae family lacks external ear flaps and has rear flippers that do not rotate. Harp seals in particular have light gray fur on their body, with the exception of their face, and a black saddle-shaped patch on their dorsal side (NOAA Fisheries Service 2012c). Harp seals feed on many types of fish and invertebrates and are only limited divers (NOAA Fisheries Service 2012c). Particular species they forage on are arctic and polar cod, capelin, and krill (NOAA Fisheries Service 2012c).

Harp seals (similar to gray and harbor seals) are capable of hearing in both air and water. In general, the estimated bandwidth for functional hearing for pinnipeds in water is 75 Hz to 75 kHz, and in air is 75 Hz to 30 kHz (Southall et al. 2007).

The entire harp seal population has been categorized into three stocks. Each stock is identified by the specific pack ice site where pupping occurs (Lavigne and Kovacs 1988 in Waring et al. 2013; Bonner 1990 in Waring et al. 2013). One stock breeds off eastern Greenland, one stock breeds in Russia’s White Sea, and the third stock (which is composed of two separate breeding herds) is located off the eastern Canadian coast and breeds off the coast of Newfoundland and Labrador (the Front herd), or near the Magdalen Islands in the Gulf of St. Lawrence (the Gulf herd) (Lavigne and Kovacs 1988 in Waring et al. 2013; Sergeant 1965). The harp seals within the Front/Gulf stock off eastern Canada are considered the western North Atlantic stock when in U.S. waters (Waring et al. 2013).

Harp seals from the North Atlantic stock begin their migration south toward U.S. waters following summer feeding in the more northern Canadian waters. During this southerly migration, adults and some immature harp seals reach the Gulf of St. Lawrence in the winter months, with some continuing into U.S. waters during winter and spring months. The most southerly point of migration for this species has been New Jersey, from January through May (Harris et al. 2002). Sightings of harp seals venturing this far south have been increasing since the early 1990s. It is thought that this southward shift in harp seal migration may be due to changing environmental conditions (Lacoste and Stenson 2000). Pupping season for harp seals occurs between late February and mid-March in the southern limits of their range (NOAA Fisheries Service 2012c). Following birth, pups are weaned quickly and adults again begin mating. Harp seals also go through a period of molting during the spring. During both these times, large congregations of harp seals gather on pack ice (NOAA Fisheries Service 2012c).

3.2.3.1 Numbers

Current population estimates for harp seals are developed based on a variety of methods, including aerial surveys and mark-recapture of whelping concentration areas. Population estimates are determined based on adult numbers and pup production at these whelping areas. Using this method, the best estimate of abundance for the western North Atlantic population is 8.3 million animals (Waring et al. 2013). The minimum population estimate for U.S. waters is unavailable because of insufficient data (Waring et al. 2013). However, it has been noted that the population appears to be increasing in U.S. EEZ waters, based on the increased number of stranded harp seals found more recently (Waring et al. 2013). Current and maximum net productivity rates for western North Atlantic stock harp seals in U.S. waters are unknown.

3.2.3.2 Status

Harps seals are not categorized as depleted under the MMPA, are not listed as threatened or endangered under the ESA, and are not state-listed in New York. Due to a lack of data for the western North Atlantic stock there is no PBR for the western North Atlantic stock of harp seals in U.S. waters. Despite being unable to determine the PBR for this stock of harp seals, it is believed that the level of human-induced mortality and serious injury in the U.S.

Atlantic EEZ is low when compared with the total stock population, and it is therefore not considered a strategic stock. The status of the stock in U.S. waters in relation to its OSP level is unknown; however, the abundance of the stock appears to be stabilized (Waring et al. 2013).

3.2.3.3 Distribution

While harps seals historically were a more northern North Atlantic and Arctic Ocean species, more recently the numbers of harps seal strandings and sightings have increased as far south as New Jersey. In particular, between 2005 and 2009, 112 harp seals were reported stranded in New York and of those 112 stranded harp seals, only 1 was a pup (Waring et al. 2012). Between June 2009 and May 2010 there were 33 strandings of harp seals on Long Island (Riverhead Foundation for Marine Research and Preservation 2010). Of those strandings, all but one occurred between January and May. That one stranding occurred in June. These data, however, do not specify if those strandings in New York waters were along the southern coast of Long Island or within Long Island Sound. During this time frame harp seals were the most stranded seal recovered by the Riverhead Foundation for Marine Research and Preservation (RFMRP) along the New York coast. There are no known haul-out sites for harp seals within the vicinity of the Project. The closest two known haul-out sites for seals along the southern coast of Long Island are located approximately 10 miles (16 kilometers) to the west of the Project area and 15 miles (24 kilometers) to the east of the Project area.

In New York waters, harp seals occurrence would be within the extralimital extent of their range between January and May. Therefore, while these are a coastal pinniped species, and they can be found be as far south as the waters off Long Island, there is a limited potential they would occur within the vicinity of the Project during winter and early spring months.

3.3 CETACEANS

There are 10 cetacean species that could be found within the northeast and Mid-Atlantic region throughout the year and that have been observed at some point in the waters offshore of Long Island. These species vary from offshore species to nearshore species, and their presence within waters offshore Long Island also varies throughout the year. These species are the humpback whale (*Megaptera novaeangliae*), fin whale (*Balaenoptera physalu*s), minke whale (*Balaenoptera acutorostrata*), North Atlantic right whale (*Eubalaena glacialis*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*), bottlenose dolphin(*Tursiops truncatus*), harbor porpoise (*Phocoena phocoena*), short-beak common dolphin (*Delphinus delphis*), short-finned pilot whale (*Globicephala macrorhynchus),* and long-finned pilot whale (*Globicephala melas*).

3.3.1 Humpback Whale

The humpback whale is a species of baleen whale from the Balaenopteridea family. Humpback whales, like all baleen whales, are sexually dimorphic with females being larger than males. Adult humpback whales can reach up to 60 feet (18 meters) in length and can weigh between 50,000 pounds and 80,000 pounds (22 000 kilograms and 80,000 kilograms) (NOAA Fisheries Service 2012d). Humpback whales are best recognized (and named for) their long pectoral fins, which can reach up to 15 feet (4.6 meters) in length. They are primarily dark gray in body color with variable amounts of white on their ventral sides and on the undersides of their pectoral fins (NOAA Fisheries Service 2012d). Humpback whales spend the vast majority of their time during the summer months feeding and building up their fat stores, which inevitably are burned off during the winter months (NOAA Fisheries Service 2012d). The whales filter-feed primarily on small crustaceans (krill), plankton, and some fish species; in New England waters, the whales are often more piscivores relative to other populations. They will feed on herring (*Clupea harengus*), sand lance (*Ammodytes spp*.), and other small fish species when in New England waters (Waring et al. 2013).

As a baleen whale, humpback whales are considered low-frequency cetaceans, i.e., they are most sensitive to sounds less than 1 kHz (Richardson et al. 1995). Because of the complications related to measuring hearing ranges, sensitivities, and localization of large, open ocean whales, it is assumed that the sound production range of the species is an indicator of the species hearing range (Richardson et al. 1995). Humpbacks are known to produce various vocalizations, including the humpback “song,” moans, grunts, pulse trains, and clicks (Richardson et al. 1995). While humpback whales are considered low-frequency cetaceans, there are components of their vocalizations that are greater than 1 kHz. For example, humpback whales produce songs during mating in frequencies ranging from 30 Hz to 8 kHz (Payne and Payne 1985), they produce moans at frequencies between 20 Hz and 1800 Hz, grunts at frequencies between 25 Hz and greater than 1900 Hz (Thompson et al. 1986), and clicks at frequencies between 2 kHz and 8.2 kHz (Winn et al. 1970 and Beamish 1979 in Richardson et al. 1995).

Humpback whales are a global species and can be found in all the major oceans, including sub-polar and equatorial as well an temperate regions. In the western North Atlantic humpback whales can be found throughout the eastern coast of the United States, the Gulf of St. Lawrence, Newfoundland, Labrador, and western Greenland (Katona and Beard 1990) with other feeding grounds near Iceland and northern Norway (Christensen et al. 1992; Palsboll et al. 1997). The individual North Atlantic regions of feeding represent discrete subpopulations, all of which were treated as a single population (Waring et al. 1998). For management purposes those humpback whales known to feed in the Gulf of Maine with strong fidelity were designated as a separate stock (Waring et al. 2013). Furthermore, subsequent genetic analyses (of sufficient sample size) supported this theory (Palsboll et al. 2001). The change was ultimately made because it was believed that in the event of this population being eliminated, repopulation would not occur on any reasonable management timescale (Waring et al. 2013). Many of the humpback whales from the northern Atlantic feeding grounds can be found in wintering calving grounds throughout the West Indies (Katona and Beard 1990). However, not all whales from the North Atlantic migrate to the winter calving grounds. Recent data indicate that many humpback whales remain in higher latitudes during the winter (Swingle et al. 1993, Clapham et al. 1993).

3.3.1.1 Numbers

The North Atlantic population (which includes the Gulf of Maine stock) was estimated at 4,894 males and 2,804 females, based on genetic tagging data collected by the Years of the North Atlantic Humpback (YoNAH) project on humpback whale breeding grounds (Palsboll et al. 1997). The sex-ratio however, in the North Atlantic population is known to be even (Palsboll et al. 1997), thus the population estimate is assumed to be an underestimate of actual population size (Waring et al. 2013).

The Gulf of Maine stock population represents a smaller sub-population of the total North Atlantic humpback whale population and is estimated at 847 individuals, based on August 2006 line-transect sighting data collected along the southern edge of Georges Bank to the upper Bay of Fundy and to the Gulf of St. Lawrence (Waring et al. 2013). The minimum population estimate for the Gulf of Maine stock is 823 individuals (Waring et al. 2013).

The overall North Atlantic humpback whale population is steadily increasing, with an estimated average growth rate of 3.1% annually between 1979 and 1993 (Stevick et al. 2003). Population growth rates in the Gulf of Maine stock are estimated at 6.5% annually (Barlow and Clapham 1997), where the survival rate is 0.96, the proportion of males to females is 1.0, and the annual pregnancy rate is 0.42 (Barlow and Clapham 1997; Clapham et al. 1995); however, due to a level of uncertainty associated with more recent estimates of population growth within the Gulf of Maine stock, the maximum productivity rate for cetaceans is assumed to be the default value of 0.04 annually (Barlow et al. 1995). If the last estimate of population within the Gulf of Maine population is extrapolated based on a 4.0% annual growth rate, the 2012 population would fall within the range of 695 to 1,072 individuals; however, this estimate does not account for mortality and/or emigration to other populations.

3.3.1.2 Status

The Gulf of Maine stock of humpback whale is categorized as depleted under the MMPA, federally listed as endangered under the ESA (as of 1970), and state-listed in New York as endangered throughout its entire range. Despite estimates of continued whale population growth, the current population size may be below OSP in the U.S. Atlantic EEZ (Waring et al. 2013). Levels of mortality and serious injury due to U.S. fisheries is unknown; however, the reported levels exceed 10% of the PBR and cannot be considered to be insignificant or approaching zero mortality and serious injury rate (Waring et al. 2013). Due to these factors this is considered a strategic stock (Waring et al. 2013). The recovery factor is assumed to be 0.10 due to being listed under the ESA as endangered (Waring et al. 2013). The PBR for the Gulf of Maine humpback whale stock is 2.7 whales. No critical habitat has been designated for the Gulf of Maine humpback whale stock.

3.3.1.3 Distribution

The North Atlantic populations of humpback whales generally remain within their respective feeding groups throughout the summer in northern latitudes, where they consume up to 3,000 pounds (1,360 kilograms) of forage a day and develop a fatty layer (blubber) that facilitates their survival during migration periods and throughout the winter months (NOAA Fisheries Service 2012d). The whales migrate south during the winter months to breeding and calving grounds in the West Indies, where genetic mixing occurs among separate feeding groups (Katona and Beard 1990; Plasboll et al. 1997; Stevick et al. 1998). However, a number of whales do not migrate and remain in mid- to high-latitude regions (Swingle et al. 1993) such as the Chesapeake and Delaware Bays as well as southeastern states (Swingle et al. 1993; Wiley et al. 1995).

Humpback whales have been reported in confirmed human-caused mortality or serious injury offshore New York and northern New Jersey between 2005 and 2010. One juvenile humpback whale was reported as having a serious injury off Sandy Hook, NJ in February 2009 (Waring et al. 2013). In April 2010, one humpback whale was reported as stranded along the Long Island coast (Riverhead Foundation for Marine Research and Preservation 2010).

In recent years there have been no reported observations of humpback whales within the vicinity of the Project area (OBIS SEAMAP 2013a). During summer months, humpback whales are commonly observed well to the east of the Project area, off Montauk Point, Long Island, and in higher concentrations further north around George's Bank and in the Stellwagen Bank area within the Gulf of Maine (CeTAP 1982; Waring et al. 2013). Because of the species occurrence along the east coast throughout the year, it is possible that the species could be found within the region of the Project year-round; however, the lack of presence within the vicinity of the Project and greater prevalence in other regions during winter through summer months indicates that it is unlikely to be present in the vicinity of the Project area during the in-water construction period.

3.3.2 Fin Whale

The fin whale is a species of baleen whale from the Balaenopteridae family. Fin whales are the second largest of the whale species, reaching up to 75 feet (22 meters) in the Northern hemisphere subspecies and 85 feet (26 meters) in the Southern hemisphere subspecies (NOAA Fisheries Service 2012e). They are very streamlined whales with a dark-colored dorsal side and white-colored ventral side (NOAA Fisheries Service 2012e). Fin whales feed primarily during the summer on krill and small schooling fish such as herring and sand lance, as well as squid (NOAA Fisheries Service 2012e). They fast during the winter.

As with the humpback whale, fin whales are considered low-frequency cetaceans, i.e., they are most sensitive to sounds under 1 kHz (Richardson et al. 1995). Based on their vocal capabilities, it is thought that the fin whale’s hearing range may extend as low as 10 Hz to15 Hz. Fin whales produce two types of sounds, moans and tonal songs. It is reported that moans have frequency limits of 14 Hz to118 Hz, with dominant frequencies at 20 Hz (Watkins 1981 in Richardson et al. 1995). It is also reported that tonal songs have dominant frequencies between 17 Hz and 25 Hz (Watkins 1981 in Richardson et al. 1995).

Fin whales in the Atlantic Ocean have been classified as two different subspecies, one located in the North Atlantic and one located in the Southern ocean. For management purposes in U.S. waters, fin whales have been divided into four stocks: Hawaii, California/Oregon/Washington, Alaska (Northeast Pacific), and western North Atlantic. The fin whales in U.S. waters along the east coast are from the western North Atlantic stock (Waring et al. 2012). Fin whales are also one of the most common large whale species observed in U.S. waters along the east coast from Cape Hatteras, North Carolina, northward (CeTAP 1982). New England waters are recognized as a major feeding ground for this species, with potential calving occurring in the Mid-Atlantic region of the U.S. (Hain et al. 1992). However, this is not true for the entire population, where the majority of the North Atlantic fin whale population mates and calves is unknown (Waring et al. 2012).

3.3.2.1 Numbers

The best abundance estimate for the western North Atlantic fin whale stock is derived from an August 2006 aerial survey of the Gulf of Maine and a July – August 2007 survey of northern Labrador to the Scotian Shelf. Based on these two surveys, the best abundance estimate is 3,985 animals, and the minimum population estimate is 3,269 animals (Waring et al. 2012). The current and maximum net productivity rates and the population trend for this species are not known because the data are insufficient. However, the gross annual reproduction rate for their stock was estimated at 8% (Agler et al. 1993). Due to the lack of data, the maximum net productivity rate is assumed to be the default value for cetaceans of 0.04 annually (Barlow et al. 1995).

3.3.2.2 Status

The western North Atlantic stock of fin whale is categorized as depleted under the MMPA, federally listed as endangered under the ESA (as of 1970), and is state-listed in New York as endangered throughout its range. The western North Atlantic stock is considered a strategic stock because it is listed as endangered under the ESA. The total levels of human-caused mortality and serious injury are unknown; however, the reported levels exceed 10% of the PBR and cannot be considered insignificant or approaching zero mortality and serious injury rate (Waring et al. 2012). The PBR for the western North Atlantic stock of fin whale is 6.5. No critical habitat has been designated for the western North Atlantic fin whale stock.

3.3.2.3 Distribution

Fin whales can be found in U.S. waters in both the Pacific and Atlantic Oceans. While in the U.S. waters of the Atlantic Ocean they are common primarily from Cape Hatteras northward. There are no known population-wide seasonal migrations, but it has been noted that some migrations within the population may occur into Canadian waters, from coastal waters out to open ocean waters, and possibly into subtropical and tropical waters (Waring et al. 2012). Thus they can found in U.S. waters off the east coast between the Mid-Atlantic and New England waters throughout the year. The species tends to occupy areas over the continental shelf proper as opposed to the shelf edge (CeTAP 1982) and is reported to prefer deeper offshore waters (NOAA Fisheries Service 2012e). During the three years of studies (1978-1982) associated with the Cetaceans and Turtle Assessment Program (CeTAP) between Cape Hatteras, North Carolina and the Gulf of Maine, seasonal affinities for fin whales were noted. An increase in sighting in the areas around Jeffrey’s Ledge, Stellwagen Bank, and just east of Cape Cod appear to show this is an important habitat during spring and summer months

(CeTAP 1982). There also appears to be an increased abundance within the vicinity of the Delaware Bay/Delaware Peninsula region during winter and spring months (CeTAP 1982).

Fin whales have been observed in the waters of Long Island, more commonly off the eastern end of the island; however, some sightings have occurred offshore of New Jersey (CeTAP 1982). In recent years there have been no reported observations of fin whales within the vicinity of the Project area (OBIS SEAMAP 2013b). Only one stranding between 2005 and 2009 has been recorded in the vicinity of the Project area. A male fin whale was reported stranded in Newark Bay, New Jersey in 2007 (Waring et al. 2012). In December 2012, a fin whale was reported stranded in Breezy Point, Queens (New York Times December 26, 2012). It was reported by the director of the Riverhead Foundation, the stranding response unit on Long Island, that it is rare to see a large whale near the shore in this area. The last time a fin whale was found stranded in this area was 1964, in the Hudson River (New York Times December 26, 2012).

Based on occurrence information, stranding records, the lack of presence within the vicinity of the Project, and greater prevalence in other areas during winter through summer months, it is unlikely that fin whales would be present in the vicinity of the Project area during the in-water construction period.

3.3.3 Minke Whale

The minke whale is a species of baleen whale from the Balaenopteridae family. The minke whale is the smallest of the baleen whales in waters surrounding North America (NOAA Fisheries Service 2012f). Adult minke whales can reach up to 35 feet (10.7 meters) in length, and weigh up to 20,000 pounds (9,200 kilograms) (NOAA Fisheries Service 2012f). There is a slight sexual dimorphism in this species, where females may be slightly larger than males, similar to other baleen whale species. The minke whale can be identified by its sleek body with dark grayish-brown coloration and a pale chevron shape on the back, behind the head. The ventral side is a lighter white color, and the tall dorsal fin is located approximately two-thirds of the way down the back (NOAA Fisheries Service 2012f). Like other baleen whales, minke whales feed seasonally. They feed on a variety of plankton, krill, and fish species, including cod and herring.

As with the other baleen whales, fin whales are considered low-frequency cetaceans, i.e., they are most sensitive to sounds under 1 kHz (Richardson et al. 1995). Because of their vocal capabilities, it is thought that the minke whale's hearing range extends as low as 60 Hz (Richardson et al. 1995). Minke whales have been reported to produce various types of sounds, including down sweeps, moans/grunts, and clicks. While humpback whales are considered low-frequency cetaceans, there are components of their vocalizations that are greater than 1 kHz. For example, clicks have been reported within the frequency range of 3.3 kHz to 20 kHz (Beamish and Mitchell 1973). Other sounds produced by minke whales, such as down sweeps, moans and grunts fall with the frequency range of 60 Hz to 140 Hz (Schevill and Watkins 1972).

Minke whales are a global species with a widespread occurrence throughout temperate and tropical waters (Waring et al. 2012). Overall, they are defined by three major and distinct populations: (1) the North Atlantic, (2) North Pacific, and (3) southern oceans, none of which interbreed with one another (WCNE 2012). Four separate populations are currently recognized in the North Atlantic: (1) Canadian east coast, (2) west Greenland, (3) central North Atlantic, and (4) northeastern North Atlantic (Donovan 1991), as delineated based on sex and length, catch distributions, sightings, marking data, and pre-existing International Council for the Exploration of the Sea (ICES) boundaries (Waring et al. 2012). For management purposes, minke whales in U.S. EEZ waters have been divided into four stocks the Alaska stock, the Canadian eastern coastal stock, the California/Oregon/Washington stock, and the Hawaii stock. Minke whales occurring off the eastern coast of the United States are in the Canadian east coast stock, which encompasses the area from the western half of the Davis Straight to the Gulf of Mexico (Waring et al. 2012).

3.3.3.1 Numbers

The total estimated Canadian east coast stock population is presently unknown (Waring et al. 2012); however, results from previous surveys conducted in August 2006 and July – August 2007 estimate the best abundance of the stock to be approximately 8,987 individuals and the minimum population estimate of the Canadian east coast stock to be 6,909 individuals (Waring et al. 2012). No current population trend for this stock are available because the analysis has not been conducted, and there is no current or maximum net productivity rate for this stock. However, the population growth rate is estimated at 4%, based on a maximum net productivity rate of 0.04 annually (Barlow et al. 1995). Pregnancy rates of females within the population range from 0.86 to 0.93, with an average pregnancy rate of approximately 0.90 (Waring et al. 2012).

3.3.3.2 Status

The Canadian east coast stock of minke whale is not categorized as depleted under the MMPA, not federally listed as threatened or endangered under the ESA, and not state-listed in New York State. Relative to the OSP, the status of the Canadian east coast stock of the minke whale in the U.S. Atlantic EEZ is not presently known (Waring et al. 2012). Total U.S. fishery-related mortality and serious injury for the Canadian east coast stock is less than 10% of the PBR and is therefore considered to be an insignificant mortality and serious injury rate that is approaching zero (Waring et al. 2012). Because the estimated human-related mortality and serious injury rate does not exceed the PBR, the minke whale is not considered a strategic stock (Waring et al. 2012). The PBR for the Canadian east coast minke whale stock is presently set at 69 individuals (Waring et al. 2012).

3.3.3.3 Distribution

Minke whales generally occur near the surface and in the upper water column of the ocean throughout their range, except in polar seas. Relationships between the four North Atlantic stocks are unknown, and the presence of sub-populations is unknown (Waring et al. 2012). Minke whales are known to occur along the continental shelf proper rather than the continental shelf edge area (Waring et al. 2012). Minke whales in U.S. east coast waters appear to have a strong seasonal component to their distribution throughout their range. They appear to be widely distributed during spring and summer months, from just east of Montauk Point, Long Island, northeast to Nantucket Shoals, and north towards Stellwagen Bank and Jeffrey's Ledge (CeTAP 1982). During the fall their range is much smaller and their abundance is reduced throughout this range (CeTAP 1982). During winter months they are largely absent from this area (Waring et al. 2012). During the three years of studies associated with the CeTAP that took place between 1978 and 1982 between Cape Hatteras, North Carolina and the Gulf of Maine, only three minke whales were observed south of Long Island during the fall months, and no sightings of minke whales were make south of Long Island during winter months (CeTAP 1982). In recent years there have been no reported observations of minke whales within the vicinity of the Project area (OBIS SEAMAP 2013c).

Between 2005 and 2010 only two minke whales have been reported in confirmed human-caused mortality or serious injury and strandings in the waters off New Jersey and along the coast of Long Island. One adult minke whale was reported dead off the coast of Point Pleasant, New Jersey in May 2009 (Waring et al. 2012) and one minke whale was reported as stranded along the Long Island coast in April 2007 (Riverhead Foundation for Marine Research and Preservation 2008).

Based on occurrence information, stranding records and injury/mortality records, the lack of presence within the vicinity of the Project, and greater prevalence in other areas during winter through summer months, it is unlikely that minke whales would be present in the vicinity of the Project area during the in-water construction period.

3.3.4 North Atlantic Right Whale

The North Atlantic right whale is a species of baleen whale from the Balaenidae family. Adult North Atlantic right whales measure between 45 feet and 55 feet (14 meters and 17 meters) in length, and can weigh up to 70 tons (63,503 kilograms) (NOAA, NMFS 2004). The species is sexually dimorphic, with females being generally larger than males (NOAA, NMFS 2004). The North Atlantic right whale has several distinguishing features including a stocky body, large head, a highly arched margin of the lower lip, a v-shaped blow, lack of a dorsal fin, and callosities in the head region (NOAA, NMFS 2004; Reeves et al. 2002b).

North Atlantic right whales feed by skimming the surface with mouths open, filtering plankton through baleen plates (Reeves et al. 2002). The species feeds primarily on zooplankton such as large copepods (*Calanus finmarchicus*), smaller copepods, krill, and barnacle larvae (NOAA, NMFS 2004) and is most often seen foraging alone. However, observations have been made of potential feeding aggregations in areas such as offshore of Rhode Island (Reeves et al. 2002; Kenney and Vigness-Raposa 2010).

As the North Atlantic right whale is a large baleen whale, it is assumed that it is primarily sensitive to low-frequency sounds, similar to the humpback, fin, and minke whales. Right whales have been recorded producing tonal sounds between 20 and 1,000 Hz (Parks & Tyack 2005) as well as vocalizations recorded in the 20 to 200 Hz range (Mellinger 2004). The sounds recorded by Mellinger were reported as an “up call,” which represents an upsweep of frequencies from lower to higher and is a common vocalization produced by right whales. Right whales have also been recorded producing sounds called “moans” at less than 400 Hz (Watkins and Schevill 1972) and “gunshots” with the dominant frequencies ranging from 50 to 2000 Hz (Parks et al. 2005).

For management purposes, there is only one stock of North Atlantic right whales. While primarily found in the coastal waters of the U.S., the one stock is comprised of individuals from the western North Atlantic and have been observed in the waters of Norway, Greenland, and the Azores (Waring et al. 2013).

3.3.4.1 Numbers

The best abundance estimate of North Atlantic right whales is based on a census of individual whales known through photo-identification. Based on this census, the best population estimate (which is also the minimum population estimate) is 444 individuals (Waring et al.

2013). This species is considered one of the most critically endangered large whale populations globally. However, recent data has suggested a slight positive trend in the population size (Waring et al. 2013). There is some concern that the reproductive rate may be decreasing, but the mean calving interval has increased from 3.67 years in 1992 to 5 years in 1997/1997 (Kraus et al. 2001). Despite recent research, the maximum net productivity rate is not known for this stock, and therefore the maximum net productivity rate is assumed to be the default value for cetaceans of 0.04 annually (Barlow et al. 1995).

3.3.4.2 Status

The North Atlantic right whale is categorized as depleted under the MMPA, has been federally listed as endangered under the ESA since 1970, and is listed in New York State as endangered throughout its range. The abundance of the stock is considered very low in comparison with its OSP (Waring et al. 2013). The PBR for the North Atlantic right whale is 0.9. The total level of human-caused mortality and serious injury are unknown; however, the reported levels exceed 10% of the PBR (2.4 right whales reported per year between 2005 and 2009) and cannot be considered insignificant or approaching zero mortality and serious injury rate (Waring et al. 2013). The western North Atlantic stock is considered a strategic stock because it is listed as endangered under the ESA, and the human-caused mortality and serious injury per year exceeds the PBR. No critical habitat for the North Atlantic right whale exists in the Project area or anywhere within the waters off southern Long Island. The closest critical habitat to the Project area is the Great South Channel, located to the east of Cape Cod. Critical habitat is also located in Cape Cod Bay and in coastal Florida and Georgia from Sebastian Inlet to the Altamaha River (NOAA, NMFS 2004; NOAA Fisheries Service 2012g).

3.3.4.3 Distribution

The North Atlantic right whale is distributed within U.S. waters spanning the entire east coast from Florida to the Gulf of Maine and into Canadian waters of the Bay of Fundy and the Scotian Shelf (Waring et al. 2013; Kenney 2002). The species is primarily found along the coastal region and inner continental shelf, which is likely due to the availability and distribution of their preferred prey—late stage juvenile and adult copepods mostly found close to the coast (Baumgartner and Mate 2005; NOAA, NMFS 2004).

Annually, the species is known to migrate between winter calving grounds in the lower latitudes to spring and summer foraging grounds in higher latitudes (NOAA, NMFS 2004). In U.S. waters right whales generally can be seen in the winter months off the coast of Georgia and northern Florida where reproductive females go to calve, and in the summer months they can be found in the waters of New England foraging and nursing their young (NOAA, NMFS 2004). When in New England waters, right whales are most abundant in Cape Cod Bay, the Gulf of Maine, and the Great South Channel (NOAA, NMFS 2004). While these known congregation areas have been established as high-use areas, frequent travel along the east coast of the U.S. is also common. Satellite tags have shown North Atlantic right whales making round-trip migrations to an area off the southeastern U.S. and back to Cape Cod Bay at least twice during the winter (Waring et al. 2013).

During their migration between foraging grounds in the northeast region and calving grounds in the southern region, right whales are most likely to be found in the vicinity of the Project area from November through April. During this time seasonal management areas (SMA) are in effect within a 20-nautical mile (37-kilometer) radius of major ports along the U.S. east coast. The Project area is within one such SMA that is associated with the Port of New Jersey and New York (see Figure 9). While the migration period for North Atlantic right whales generally ends each year on April 30th, there is still the potential for the presence of this species to occur within the vicinity of the Project area during late spring and into the summer months. Right whales have also been observed offshore of Long Island outside of the migration period during summer months in recent years (NOAA Fisheries NEFSC 2013). According to the NOAA Fisheries Service Northeast Fisheries Science Center (NEFSC) North Atlantic Right Whale Sighting Advisory System (SAS), 29 right whale observations have been reported in the waters south of Long Island and north of New Jersey between January 2007 and August 2013 (NOAA Fisheries Service, NEFSC 2013). Of those sightings, only three were within close proximity to the Project area. It is not expected that any right whales along the southern coast of Long Island, and in particular within the Project area, would be foraging because this behavior has never been documented there. Therefore, presence of any right whales within the vicinity of the Project area during winter through summer months is possible, but would be transient.

3.3.5 Atlantic White-Sided Dolphin

The Atlantic white-sided dolphin is a species of toothed whale from the Delphinidae family. Adult Atlantic white-sided dolphins can range between 9 feet (3 meters [males]) and 8 feet (2.5 meters [females]) in length and can weigh between 400 pounds and 500 pounds (180 kilograms and 225 kilograms) (NOAA Fisheries Service 2012h). Similar to other Delphinidae species, the Atlantic white-sided dolphin has a robust body shape with a short rostrum. However, this species can be identified by its color pattern, which includes a bi-colored rostrum, black dorsal side, fluke, flippers, and dorsal fin, white ventral side and lower rostrum, and gray sides.

Their most distinguishing characteristic is the white patch that begins below the dorsal fin and is bordered by a yellow/tan streak down to the fluke (NOAA Fisheries Service 2012h). Atlantic white-sided dolphins within the western North Atlantic stock generally show a preference for several fish and invertebrate species, including silver hake (*Merluccius bilinearis*), spoonarm octopus (*Bathypolypus bairdii*), and haddock (*Melanogrammus aeglefinus*). Atlantic herring (*Clupea harengus*) are most often consumed in summer but are not heavily preyed upon during winter months, suggesting a seasonal variation in diet (Craddock et al. 2009).

Atlantic white-sided dolphins, along with 56 other species and subspecies, are considered mid-frequency cetaceans. In general, the estimated bandwidth for functional hearing in mid-frequency cetaceans is 150 Hz to 160 kHz (Southall et al. 2007). Atlantic white-sided dolphins, like many toothed whales, are very vocal animals, using sound for various activities such as echolocation for feeding and navigation as well as for socialization (Southall et al. 2007). However, unlike large baleen whales, hearing has been directly tested in many toothed whales by both behavioral reactions to sounds and direct measurements to hearing through AEP methods (Southall et al. 2007).

The Atlantic white-sided dolphin occurs throughout temperate and sub-polar waters of the North Atlantic, most prominently in continental shelf waters to depths of approximately 330 feet (100 meters) (Waring et al. 2012). Species sightings, strandings, and incidental take data suggest that the western North Atlantic stock of this species may exist in three separate stock units: (1) Gulf of Maine, (2) Gulf of St. Lawrence, and (3) Labrador Sea stocks (Palka et al. 1997). This hypothesis is based largely on a lack of summer sightings along the Atlantic side of Nova Scotia between the Gulf of Maine and the Gulf of St. Lawrence.

3.3.5.1 Numbers

The total number of Atlantic white-sided dolphins in the western North Atlantic stock is based on population estimates, which have been calculated since 1978. The best available current population estimate is 23,390 individuals, which is based on the sum of the 2006 and 2007 surveys (Waring et al. 2012). The minimum population estimate for this stock is 19,019 individuals (Waring et al. 2012). Productivity rates are presently unknown for this stock; however, for the purposes of stock assessment, it is assumed that the maximum net productivity rate of 0.04 annually is the default value for cetaceans (Barlow et al. 1995).

Proposed Pipeline Route

Existing 26" Lower NY Bay Lateral

Right Whale Seasonal Management Area

NOTE: From November 1 through April 30, all vessels greater than or equal to 65 ft (19.8 m) in overall length must slow to speeds of 10 knots or less in Seasonal Management Areas (50 CFR 224.105)

Source: ESRI 2010

N W E S

0 5
Miles

Figure 9
Rockaway Delivery Lateral Project
Right Whale
Seasonal Management Area

3.3.5.2 Status

The western North Atlantic stock of the Atlantic white-sided dolphin is not categorized as depleted under the MMPA, is not federally listed as threatened or endangered under the ESA, and is not listed in New York State. The status of the dolphins relative to the OSP in the U.S. Atlantic EEZ is presently unknown (Waring et al. 2012). PBR for this stock is 190 individuals (Waring et al. 2012).The total U.S. fishery-related mortality and serious injury for the western North Atlantic stock is not less than 10% of the PBR; therefore, fishery-related mortality and serious injury cannot be considered insignificant and approaching zero (Waring et al. 2012). Furthermore, the 2005 – 2009 estimated average annual human-related mortality exceeds the PBR for this stock and it is therefore considered a strategic stock.

3.3.5.3 Distribution

Atlantic white-sided dolphins of the western North Atlantic stock inhabit waters from central west Greenland to North Carolina and as far east as the Mid-Atlantic ridge (Hamazaki 2002; Doksaeter et al. 2008; Waring et al. 2008). Within the western North Atlantic stock, the Gulf of Maine population is most prevalent in the continental shelf waters from Hudson Canyon to Georges Bank and in the Gulf of Maine and lower Bay of Fundy (Waring et al. 2012). Seasonal shifts in abundance occur throughout the western North Atlantic region, where the dolphins appear to be more prevalent from Georges Bank to the lower Bay of Fundy from June through September and from October to December. They appear to occur at intermediate densities from southern Georges Bank to the southern Gulf of Maine (Northridge et al. 1997; Payne and Heinemann 1990 in Waring et al. 2012). Sightings of dolphins south of Georges Bank (Hudson Canyon in particular) occur year-round, but generally at lower densities (Waring et al. 2012).

Based on observations made during the CeTAP (1982) surveys, Atlantic white-sided dolphins were found primarily east and north of Long Island and the Project area. Those Atlantic white-sided dolphins observed south of Long Island were farther offshore in the deeper water of the continental shelf proper and closer to the continental shelf slope. Generally, this species was largely absent from the overall region (Cape Hatteras, North Carolina, to the Gulf of Maine) during the winter months (CeTAP 1982).

Atlantic white-sided dolphins have been reported as stranded along the New York coast in recent years. Between 2006 and 2008, 12 Atlantic white-sided dolphins were reported stranded in New York (Waring et al. 2012). Between June 2009 and May 2010, only one Atlantic white-sided dolphin was reported as stranded along the Long Island coast (Riverhead

Foundation for Marine Research and Preservation 2010). The one stranding occurred in February 2012.

Based on the known occurrence of this species in New England waters, east and north of the Project area, during the spring, summer, and fall months, and the overall lack of presence throughout the region during winter months, it is not expected that the Atlantic white-sided dolphin would occur within the vicinity of the Project during the in-water construction period.

3.3.6 Bottlenose Dolphin

The bottlenose dolphin is a species of toothed whale from the Delphinidae family. Adult bottlenose dolphins range between 6 feet to 12.5 feet (1.8 meters to 4.8 meters) in length and can weigh up to 1,400 pounds (635 kilograms) (NOAA Fisheries Service 2012i). This species is sexually dimorphic, with males being slightly larger than females (NOAA Fisheries Service 2012i). The bottlenose dolphin is one of the most recognized marine mammal species, with a short, thick rostrum, light gray color, and robust body shape (NOAA Fisheries Service 2012i).

Bottlenose dolphins are considered generalist feeders, feeding on prey items that are native to the area or region they are in (NOAA Fisheries Service 2012i). Prey species for coastal bottlenose dolphins include various benthic invertebrates and fish species and various squid and fish species for bottlenose dolphin that inhabit offshore areas.

Like the Atlantic white-sided dolphin, bottlenose dolphins are considered mid-frequency cetaceans. In general, the estimated general bandwidth for functional hearing in mid-frequency cetaceans is 150 Hz to 160 kHz (Southall et al. 2007). Bottlenose dolphins, like many toothed whales, are very vocal animals, using sound for various activities such as echolocation for feeding and navigation as well as for socialization (Southall et al. 2007).

Bottlenose dolphins are a global species and can be found in most of the temperate and tropical waters of the world (NOAA Fisheries Service 2012i). For management purposes, bottlenose dolphins in U.S. east coast waters have been divided into two morphologically and genetically distinct morphotypes—coastal and offshore (Duffield et al. 1983 in Waring et al. 2009; Duffield 1986 in Waring et al. 1998). Those two morphotypes have been further divided into 16 stocks. Within the coastal morphotype, the stocks are divided into coastal migratory or estuarine bottlenose dolphins. It appears, based on photo-identification, that many of the estuarine morphotypes are residents of their particular region or area. For example, the Biscayne Bay stock remain year-round within the Bay and are genetically distinct from those dolphins residing nearby by in the estuary of Florida Bay (Waring et al. 2010). Of the 16 bottlenose dolphin stocks present along the U.S. east coast, the northern migratory coastal stock is most likely to be found in the Project region.

3.3.6.1 Numbers

The best abundance estimate for the western North Atlantic northern migratory coastal stock of bottlenose dolphin is derived from a 2002 summer survey. Based on this survey, the best abundance estimate is 9,604 animals, and the minimum population estimate is 7,147 animals (Waring et al. 2010). Data on the current and maximum net productivity rates and the population trend for this stock are not sufficient nor is there data on population trend, for this stock. Current and maximum net productivity rates for this species are also unknown; however, for the purposes of stock assessment, it is assumed that the maximum net productivity rate is the default value for cetaceans of 0.04 annually (Barlow et al. 1995).

3.3.6.2 Status

The western North Atlantic northern migratory coastal stock of bottlenose dolphin is categorized as depleted under the MMPA, is not federally listed as threatened or endangered under the ESA, and is not listed in New York State. The status of the western North Atlantic northern migratory coastal stock of bottlenose dolphin relative to the OSP in the U.S. Atlantic EEZ is unknown (Waring et al. 2010). The PBR for this stock is currently 71 individuals (Waring et al. 2010). It is expected that the total mortality and serious injury of this stock is not less than 10% of the calculated PBR because of spatial overlap of the northern migratory stock and other stocks of bottlenose dolphins in North Carolina waters and because several fisheries have not been observed and it is expected that the reported mortalities are minimum estimates (Waring et al. 2010). Therefore, it cannot be considered to be an insignificant and approaching zero mortality and serious injury rate. Because is it classified as depleted under the MMPA, the western North Atlantic northern migratory coastal stock of bottlenose dolphin is considered a strategic stock.

3.3.6.3 Distribution

The western North Atlantic northern migratory stock of bottlenose dolphin can be found between Long Island, New York, and Cape Hatteras, North Carolina, during summer months (July – September) (CeTAP 1982). During winter months dolphins from this stock are rarely seen north of the North Carolina/Virginia border. Their movements north are thought to be controlled by water temperature (Garrison et al. 2003 in Waring et al. 2010). While in the Long

Island region during the summer months, this coastal stock remains between the shoreline and the 25-meter depth contour (Waring et al. 2010).

Bottlenose dolphins have been reported as stranded along the New York coast in recent years. Between 2006 and 2008, 16 bottlenose dolphins were reported stranded in New York (Waring et al. 2010). Between June 2009 and May 2010 two bottlenose dolphins were reported as stranded along the Long Island coast (Riverhead Foundation for Marine Research and Preservation 2010), one in June and one in April. Most recently, the NOAA Fisheries Service declared an Unusual Mortality Event (UME) for bottlenose dolphins in the mid-Atlantic region, beginning in early July 2013. This UME included elevated numbers of strandings in New York, New Jersey, Delaware, Maryland, and Virginia. In New York, 32 individual bottlenose dolphins were reported as stranded along the southern coast of Long Island (as of September 16, 2013) (NOAA Fisheries Service 2013). Bottlenose dolphins began stranding in New York prior to July. The Riverhead Foundation for Marine Research and Preservation (2013) reported one stranding in March, one stranding in May, and two strandings in June.

Based on the known distribution of this species in warmer southern waters during the winter months and occurrence within the Project region during summer months, it is expected that bottlenose dolphins would occur within the vicinity of the Project during the in-water construction period, specifically during the later spring and summer months.

3.3.7 Harbor Porpoise

The harbor porpoise is a species of toothed whale from the Phocoenidae family. Adult harbor porpoises range between 5 feet to 5.5 feet (1.5 meters to 1.7 meters) in length and can weigh up to 170 pounds (77 kilograms) (NOAA Fisheries Service 2012j). This species is considered sexually dimorphic, with females being slightly larger than males. This species can be recognized by its small, robust, dark gray body (with white ventral side), triangular dorsal fin, and short rostrum (NOAA Fisheries Service 2012j). Harbor porpoises feed on both demersal and benthic species, primarily schooling fish and cephalopods (NOAA Fisheries Service 2012j).

Harbor porpoises, along with 19 other species and subspecies, are considered high-frequency cetaceans. In general, the estimated bandwidth for functional hearing in high-frequency cetaceans is 200 Hz to 180 kHz (Southall et al. 2007). Similar to the bottlenose dolphin (and other odontocetes), harbor porpoises are vocal animals, using echolocation for feeding and navigation and vocalizing for socialization (Southall et al. 2007). Audiograms for harbor porpoises have been developed through direct behavioral reaction testing and AEP methods (Southall et al. 2007).

Harbor porpoises can be found in the coastal and offshore waters of both the Atlantic and Pacific Oceans. In the western North Atlantic, the species can be found between West Greenland and Cape Hatteras, North Carolina, and in the eastern North Atlantic, the species can be found from the Barents Sea to West Africa (NOAA Fisheries Service 2012j). Within these areas they are most often found in water less than 650 feet (198 meters) deep, in particular, in bays, estuaries, and harbors (NOAA Fisheries Service 2012j). For management purposes, harbor porpoises in U.S. waters have been divided into 10 stocks. Of those 10 stocks, only one, the Gulf of Maine/Bay of Fundy stock, is found along the U.S. east coast and thus could be found in the Project region.

3.3.7.1 Numbers

The best abundance estimate for the Gulf of Maine/Bay of Fundy stock of harbor porpoise stock, derived from an August 2006 aerial survey, 89,054 animals, and the minimum population estimate is 60,970 animals (Waring et al. 2012). Currently there is no known population trend available for this stock. Many studies have attempted to estimate the possible population growth rates. The most recent and currently accepted population growth rate was determined using a Bayesian population model that used fertility data and age-at-death data from stranded animals and animals taken in gillnets (Waring et al. 2012). Based on this modeling process it was determined that the potential natural growth rate for the Gulf of Maine/Bay of Fundy stock of harbor porpoises was 0.046 (Waring et al. 2012).

3.3.7.2 Status

The Gulf of Maine/Bay of Fundy stock of harbor porpoise is not categorized as depleted under the MMPA and is not federally listed as threatened or endangered; however, it is -listed as a species of concern in New York State waters. The status of the Gulf of Maine/Bay of Fundy stock of harbor porpoise relative to the OSP in the U.S. Atlantic EEZ is presently unknown (Waring et al. 2012). PBR for this stock is 701 individuals (Waring et al. 2012). The total U.S. fishery-related mortality and serious injury for the western North Atlantic stock is not less than 10% of the PBR; therefore, fishery-related mortality and serious injury cannot be considered insignificant and approaching zero (Waring et al. 2012). The estimated average annual human-related mortality exceeds the PBR for this stock and it is thus considered a strategic stock.

3.3.7.3 Distribution

The Gulf of Maine/Bay of Fundy stock of harbor porpoise can be found over the continental shelf between the Gulf of Maine/Bay of Fundy region and North Carolina in varying abundance, depending on the season (Waring et al. 2012). During the summer months (July – September) this stock can be found primarily concentrated in the northern Gulf of Maine and the southern Bay of Fundy (Waring et al. 2012). While in this region, harbor porpoises are generally found in less than approximately 500 feet (150 meters) of water (Waring et al. 2012). During the fall months (October – December) and spring months (April – June), the species can be found between Maine and New Jersey; however, during these months they are widely dispersed throughout this range (Waring et al. 2012). During winter months (January – March), harbor porpoises can also be found dispersed between New Jersey and North Carolina, with much lower densities between New York and Canada (Waring et al. 2012; CeTAP 1982). There has been no research that supports either a migration triggered by water temperature or a specific migration route throughout its range.

Harbor porpoises have been reported as stranded along the New York coast in recent years. Between 2005 and 2009 48 harbor porpoises were reported stranded in New York (Waring et al. 2012). Between June 2009 and May 2010 three harbor porpoises were reported as stranded along the Long Island Coast (Riverhead Foundation for Marine Research and Preservation 2010). Only one of the three strandings occurred between January and May, and the other two strandings occurred in August and December.

Based on the current understanding of the species distribution, it can be expected that harbor porpoises could be present, in varying densities, in the region and in the vicinity of the Project during fall, winter, and spring months (October – June). Because the species is widely distributed throughout the region during this timeframe, harbor porpoises could be present in the vicinity of the Project during the in-water construction period, specifically during winter through late spring months.

3.3.8 Short-Beaked Common Dolphin

The short-beaked common dolphin is a species of toothed whale from the Delphinidea family. Common dolphins are smaller than other members of the Delphinidae family. Adult common dolphins reach up to 9 feet (2.7 meters) in length and weigh approximately 440 pounds (200 kilograms) (NOAA Fisheries Service 2012k). Similar to other dolphin species, males can be slightly larger than females. Common dolphins can be identified by bright their colors and patterns, distinct patterns (NOAA Fisheries Service 2012k). These patterns include a dark gray, "V" shaped pattern that extends from the rostrum and along the back, a yellow/tan section on the sides, and a white patch on the ventral side that is located forward of the dorsal fin (NOAA Fisheries Service 2012k). They also have a somewhat longer rostrum, a sleek body form, and tall, triangular dorsal fin located along the mid-back (NOAA Fisheries Service 2012k). Short-beaked common dolphins feed primarily on schooling fish and cephalopod species that can be found within the top 650 feet (200 meters) of the water column (NOAA Fisheries Service 2012k).

Like the Atlantic white-sided dolphin, short-beaked common dolphins are considered mid-frequency cetaceans. In general, the estimated general bandwidth for functional hearing in mid-frequency cetaceans is 150 Hz to 160 kHz (Southall et al. 2007). Short-beaked common dolphins, like many toothed whales, are very vocal animals, using echolocation for feeding and navigation and sounds for socialization (Southall et al. 2007).

The short-beaked common dolphin is among the most widely distributed cetacean species. They occur throughout the world in temperate and subtropical waters (Waring et al. 2012). In U.S. EEZ waters they can be found offshore of both the east and west coasts. For management purposes, short-beaked common dolphins in the U.S. waters are divided into two separate stocks, the California/Oregon/Washington stock and the western North Atlantic stock. In 2005, Westgate tested the population stock via molecular analysis of mitochondrial DNA (mtDNA, in addition to a geometric morphometric analysis of cranial morphology. Both of these studies were unable to provide evidence suggesting that the population is more than a single stock within the western north Atlantic (Westgate 2005 in Waring et al. 2013). Therefore, the western North Atlantic short-beaked common dolphin is considered a single stock.

3.3.8.1 Numbers

The best abundance estimate for the western North Atlantic stock of short-beaked common dolphin is based on previous abundance estimates from two 2004 surveys in the U.S. Atlantic. The best population estimate for this stock is 67,191 individuals, and the minimum population estimate is 52,893 (Waring et al. 2013). This population estimate is a result of the 2011 survey for the northern and southern U.S. Atlantic waters (Waring et al. 2013). There is no population trend available for this stock. Current and maximum net productivity rates for this species are also unknown; however, for the purposes of stock assessment, it is assumed that the maximum net productivity rate is the default value for cetaceans of 0.04 annually (Barlow et al. 1995).

3.3.8.2 Status

The western North Atlantic stock of the short-beaked common dolphin is not categorized as depleted under the MMPA, is not federally listed as threatened or endangered under the ESA, and is not state-listed in New York State. The status of the western North Atlantic stock of short-beaked common dolphin, relative to the OSP in the U.S. Atlantic EEZ is unknown (Waring et al. 2013). The PBR for this stock is currently 529 individuals (Waring et al. 2013). The total U.S. fishery-related mortality and serious injury for this stock is not less than 10% of the PBR and cannot be considered to be insignificant and approaching zero mortality and serious injury rate as a result (Waring et al. 2013). From 2006 – 2010, the average annual human-related mortality rates did not exceed the PBR and thus the western North Atlantic stock of common dolphin is not a strategic stock (Waring et al. 2013).

3.3.8.3 Distribution

Short-beaked common dolphins are distributed world-wide, but within the western North Atlantic stock, they can occur from Newfoundland to Florida (Waring et al. 2013). The dolphins occur over the continental shelf along the 100-meter to 2,000-meter (328-feet to 6,560-feet) isobaths (Doksaeter et al. 2008). Generally, the dolphins are distributed along the continental slope and are commonly associated with features of the Gulf Stream (Waring et al. 1992; Hamazaki 2002). During the CeTAP surveys (1978-1982) this species was primarily observed along the shelf edge and into the deep ocean basin, especially throughout the spring, summer, and winter (CeTAP 1982). Their movements throughout their range appear to be generally driven by water temperature. During mid-summer to autumn, common dolphins migrate to Georges Bank and the Scotian shelf, and during mid-January to May, the dolphins are spread out from Cape Hatteras to Georges Bank (Hain et al. 1981; Payne et al. 1984). During the summer and autumn months, when water temperatures are higher than 11°C, short-beaked common dolphins generally migrate to the Scotian shelf and continental shelf off of Newfoundland (Sergeant et al. 1970; Gowans and Whitehead 1995).

Observations made during the CeTAP (1982) surveys indicate that short-beaked common dolphins are found primarily east and north of Long Island and the Project area during all seasons. Those short-beaked common dolphins observed south of Long Island occurred farther offshore in the deeper water of the continental shelf proper, closer to the continental shelf slope (CeTAP 1982).

Short-beaked common dolphins have been reported as stranded along the New York coast in recent years. Between 2006 and 2010, 44 short-beaked common dolphins were reported stranded in New York (Waring et al. 2013). Of these 44 strandings, 20 animals were involved in a mass stranding in Suffolk County, New York, and in 2009 seven animals were involved in two mass strandings (Waring et al. 2012). Between June 2009 and May 2010, 10 common dolphins were reported as stranded along the Long Island coast (Riverhead Foundation for Marine Research and Preservation 2010). Of those 10 strandings, 5 occurred between January and May. The remaining 5 strandings occurred in November and December.

Based on the known occurrence of this species in deeper offshore waters with the majority of observations along the continental slope and into the deep ocean basin during winter and early spring months, and their known presence in the waters of New England and further north during the summer months, it is expected that the short-beaked common dolphin would be rare in the vicinity of the Project during the in-water construction period. However, based on the high number of strandings along the Long Island coast, this species may occur in the vicinity of the Project during winter and early spring months.

3.3.9 Short-Finned Pilot Whale

The short-finned pilot whale is one of two species of pilot whale (*Globicephala sp.*) and is a species of toothed whale from the Delphinidae family. Adult short-finned pilot whales are larger than most members of the Delphinidea family. Adult females can reach up to 12 feet (3.67 meters) in length, and males, on average, can reach up to 18 feet (5.5 meters) in length. Adults weigh between 2,200 pounds and 6,600 pounds (1,000 kilograms and 3,000 kilograms) (NOAA Fisheries Service 2012l). This species is sexually dimorphic, with males being larger than females (NOAA Fisheries Service 2012l). The short-finned pilot whale can be identified by its bulbous head, lack of an obvious rostrum, dark black or dark brown body color, and a forward- located, broad-based dorsal fin (NOAA Fisheries Service 2012l). Short-finned pilot whales feed on species that are mostly found mostly in water 1,000 feet (305 meters) or deeper. Their primary prey species is squid; however, they also feed on octopus and fish species (NOAA Fisheries Service 2012l).

Like the Atlantic white-sided dolphin, short-finned pilot whales are considered mid-frequency cetaceans. In general, the estimated general bandwidth for functional hearing in mid-frequency cetaceans is 150 Hz to 160 kHz (Southall et al. 2007).

Short-finned pilot whales are a global species and can be found in tropical and subtropical areas, primarily in deeper waters (NOAA Fisheries Service 2012l). In U.S. waters they can be found along both the Atlantic and Pacific coasts. For management purposes, short-finned pilot whales in U.S. waters have been divided into four stocks. Of those four stocks, only one, the western North Atlantic stock, is found along the U.S. east. Therefore, this stock could be found in the Project region.

3.3.9.1 Numbers

The best abundance estimate for the western North Atlantic stock of the short-finned pilot whale is derived from a 2004 summer survey and an analysis of spatial distribution based on genetic analyses of biopsy samples. Based on this information, the best abundance estimate is 24,674 animals and the minimum population estimate is 17,190 animals (Waring et al. 2012). The current population trend for this species is unknown due to insufficient data, and the current and maximum net productivity rates are also unknown. However, it is assumed that the maximum net productivity rate is the default value for cetaceans of 0.04 annually (Barlow et al. 1995).

3.3.9.2 Status

The western North Atlantic stock of the short-finned pilot whale is not categorized as depleted under the MMPA, is not federally listed as threatened or endangered under the ESA, and is not listed in New York State. The status of short-finned pilot whales relative to the OSP in the U.S. Atlantic EEZ is presently unknown (Waring et al. 2012). PBR for this stock is 172 individuals (Waring et al. 2012). Due to the difficulty in determining mortality estimates between long-finned and short-finned pilot whales, the total U.S. fishery-related mortality and serious injury for the western North Atlantic stock of the short-finned pilot whale is unknown. However, it is expected that it is not less than 10% of the PBR; therefore, fishery-related mortality and serious injury cannot be considered insignificant and approaching zero (Waring et al. 2012). This is not a strategic stock because total mortality does not exceed the PBR and is likely to be composed partially of long-finned pilot whales as well.

3.3.9.3 Distribution

The western North Atlantic stock of the short-finned pilot whale can be found primarily along the continental shelf break between New England and Florida. Short-finned pilot whales are difficult to differentiate from long-finned pilot whales during aerial and boat surveys, so it is difficult to specifically determine their exact range. However, it is expected that short-finned pilot whales are more common between Florida and North Carolina. There is also some spatial overlap with long-finned pilot whales in the Mid-Atlantic region between Cape Hatteras, North Carolina and New Jersey (Waring et al. 2012). Because these species prefer deeper offshore waters they are not often observed in the waters overlying the continental shelf proper and are more commonly seen at the continental shelf break and farther offshore on the slope.

Pilot whales have been reported stranded along the New York coast in recent years. However, between 2005 and 2009 no short-finned pilot whales were reported stranded in New York (Waring et al. 2012). Between June 2009 and May 2010 only one pilot whale was reported stranded along the coast of Long Island, but it was not identified as either a short-finned or long-finned pilot whale (Riverhead Foundation for Marine Research and Preservation 2010). Based on this information, and the species preference for deeper pelagic waters, it is unlikely that this species would be found in the Project vicinity during the in-water construction period.

3.3.10 Long-Finned Pilot Whale

The long-finned pilot whale is one of two species of pilot whale (*Globicephala sp*,) and is a species of tooted whale from the Delphinidae family. Adult long-finned pilot whales, similar to the short-finned pilot whale, are larger than most members of the Delphinidae family. Adults range from 19 feet (5.8 meters [females]) to 25 feet (7.6 meters [males]) in length and can weigh between 2, 900 pounds (1,300 kilograms [females]) and 5,000 pounds (2,300 kilograms [males]) (NOAA Fisheries Service 2012m). The long-finned pilot while is very similar in appearance to the short-finned pilot whale; however, its pectoral fins are long and tapered in a sickle shape. This characteristic gives the species its common name. Because the largely distinguishing characteristic for this species is often below the water, it is difficult for long-finned and short-finned pilot whales to be differentiated during aerial and boat surveys.

Similar to short-finned pilot whales, long-finned pilot whales primarily occur in deeper waters. However, this species is more commonly found in temperate to sub-polar oceanic waters (NOAA Fisheries Service 2012m). Long-finned pilot whales are known to be deep divers, commonly diving between 656 feet and 1,640 feet (200 meters and 500 meters) for feeding. While at depth, long-finned pilot whales feed on a variety of species, including cod, herring, hake, squid, octopus, and shrimp (NOAA Fisheries Service 2012m).

Like the Atlantic white-sided dolphin, long-finned pilot whales are considered mid-frequency cetaceans. In general, the estimated bandwidth for functional hearing in mid-frequency cetaceans is 150 Hz to 160 kHz (Southall et al. 2007).

Long-finned pilot whales are a global species and can be found in colder temperate and sub-polar regions, such as southern Australia, Cape Province (South Africa), Chile, the Gulf of St. Lawrence, and Greenland. Within U.S. waters they can be found along the east coast. For management purposes, long-finned pilot whales consist of only one stock, the western North Atlantic stock. This stock could be found in the Project region.

3.3.10.1 Numbers

The best abundance estimate for the western North Atlantic stock of the long-finned pilot whale is derived from a 2004 summer survey and an analysis of spatial distribution based on genetic analyses of biopsy samples. Based on this information, the best abundance estimate is 12,619 animals and the minimum population estimate is 9,333 animals (Waring et al. 2012). The current population trend for this species is unknown due to insufficient data. Productivity rates are presently unknown for this stock; however, for the purposes of stock assessment, it is assumed that the maximum net productivity rate is the default value for cetaceans of 0.04 annually (Barlow et al. 1995).

3.3.10.2 Status

The western North Atlantic stock of the long-fined pilot whale is not categorized as depleted under the MMPA, is not federally listed as threatened or endangered under the ESA, and is not listed in New York State. The status of long-finned pilot whales relative to the OSP in the U.S. Atlantic EEZ is presently unknown (Waring et al. 2012). However, the total fishery mortality for the western North Atlantic stock of long-finned pilot whale may exceed the PBR, and thus it is considered a strategic stock under the MMPA. The PBR for this stock is 93 individuals (Waring et al. 2012).

3.3.10.3 Distribution

The western North Atlantic stock of the long-finned pilot whale can be found along the continental shelf of the U.S. coast between the Mid-Atlantic and the Gulf of Maine. As with short-finned pilot whales, long-finned pilot whales are difficult to differentiate from their counterparts during aerial and boat surveys, so it is difficult to specifically determine their exact range in U.S. waters. However, it is expected that long-finned pilot whales are more common in the offshore waters of New England during winter and early spring (January – May) (CeTAP 1982). During late spring through autumn (May – November/December) long-finned pilot whales can be found in the area of Georges Bank and the Gulf of Maine (CeTAP 1982). There is also some spatial overlap with short-finned pilot whales in the mid-Atlantic region between Cape Hatteras, North Carolina, and New Jersey during summer months (Waring et al. 2012).

Long-finned pilot whales have been reported stranded along the New York coast in recent years. Between 2005 and 2009 six long-finned pilot whales were report stranded in New

York (Waring et al. 2012). Between June 2009 and May 2010 only one pilot whale was reported stranded along the coast of Long Island, but it was not identified as either a short-finned or long-finned pilot whale (Riverhead Foundation for Marine Research and Preservation 2010). Based on this information, and the species preference for deeper pelagic waters, it is unlikely that this species would be found in the Project region during the in-water construction period.

4.0 AFFECTED SPECIES STATUS AND DISTRIBUTION

A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities.

Because of the large number of marine mammals discussed, Section 3.0 was combined with Section 4.0 in order to consolidate all species-specific information in one place. Each topic required in Section 4.0 (status, distribution, and seasonal distribution [when applicable]) has been identified and addressed in subheadings in Section 3.0 in order to make finding the relevant information easier.

5.0 TYPE OF INCIDENTAL TAKE AUTHORIZATION REQUESTED

The type of incidental taking authorization that is being requested (i.e., takes by harassment only, takes by harassment, injury and/or death), and the method of incidental taking.

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]"(50 C.F.R, Part 216, Subpart A, Section 216.3-Definitions).

Level A is the more severe form of harassment because it may result in injury or death, whereas Level B results only in disturbance without the potential for injury. This IHA application is requesting only *takes resulting from Level B acoustical harassment*.

Incidental Take Authorization Request and Method of Incidental Taking

Transco requests the issuance of an IHA pursuant to Section 101(a)(5) of the MMPA for the incidental take of seven marine mammal species by vibratory pile-driving activities associated with construction of a subsea pipeline offshore of the Rockaway Peninsula, Queens County, New York, during the period of January 2014 – August 2014. The activities outlined in Section 1.0 have the potential to take marine mammals by acoustic behavioral harassment during vibratory pile-driving activities. More specifically, the requested authorization is for the incidental harassment of marine mammals that might enter the 120 dB and greater ZOI during active vibratory pile driving. No Level A takes are expected to occur during the Project.

6.0 NUMBER OF MARINE MAMMALS THAT MAY BE AFFECTED

By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in Section 5, and the number of times such takings by each type of taking are likely to occur.

This section summarizes the potential incidental take by Level B behavioral harassment of marine mammals during vibratory pile-driving activities from Transco's proposed Project, described in Section 1.0. Section 6.3 describes the methods used to calculate the potential take of each marine mammal species with the potential to be found in the vicinity of the Project during in-water construction and provides the number of each marine mammal species for which Level B behavioral harassment takes are being requested.

Due to the low source level of the vibratory hammer and the coordination and visual monitoring outlined in Section 13.1, Monitoring Plan, the vibratory hammer activities discussed in this IHA application are only expected to incidentally take by Level B acoustical behavioral harassment small numbers of gray seals, harbor seals, harp seals, the North Atlantic right whale, bottlenose dolphins, harbor porpoises, and short-beaked common dolphins (should the sound be audible above the local background noise). As the vibratory hammer would not produce sounds greater than or equal to 180 dB or 190 dB, there is no potential for injury (Level A take), and therefore no shut-down procedure would be implemented.

The short time frame of the actual vibratory pile-driving activities and the transitory behavior of the marine mammals that have the potential to be found within the vicinity of the Project area, also contributes to the conclusion that animals would experience only Level B acoustic harassment for a brief and temporary time period. It is therefore expected that each animal exposed would experience only one exposure to potentially harassing levels of sound if it enters the 120 dB ZOI. No animals are expected to forage specifically within the Project area and there are no haul-out sites close to the Project area. The closest two known haul-out sites for seals along the southern coast of Long Island are approximately 10 miles (16 kilometers) to the west of the Project area in the Lower Bay area and 15 miles (24 kilometers) to the east of the Project area near Point Lookout. Therefore, multiple exposures to any one animal are not expected.

6.1 ESTIMATED DURATION OF PILE DRIVING

As noted above in Section 2, it is estimated that it would take no more than one day of operation, spread out over one week each, for installation and removal of the temporary piles (Table 6). The maximum number of hours of pile installation and removal is two hours total for each activity.

6.2 ESTIMATED ZONE OF INFLUENCE

Distance to the threshold criteria established by the NOAA Fisheries Service for Level B harassment takes due to vibratory pile driving activities was presented in Section 1.6.4, Attenuation to NOAA Fisheries Service Thresholds. The ZOI (i.e., the area ensonified by sounds at or greater than the threshold) was calculated from these distances. The distance from the source to the 120 dB isopleth for Level B acoustical harassment threshold for vibratory pile driving was estimated at approximately 3 miles (4.6 kilometers), representing approximately 17 square miles (44 square kilometers). This takes into account pile driving taking place within 0.65 miles (approximately 1 kilometer) of shore, which would inhibit the sound from propagating fully around the source because it would be partially interrupted by land. The ZOI also assumes that there are no other impedances and that the sound is not masked by the local background noise. This calculated120 dB ZOI will be monitored during construction to estimate actual takes by harassment of marine mammals, and if any marine mammals enter the assumed ZOI during active vibratory pile driving, their behavior will be monitored.

6.3 METHOD OF ESTIMATED INCIDENTAL TAKES REQUESTED

Incidental takes were estimated for each species by estimating the likelihood of a marine mammal being present within the expected ZOI during active vibratory pile driving. Expected animal presence in the vicinity of the Project area during in-water construction was described in Section 3.0. Based on this information, it was determined that only six marine mammal species are likely to be present; gray seal, harbor seal, harp seal, North Atlantic right whale, harbor porpoise, and short-beaked common dolphin. Although all other species discussed in Section 3.0 can be found within the region of the Project area, they are not expected to be present either because of the time of year or because of their preference for waters further offshore. (The ZOI is expected to extend out, at most, only 3 miles [4.6 kilometers] from shore.)

Potential take can be estimated by multiplying the area of the ZOI by the local animal density. This provides an estimate of the number of animals that might occupy the ZOI at any given moment during vibratory pile driving activities. However, density estimates for marine mammals within the coastal Mid-Atlantic are limited, and there are no density estimates for the specific Project area along the southern coast of Long Island. Therefore, estimated takes were calculated based on the best available information for the region which includes density estimates developed by the Department of Navy (Navy) through their Navy OPAREA Density Estimate (NODE) for the Northeast OPAREAS—Boston, Narragansett Bay, and Atlantic City (DON 2007), which covers all continental shelf waters from the southern point of New Jersey to Nova Scotia, Canada, from the coast out past the continental shelf. The report presents density estimates either determined by models created with species-specific data or derived from abundance estimates found in the NOAA Fisheries 2007 Stock Assessment Reports (DON 2007). In the NODE report, density surface models (DSMs) were run for six species of marine mammals. Of which included the short-beaked common dolphin and the harbor porpoise. Other density estimates within the NODE report were determined based on shipboard and aerial surveys conducted by the NEFSC during summer months between 1998 and 2004. Density for all species was calculated based on seasons and spatial strata. The seasons were defined as follows:

- Winter – December, January, February
- Spring – March, April, May
- Summer – June, July, August
- Fall – September, October, November

The spatial strata consisted of 11 areas within the Navy's Northeast study area. The spatial strata that most represented the Project area were the Mid-Atlantic strata, which encompassed the area from 3 nautical miles offshore of southern Long Island south to the Maryland/Virginia border (on the eastern shore) and out to the continental shelf break (Figure 10).

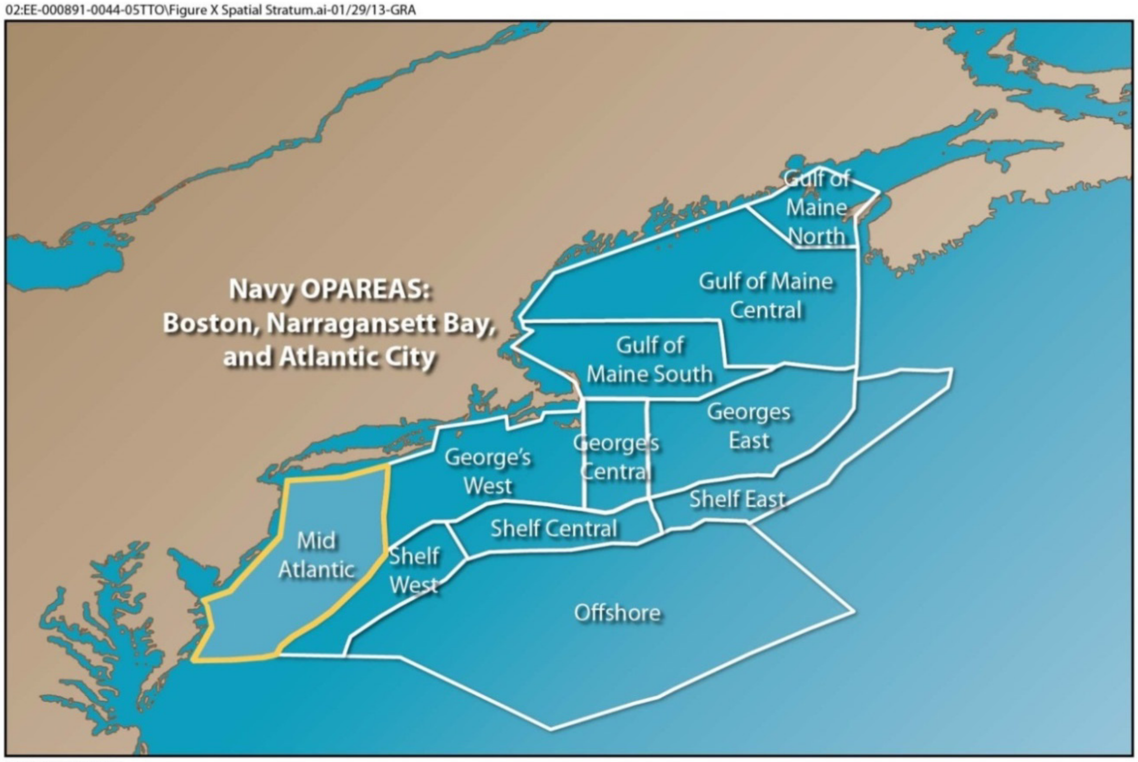

Figure 10 Navy Northeast OPAREA Spatial Strata

Density for each marine mammal species was calculated for this stratum during each season (DON 2007). Sighting data during each season and in each stratum were not available for all species, so different methods were used based on the available information. Overall, density was calculated from summer abundance estimates provided in 2005 based on the 1998-2004 NEFSC survey data. Summer density was than calculated by dividing the abundance determined for each species in each stratum (where data were available) by the area of survey coverage for which the original abundance estimate was calculated (DON 2007). Because pinnipeds are not often sighted in aerial and shipboard surveys, their densities were calculated based on the most recent NEFSC stock assessment review (SAR) at the time (Waring et al. 2004). The occurrence of many of the species found in the Northeast OPAREAS was known, but the surveys did not provide enough information to derive density estimates for all species in all stratums and for each season. In these cases, density for a stratum and season was most often calculated using the seasonal density estimates from an adjacent stratum using a proportional sighting per unit effort (SPUE) for the stratum and season of concern. That proportional SPUE calculation is as follows:

$$D_{als} = (SPUE_{als} \times D_{bls}) / SPUE_b$$

where:

D = density

a = stratum for which the density is being calculated

b = adjacent stratum contain the existing density estimate

l = species

s = season (DON 2007)

For the seven species for which takes are being requested, various methods were used to determine their density within each stratum and each season due to lack of data. Densities were only determined for five of the seven species in the NODE report: the harbor seal, North Atlantic right whale, bottlenose dolphin, short-beaked common dolphin, and harbor porpoise. Because the other two species, gray seal and harp seal, have a small potential for occurrence and are rare to the area, no density estimates were available and other methods were used to determine potential takes. The text describes how each density estimate used in this application was determined for each species.

6.3.1 Species Density Estimations

Gray seal

Due to a lack of data and their rare occurrence in the Mid-Atlantic region, no densities for gray seals were calculated in the NODE report or any other available sources. However, the occurrence of this species has been documented on the southern coast of Long Island during winter months. The closest documented haul-out location for gray seals along the Long Island coast is on Cupsogue Beach, approximately 60 miles (96 kilometers) east of the Project area. During the winter/early spring months (January through April) of 2010 through 2013 a total of 44 gray seals were observed in this location (CRESLI n.d.). On average, 14 gray seals were observed in this location per year. Due to their known occurrence east of the Project area, there is the potential for gray seals to be found in the vicinity of the Project area during the winter months. Since there are no density estimates for gray seals in the Mid-Atlantic region or in the Project area, Transco is estimating that up to 14 gray seals could enter into the Level B harassment ZOI during active vibratory pile driving (Table 9). It is expected that this is a conservative estimate because the species is less common in the area, the sighting location is located more than approximately 60 miles (96 kilometers) away from the Project area, and the closest known haul-out for any seal species is approximately 10 miles (16 kilometers) away from the Project area.

Harbor seal

Due to a lack of survey data, the densities for harbor seals were determined using SAR-derived methods and were based on spring and summer abundance estimates. Therefore the density of harbor seals may not be the most representative of the Project area; however, it is based on the best available information (DON 2007). This estimate also assumes that the animals are evenly distributed throughout the entire Mid-Atlantic stratum and throughout all four seasons, which is inaccurate and therefore makes the density estimate overly conservative. Based on this information, the density estimates of harbor seals in the vicinity of the Project area during the in-water construction period are 156.409 animals/kilometer^2 (for winter, spring and summer) (Table 9). Based on these density estimates, Transco is requesting authorization for Level B acoustical harassment take of 207 harbor seals.

Harp seal

Due to a lack of data and their rare occurrence in the Mid-Atlantic region, no densities for harp seals were calculated in the NODE report or any other sources. However, the occurrence of this species has been documented on the southern coast of Long Island during the winter months. The closest documented haul-out location for harp seals along the Long Island coast is on Cupsogue Beach, approximately 60 miles (96 kilometers) east of the Project area. No harp seals were observed in this haul-out area during the winter months of 2010 through 2012. The most recent observation of harp seals in this location was in 2008 when 4 harp seals were observed in March of that year (CRESLI n.d.). Although their occurrence in the Mid-Atlantic region is rare, their occurrence has been documented. Since there are no density estimates for harp seals in the Mid-Atlantic region or in the Project area, Transco is estimating that up to 4 harp seals could enter into the Level B harassment ZOI during active vibratory pile driving (Table 9). It is expected that this is an overly conservative estimate because the species is less common in the area, the sighting location is located more than approximately 60 miles (96 kilometers) away from the Project area, and the closest known haul-out for any seal species is approximately 10 miles (16 kilometers) away from the Project area.

North Atlantic right whale

Because past surveys of North Atlantic right whales were concentrated in the Gulf of Maine, density estimates were conservatively calculated (due to their critically endangered status) for all other stratum and all seasons based on the SAR-derived value for the winter in the Gulf of Maine (DON 2007). The SAR abundance number at the time of the report was 300 (Waring et al. 2004). This abundance value is less than the current 444 individuals reported in the most recent SAR (Waring et al. 2013). However, despite the slight increase in abundance of the North Atlantic right whale, the assumption that the density is the same across all stratum and all seasons is an overly conservative approach. Based on this information, density estimates of North Atlantic right whales in the vicinity of the Project area during the in-water construction period are 0.034 animals/ 100 kilometer^2 (for winter, spring, and summer) (Table 9). Based on these density estimates, Transco is requesting authorization for Level B acoustical harassment of 1 North Atlantic right whale that may transit through the area during in-water construction.

Bottlenose dolphin

Density estimates from the summer were available for the mid-Atlantic stratum from the NMFS, NEFSC (DON 2007). Density estimates for the spring in this stratum were not available; therefore, they were derived from SPUE values based on the summer density estimates (DON 2007). The bottlenose dolphin is expected to be present within the vicinity of the Project area during spring and summer months (see Section 3.3.6). Density estimates of bottlenose dolphins in the vicinity of the Project area during the in-water construction period are 8.140 animals/100 kilometers^2 (spring) and 26.905 animals/100 kilometers^2 (summer). Based on these density estimates, Transco is requesting authorization for Level B acoustical harassment take of 16 bottlenose dolphins that may transit through the area. This is overly conservative because the spring density is derived from another season which may not accurately represent species presence and density during that time.

Short-beaked common dolphin

Density estimates from the available survey data for short-beaked common dolphins were not available for the mid-Atlantic stratum. Therefore, the density estimates for each season were derived from proportional SPUE calculations taken from the summer density estimates in the Shelf West stratum, which is adjacent to the mid-Atlantic stratum (DON 2007). The short-beaked common dolphin is expected to be present within the vicinity of the Project area during winter and spring months, but not during summer months (see Section 3.3.8). Based on the SPUE, density estimates of short-beaked common dolphins in the vicinity of the Project area during the in-water construction period (winter and spring months only) are 145.347 animals/100 kilometer^2 (winter) 1.908 animals/100 kilometer^2 (spring) (Table 9). Based on these density estimates, Transco is requesting authorization for Level B acoustical harassment take of 67 short-beaked common dolphins that may transit through the area. This is overly conservative because the density data was derived from another stratum that may not as effectively reflect the actual density of short-beaked common dolphins in the mid-Atlantic stratum and the vicinity of the Project area and because the seasons considered in the NODE report include months outside the in-water work window.

Harbor porpoise

Density estimates for harbor porpoises were not available for the Mid-Atlantic stratum based on the available survey data. Therefore, density estimates for each season were derived from proportional SPUE calculations taken from the spring density estimates in the George's West stratum, which is adjacent to the mid-Atlantic stratum (DON 2007). The harbor porpoise is expected to be present within the vicinity of the Project area during winter and spring months, but not during summer months (see Section 3.3.7). Based on this information, density estimates of harbor porpoises in the vicinity of the Project area during the in-water construction period are 6.404 animals/kilometer^2 (winter) and 19.895 animals/kilometer^2 (spring) (Table 9). Based on these density estimates, Transco is requesting authorization for Level B acoustical harassment take of 12 harbor porpoises that may transit through the area. This is overly conservative because the density data were derived from another stratum that may not as effectively reflect the actual density of short-beaked common dolphins in the mid-Atlantic stratum and the vicinity of the Project area, and the seasons considered in the NODE report include months outside the in-water work window.

6.3.2 Calculating Takes

Using the density estimates from the Navy NODE report, potential takes by harassment were calculated within the ZOI for five of the seven species likely to found in the vicinity of the Project area during the in-water construction period: harbor seal, North Atlantic right whale, bottlenose dolphin, short-beaked common dolphin, and harbor porpoise. It is expected that the potential takes by harassment presented here are overly conservative numbers based on a variety of factors:

- The overly conservative ZOI (as described in Section 6.2)
- The actual time frame for vibratory pile driving would occur during no more than two non-consecutive days, spread over two non-consecutive weeks between January and August (see Section 6.1)

- The density seasons as determined in the NODE report include additional months outside those of the in-water construction window
- The density estimates assume even distribution throughout strata and are largely derived from adjacent stratum that may not represent density accurately in the vicinity of the Project area.

Therefore, it is expected that the actual number of individual animals being exposed to Level B harassment levels of sound would be far less than requested. There is no danger of injury, death, or hearing impairment from the exposure to noise levels associated with the proposed vibratory pile driving. Also, it is possible that the sound produced by the vibratory pile driver may not be fully audible to these species due to the local background noise which is likely to be dominated by loud and low-frequency commercial vessel noise.

Two additional species are likely to be found in the vicinity of the Project area during in-water construction, gray seals and harp seals, and could also be taken by Level B harassment as a result of vibratory pile driving during the in-water construction period. As mentioned previously, the NODE report does not estimate densities of these species in the mid-Atlantic stratum. The population estimates for these marine mammal species and stock in U.S. waters of the western North Atlantic region are also not available (Waring et al. 2013). However, the best population (there are currently no minimum population estimate) in Canadian waters is estimated at 348,900 individual gray seals, and 8,300,000 individual harp seals. Because the Project area represents only a small fraction of the western North Atlantic region where these animals occur, and these animals do not congregate directly within the vicinity of the Project area, it is expected that only very small numbers of these two pinniped species would potentially be affected by the vibratory pile driving associated with the Project. The numbers of takes requested above (and in Table 9) are expected to be extremely conservative based on the infrequent occurrence of these two species in the area, and for the same reasons outlined for the other four species discussed above.

6.4 NUMBER OF TAKE FOR WHICH AUTHORIZATION IS REQUESTED

Table 9 displays both the densities and incidental takes being requested, including the gray seal and harp seal, despite the lack of density data. For these species, only very small numbers of takes in relation to stock size are being requested.

Table 9
Estimated Marine Mammal Densities for the Continental Shelf Portion of the Mid-Atlantic Region and the Numbers of Marine Mammals at Potential Risk of "Take" by Harassment

Species	Estimated Density per 100 km^2 Winter (1)	Estimated Density per 100 km^2 Spring (1)	Estimated Density per 100 km^2 Summer (1)	Estimated Take by Level B Harassment Winter	Estimated Take by Level B Harassment Spring	Estimated Take by Level B Harassment Summer	Total Takes by Level B Harassment Requested
Gray seal	N/A	N/A	N/A	7	7	0	14
Harbor seal	156.409	156.409	156.409	69	69	69	207
Harp seal	N/A	N/A	N/A	0	4	0	4
North Atlantic right whale	0.034	0.034	0.034	0.015	0.015	0.015	1
Bottlenose dolphin	0.207(2)	8.140	26.905	0(2)	4	12	16
Short-beaked common dolphin	145.347	1.908	3.590(3)	64	1	2	67
Harbor porpoise	6.404	19.895	0.000	3	9	0	12

(1) Source: Navy OPAREA Density Estimates (NODE) for the Northeast OPAREAS: Boston, Narragansett Bay and Atlantic City August 2007

(2) Bottlenose dolphin are unlikely to be present within the vicinity of the Project area during winter months, therefore no takes are expected during winter months.

Note:

N/A = Not available

7.0 ANTICIPATED IMPACT ON SPECIES OR STOCKS

The anticipated impact of the activity upon the species or stock of marine mammals.

Transco is proposing the installation and removal of up to 70 temporary steel pipe piles using a vibratory hammer to occur over no more than two non-consecutive days spread over two non-consecutive weeks between January and May. The vibratory hammering activities generated during the Project would exceed the 120dB RMS threshold considered behaviorally disturbing from a continuous noise source (Level B harassment) to marine mammals.

Transco is requesting authorization for Level B acoustical harassment takes of small numbers of six marine mammal species, only four of which potential take numbers could be calculated using density information due to the lack of available density data for the remaining two species (see Section 6.3 for details). The numbers of takes in relation to the overall stock size of each of the six species are presented in Table 10.

Table 10
Estimated Marine Mammal, Numbers of Marine Mammals at Potential Risk of "Take" by Harassment, and Percent of Stock Potentially Affected

Species	Estimated Density per 100 km^2 Winter [1]	Estimated Density per 100 km^2 Spring [1]	Estimated Density per 100 km^2 Summer [1]	Estimated Take Winter	Estimated Take Spring	Estimated Take Summer	Total Takes by Level B Harassment Requested	Abundance of Stock [2]	Percentage of Stock Potentially Affected
Gray seal	N/A	N/A	N/A	7	7	0	14	348,900	0.004 %
Harbor seal	156.409	156.409	156.409	69	69	69	207	99,340	0.208 %
Harp seal	N/A	N/A	N/A	0	4	0	4	8,300,000	0.000048 %
North Atlantic right whale	0.034	0.034	0.034	0.015	0.015	0.015	1	444	0.225 %
Bottlenose dolphin	0.207[3]	8.140	26.905	0[3]	4	12	16	7,147	0.224%
Short-beaked common dolphin	145.347	1.908	3.590	64	1	2	67	52,893	0.127 %
Harbor porpoise	6.404	19.895	0.000	3	9	0	12	89,054	0.013 %

(1) Source: Navy OPAREA Density Estimates (NODE) for the Northeast OPAREAS: Boston, Narragansett Bay and Atlantic City August 2007;
(2) Source: Waring et al. 2012
(3) Bottlenose dolphin are unlikely to be present within the vicinity of the Project area during winter months, therefore no takes are expected during winter months.

Note:
N/A = Not available

In order for NOAA Fisheries Service to authorize the incidental take of marine mammals, they must determine that there is a negligible impact on the marine mammal species or stock. As stated in 50 CFR § 216.103, NOAA Fisheries Service defines negligible impact to be "an impact resulting from a specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stocks [of marine mammals] through effects on annual rate of recruitment or survival."

It is expected that acoustical disturbance of marine mammal species would be temporary due to the short time-frame of the actual pile driving activities and transient nature of the animals within the area. Also, the percentage of each population that would be temporarily disturbed through Level B acoustical harassment is not expected to have an impact on recruitment or survival of any of the marine mammal stocks discussed in this application (*see* Table 10). Therefore, based on the best available information and the information provided in this authorization request (including density, status, and distribution), it is expected that the vibratory pile-driving activities would have a negligible impact on the marine mammal species and stocks that could occur in the vicinity of the Project area during the in-water construction period.

8.0 ANTICIPATED IMPACT ON SUBSISTENCE

The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses.

This section is not applicable. The Project would take place in the Atlantic Ocean offshore of New York State, specifically, the Rockaway region. There are no traditional subsistence hunting areas within the Project region.

9.0 ANTICIPATED IMPACTS ON HABITAT

The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat.

9.1 INTRODUCTION

In-water construction activities would have temporary impacts on marine mammal habitat by producing temporary disturbances, primarily through in-water sound pressure levels from vibratory pile driving. Other temporary changes resulting from in-water construction activities are turbidity, water quality, and prey distribution. Mitigation measures implemented by Transco to minimize potential environmental effects from the Project are outlined in Section 11.0, Mitigation Measures.

9.2 IN-AIR DISTURBANCE OF HAUL-OUTS

There are no known haul-out sites for any seal species within the vicinity of the Project area. The closest two known haul-out sites for seals along the southern coast of Long Island are located approximately 10 miles (16 kilometers) to the west of the Project area and 15 miles (24 kilometers) to the east of the Project area. Therefore, there is no concern for acoustic disturbance to pinniped species while hauled out.

9.3 UNDERWATER NOISE DISTURBANCE

NOAA Fisheries Service is currently using underwater noise injury thresholds of 190dB RMS for pinnipeds, 180 dB RMS for cetaceans, and underwater noise disturbance thresholds of 160 dB RMS (impulsive sounds) and 120 dB RMS (continuous sounds) for both cetaceans and pinnipeds. There are no sound sources associated with the Project that would produce sounds within the injury thresholds or behavioral disturbance for impulsive sounds. However, the disturbance threshold for continuous sound would be reached during vibratory pile-driving activities. The distance to this threshold is approximately 3 miles (4.6 kilometers) and is described in detail in Section 1.6.4, Attenuation to NOAA Fisheries Service Thresholds.

Sound is a key component of survival for many marine species. It is used for various components of daily survival such as foraging, navigation and predator avoidance. It is also thought that marine mammals use sound to learn about their surrounding environment gathering information from both natural sources (such as inter- and intra-specific species), or naturally occurring phenomenon such as wind, waves, rain, or naturally occurring seismic activity (i.e., earthquakes) (Richardson et al. 1995). With a global increase in human-generated sound in the water column, marine organisms may be affected by exposure to such noise behaviorally, acoustically, and/or physiologically (Richardson et al. 1995).

Behavioral reactions can include a flight response, changes in breathing and diving patterns, avoidance of important habitat or migration areas, and a disruption of social relationships and interactions (Richardson et al. 1995; Nowacek et al. 2007; McCauley et al. 2000). Acoustic responses from marine mammals can include masking, changes in call rates, and changes in call frequency (Southall et al. 2007; Richardson et al. 1995; Nowacek et al. 2007). Masking is a decreased ability of an animal to detect relevant sounds due to an increase in background noise that effectively blocks those sounds. Physiological responses can include TTS, PTS, increased stress levels, and direct or indirect tissue damage (Richardson et al. 1995; Southall et al. 2007, Wright et al. 2007). TTS is the temporary, fully recoverable reduction in hearing sensitivity due to exposure to greater-than-normal sound intensity. PTS is a permanent, non-recoverable reduction in hearing sensitivity due to damage caused by either a prolonged exposure to a sound or temporary exposure to a very intense sound. When or how a marine animal responds to a sound depends on numerous variables such as the characteristics of the sound itself, characteristics of the animal (age, sex, habitat), and previous exposure to the sound of concern or other sounds (Wartzok et al. 2004).

Noise generated during pile-driving activities may be audible to marine mammals in the vicinity of the Project area. Most assessments of impacts associated with marine mammals and pile driving have been focused on impact pile driving. The pulsed noise of impact pile driving produces much greater source levels than vibratory pile driving, thereby increasing the potential for injury and behavioral impacts. The use of vibratory pile driving is considered a method to reduce impacts during pile-driving activities (ICF Jones & Stokes and Illingworth and Rodkin, Inc. 2009). Because the lower source levels and more continuous noise sources associated with vibratory pile driving, the impacts would be expected, at most, to be behavioral rather than injurious. Behavioral reactions such as avoidance of the sound source, avoidance of feeding habitat, or changes in breathing patterns have been reported as reactions to increased sound level (Malme et al 1984; Richardson et al. 1995; Nowacek et al. 2007; Tyack 2009). It is not expected that behavioral reactions beyond potential avoidance of the 120 dB re 1 µPa RMS and greater noise zone would occur in association with the vibratory pile-driving activities during the Project. Also, the level of disturbance from noise associated with vibratory pile driving will be greatly dependent on the local background noise. It is possible that marine mammals within the vicinity of the Project area and within the calculated ZOI may not actually be able to perceive noise from the vibratory pile driver due to the potentially louder background noise which is likely to be dominated by loud low-frequency commercial vessel noise.

Cetacean and pinniped occurrence in the Project area is expected to be transient. No distinct marine mammal foraging habitat has been identified in the vicinity of the Project. Therefore, disturbance from underwater noise associated with the Project would be limited because marine mammals can avoid any potentially disturbing noise and would not be excluded from any important habitat.

Potential Sound Pressure Level Impacts on Fish Prey Species

Fish are a primary dietary component of the cetaceans and pinnipeds discussed in this application. Similar to marine mammals, fish can also be affected by noise both physiologically and behaviorally. However, the amount of information regarding impacts on fish from human-generated acoustic sources is limited. The acoustic threshold criteria for physiological impacts on fish were developed by the Fisheries Hydroacoustic Working Group (FHWG) in 2008. The criteria determined by the FHWG is based on impacts from pile driving; however, it is assumed that because this is the most current information for any physiological acoustic impacts on fish, the criteria can be used for other human-generated sound sources. The FHWG determined that potential injury for all fish species is based on dual criteria: (1) Peak SPL of 206 dB re 1µPa and (2) 187 dB accumulated SEL (dBcSEL; re 1µPa2-sec) for fish weighing 2 grams or more or 183 dB accumulated SEL (dBcSEL; re 1µPa2-sec) for fish weighing 2 grams or less (Palmer 2012). To assess behavioral disturbance, NOAA Fisheries Service has adopted a threshold criterion of 150 dB re 1µPaRMS for fish of all sizes (Palmer 2012).

No Project-related noise would exceed the NOAA Fisheries Service threshold criteria for injury to fish. Therefore, because no sounds causing an impact would be produced during the Project, it is not expected that any fish would be injured as result of Project-related noise. The vibratory hammer does have the potential to cause behavioral disturbance within approximately 164 feet (50 meters) of the source (as calculated using the Practical Spreading Model [see Section 1.6.3]).

Behavioral disturbance of fish prey species could occur as a result of vibratory pile driving. It is possible that fish could be excluded from the area due to disturbing levels of sound while the vibratory hammer is operating; however, because the area of disturbance surrounding an individual pile is small, it is not expected that movements to avoid noise would require extra energy expenditure or would permanently deter any fish from returning to the area following the cessation of pile driving. The Project area is not distinct from the surrounding New York Bight region, so it is expected that cetaceans and pinnipeds would still be able to feed on fish prey species in the areas surrounding the Project area, and any behavioral effects on any fish prey species would not impact the cetaceans or pinnipeds discussed in this application.

9.4 TURBIDITY AND WATER QUALITY IMPACTS

Turbidity

During the course of the Project various activities are expected to disturb the sediment. These activities include pile driving, dredging the HDD exit pit via a clamshell dredge, trenching via jet-sled, excavation using hand-jets (including the hot tap, subsea cable crossing and anode bed locations), backfill of the trench via small-scale suction dredge (if necessary), backfill of other excavated areas using hand jets (potentially including the HDD exit pit) and vessel anchoring. All these activities are expected to re-suspend disturbed sediment and result in turbid conditions within the immediate Project area. It is expected that of the activities, the trenching via jet-sled would create the greatest amount of turbidity. During trenching, the sediment would be fluidized. The fluidized sediment loosened by the jets is entrained by suction tubes and primarily behind the sled and back into the trench following the final pass. Three passes of the jet-sled are anticipated in order to assure that the pipeline is buried as close to the required depth of 4 feet (1.22 meters) as possible using the jet-sled alone. Following the burial of the pipeline, post-installation hydrographic surveys will determine the exact depth of the pipeline. If a depth of 4 feet (1.22 meters) has not been reached, then targeted backfill would be required. Actively backfilling the pipeline would include the use of a small-scale suction dredge operated immediately adjacent to the trench. The combined footprint of the jet sled and the small-scale suction dredge would be approximately 38 feet wide, accounting for two passes of the suction dredge and side-sloughing at a slope of 1V:3H.

Suspended sediments would be transported and re-deposited downstream of the prevailing currents, which would increase siltation in the vicinity of the Project. Installation of the proposed pipeline facilities would directly affect the seabed along the 2.19-mile (3.5-kilometer) long corridor in which the pipeline and subsea equipment would be installed and along which anchor placement would occur. Because of the sediment in the Project area is sandy; the majority of material is expected to be re-deposited quickly, near the pipeline trench or other excavation site. Project-specific numerical modeling indicates that the turbidity resulting from construction activities is expected to be short-term, localized, and quickly dispersed by the prevalent longshore currents in the offshore Project area (HDR-HydroQual 2013a and 2013b). Resulting sedimentation is also expected to be localized. For example, modeling results indicate that average trenching-induced sedimentation is not expected to exceed 0.4 inches (1.0 centimeters) at distances greater than 800 feet (244 meters) from the proposed trench centerline (HDR-HydroQual 2013b). Following the completion of trenching via jet-sled, the turbidity levels within the temporary offshore workspace are expected to return to normal ambient levels within approximately four hours following the end of construction in all construction scenarios.

In New York State waters, turbidity standards require “no increase that will cause a substantial visible contrast to natural conditions” for Class SA (6 NYCRR §703.2). Because the turbidity resulting from construction activities is expected to be short-term, localized, and quickly dispersed by the longshore currents in the offshore Project area, no mitigation measures are currently planned to reduce the temporary increase in turbidity during construction. Using a turbidity curtain would likely be ineffective since successful application requires more benign metocean conditions in comparison with the currents at the offshore project location. However, turbidity will be monitored during construction and activities will be adjusted as practicable to reduce excessive turbidity. The duration and extent of the turbidity plume depends on the speed of the jet-sled. For the jet sled “worst case” scenario the total sediment volume released was consistent for the three construction rates that were modeled (HDR-HydroQual 2013a). In the bottom layer of the ocean the modeled suspended solids plume concentrations of approximately 50 milligrams per liter (mg/L) extended up to 2.5 miles (4.0 kilometers) from the pipeline trench for the fastest trenching rate and up to 1.1 miles (1.7 kilometers) from the trench for the slowest trenching rate. However, as trenching rates increase, the time over which a plume exists is shorter because construction duration is shorter, ranging from 12.6 hours for the fastest modeled construction rate to 29.8 hours for the shortest construction rate. The model also indicates that the Project would not cause sediment to be suspended in the upper layers of the ocean at any of the trenching rates or with hand-jetting or clamshell dredging activities. Based on contractor feedback, pipeline lowering is expected to require 3 passes of the jet sled at variable rates (200 to 400 feet per hour), but will disturb approximately one quarter of the material assumed for the “worst case” (HDR-HydroQual 2013b). Therefore, the maximum extent of a suspended sediment plume from the jet sled activity with a concentration of 50 mg/L is only expected to extend approximately 0.6 miles (1.0 kilometers) from the trench, but the total trenching time would be approximately 7.5 days.

Turbidity within the water column has the potential to reduce the level of oxygen in the water column and irritate the gills of cetacean or pinniped prey fish species in the Project area. However, turbidity plumes associated with the Project would be temporary and localized, and fish in the Project area would be able to move away from and avoid the areas where plumes may occur. Therefore, it is expected that the impacts on prey fish species from turbidity, and therefore on marine mammals, would be minimal and temporary.

Water Quality

Prior to operation, the pipeline would be hydrostatically tested four times using water withdrawn from the Atlantic Ocean. The total volume of water needed for pipeline testing would be approximately 578,700 gallons (573,500 of seawater and 5,200 of fresh water). Hydrostatic testing of the Rockaway Delivery Lateral involves flooding the pipeline with filtered seawater infused with an oxygen scavenger, a non-oxidizing biocide and a dye at the following concentrations: 200 parts per million (ppm) of biocide such as X-CIDE® 750 or equivalent, 100 ppm of oxygen scavenger (such as B-542 or equivalent, and approximately 23 ppm of clear champaign (fluorescent) dye (fluorescein disodium). The oxygen scavenger is used to prevent chemical corrosion of the pipeline interior, while the biocide is used to prevent corrosion as a result of microorganisms present in seawater. The dye is needed to allow easier detection of any leaks underwater.

During the testing, clean seawater would be filtered through a 200 size mesh screen (mesh opening = 0.0029 inches [0.07 millimeters]). The filtering prevents debris and foreign material from entering the pipeline. The suction head or submersible pump would take in water at a depth of more than 20 feet below the ocean surface to minimize the introduction of more oxygenated water and microorganisms into the pipeline. The fill rate for the hydrostatic test water into the pipeline would be approximately 4,000 gallons per minute. Based on the volume of water expected to be withdrawn from the marine environment (approximately 573,500 gallons) and the rate at which it is expected to be removed (approximately 4,000 gallons per minute), it is expected that water withdrawal would take no more than 143 minutes (approximately 2.5 hours) of total operating time.

Before pipeline commissioning, the hydrostatic test water would be pumped from the pipeline into a diffuser to re-oxygenate the water before it is discharged into the marine environment in the general area from which it was withdrawn. The exact location of discharge is to be determined by Transco in consultation with the contractor and according to any applicable permit requirements. The rate of discharge back into the ocean would be approximately 2,000 gallons per minute. A dewatering pig would be used to dry the pipe after the hydrostatic test. No swabbing chemicals/drying agents would be used during the dewatering process and only clean, filtered, oil-free air would be used for the displacement of dewatering pigs. While the process of withdrawing water from the marine environment is expected to result in a loss of 100% of the plankton that are entrained during the process, the loss of plankton is not expected to impact food resources for right whales or marine mammal prey species. The total volume of water required for the hydrostatic testing is an insignificant fraction of the total water available in the Atlantic Ocean along the Rockaway Peninsula and thus is not expected to have an impact on water quality.

The potential impacts from entrainment are best predicted by looking at general larvae and egg densities expected in this portion of the Atlantic Ocean. Generally, NOAA Fisheries Service data (ecosystems monitoring [ECOMON] program and the marine resources monitoring, assessment, and prediction [MARMAP] [program]) indicate that egg densities (all taxa) in northeast Atlantic marine waters typically range from 1 to 3 eggs per cubic meter (m^3) of water; larvae densities are about half the density for eggs, or about 0.5 to 1.5 larvae/m^3. Using the median of these densities, the use of 573,500 gallons (2,171 m^3) of seawater would result in the loss of approximately 4,342 eggs and 2,171 larvae (all taxa combined). The fact that entrainment would take place in a marine environment where significant natural mortality is prevalent must also be taken into account. It is impossible to state with any certainty what factors control the survival of fish eggs and larvae and this has been a major goal of oceanographers for more than a century. But the premise is simple: fish are highly fecund animals, producing many more progeny than can possibly survive to recruitment age. However, the timing of the hydrostatic test would minimize the potential for many species (at the egg and larvae life-stages) to be present. Furthermore, the relatively small amount of water being drawn into the pipe is extremely small compared with the ubiquitous habitat found in the Project's vicinity; therefore, it is assumed that effects, at population-level, on zooplankton and/or ichthyoplankton lost, would be minimal and insignificant.

Despite the potential indirect impact via entrainment of prey, adverse impacts on marine mammals would not be expected as a result of hydrostatic test water discharge.

9.5 CONCLUSIONS REGARDING IMPACTS ON HABITAT

The most likely impacts on marine mammal habitat for the Project are underwater noise, turbidity, water quality, and potential effects on the food supply. However, it is not expected that any of these impacts would be significant. It is not expected that there would be a direct loss of habitat available to marine mammals due to any of the activities associated with the Project. All marine mammal species using habitat near the Project area are primarily transiting the area; no known foraging or haul-out areas are located in the vicinity of the Project.

Any adverse impacts on prey species are expected to be temporary and localized. Given the large numbers of fish and other prey species in the larger New York Bight region, the short-term effects on fish species, the ability of both prey species and marine mammals to avoid the areas of disturbance, and the availability of similar suitable habitat surrounding the Project area, the Project is not expected to have measureable effects on the distribution or abundance of potential marine mammal species in the Project area.

Both turbidity and water quality impacts would be temporary and localized in relation to the larger New York Bight region. Therefore, it is not expected that there would be any adverse impacts on marine mammals or their prey species.

10.0 ANTICIPATED IMPACTS OF LOSS OR MODIFICATION OF HABITAT

The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved.

During the course of the Project, various activities would cause benthic disturbance. These include dredging via clamshell dredge, pile driving, laying the pipe on the seafloor, trenching via jet-sled, hand-jetting around the hot-tap and for the anode bed, backfilling via a small-scale suction dredge, and vessel anchoring. These activities would not result in the significant permanent loss or modification of habitat for marine mammals or their prey. The greatest impact on marine mammals associated with the Project would be the potential minimal and temporary loss of habitat due to elevated noise levels and the potential temporary impact on prey species due to turbidity. These temporary impacts were discussed in detail in Section 9.0, Anticipated Impact on Habitat.

11.0 MITIGATION MEASURES

The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance.

The Project is not anticipated to result in take by Level A injury of marine mammals; however, it may result in take by Level B acoustical harassment of gray seals, harbor seals, harp seals, one North Atlantic right whale, bottlenose dolphins, short-beaked common dolphins, and harbor porpoises. Due to mitigation measures that will be implemented, any Level B acoustical harassment would be temporary and would not be expected to result in any long-term effects on marine mammal stocks or habitat in the region. Mitigation measures for in-water construction activities associated with the Project are provided below.

11.1 PILE DRIVING

- A vibratory hammer instead of an impact hammer will be used for pile driving to reduce in-water noise levels while installing and removing up to 70 temporary steel pipe piles.
  - Total operation time for vibratory pile driving will be less than one day in duration over approximately one week (one week each for installation and extraction).
  - Soft-start procedures will be used before the start of each pile-driving session.
  - Pile driving installation and removal will only take place during daylight hours.

- NOAA Fisheries-approved observers will be present to conduct surveys 30 minutes before, during, and 30 minutes after all vibratory pile-driving activities to monitor for marine mammals within the ZOI.

  - Level A (180 / 190 dB re 1µPa) – not applicable (vibratory hammer RMS level is 160 dB re 1µPa)
  - Level B (120 dB re 1µPa) – approximately 3 miles (4.6 kilometers)

- Two NOAA Fisheries-approved observers will be stationed on the escort boat, located approximately 1.5 miles (2.3 kilometers) from the active pile driving.
  - The escort boat will monitor the 1.5 mile (2.3 kilometers) entire perimeter, with the observers monitoring 360° around the vessel (between the pile driving and the vessel and from the escort vessel out to the extent of the ZOI).
  - Pile driving installation and removal will only be conducted when lighting and weather conditions allow the two NOAA-approved observers to visually monitor the full exclusion zone through the use of binoculars or other observation devices (1.5 miles in each direction from the escort boat).
  - If marine mammals are observed within the ZOI, the sighting will be fully documented and observers will monitor the animal for any abnormal behaviors displayed while vibratory pile driving is occurring, or shortly after vibratory pile driving has ended. These abnormal behaviors could include aggressive behavior related to noise exposure (i.e., tail/flipper slapping or abrupt directed movement), avoidance of the sound source, or an

obvious startle response (i.e., a rapid change in swimming speed, erratic surface movements, or sudden diving associated with the onset of a sound source). Should abnormal behaviors such as these be observed, the vibratory hammer would be shut down until the animal has moved outside of the ZOI.

- Information recorded during each observation should include:
  - Marine mammal behavior, overall numbers of individuals observed, frequency of observation, and activity of vibratory pile driver (i.e. soft-start, active, post pile driving, etc.), etc.

- NOAA Fisheries-approved observers should meet the following 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.
  - Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
  - Experience or training in field identification of marine mammals (cetaceans and pinnipeds).
  - Sufficient analytical and writing skills to interpret and report collected marine mammal data.
  - Ability to communicate orally, by radio, and in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.
  - A college-level education (bachelor's degree or higher) in marine mammal, wildlife, fisheries, or related fields is recommended, but not required.

11.2 TRANSITING VESSELS

Various vessels would be located within the area throughout the duration of the Project. This activity is not considered a concern for harassment of marine mammals in the vicinity of the Project area because of the high level of vessel activity associated with both commercial traffic (to and from the Port of New Jersey and New York) and recreational traffic that already occurs within the region. However, due to the critically endangered status of the North Atlantic right whale, vessel activity and speed regulations are already in place along the east coast. As mentioned in Section 3.3.4.3 (North Atlantic Right Whale Distribution), the Project area is located within a SMA associated with the Port of New Jersey and New York between November and April. While this SMA is in effect, transiting vessels and vessel operators associated with the Project will comply with the following protocol:

- Have a NOAA Fisheries-approved observer, or the vessel operators and crews (trained to observe for protected species), maintain a vigilant watch for right whales and slow down or stop the vessel to avoid striking the animal(s)

- Conform to the regulations prohibiting the approach of right whales closer than 500 yards (1,500 feet) (50 CFR 224.103(c))

- Monitor the right whale sighting reports (including SAS and dynamic management areas [DMAs]) to remain informed on the whereabouts of right whales in the vicinity of the Project area

- Not exceed a speed of 10 knots between November 1 and April 30 to reduce the potential for collisions with whales (see Appendix A)

11.3 CONSTRUCTION ACTIVITIES

All in-water construction activities will comply with federal regulations to control the discharge of operational waste such as bilge and ballast waters, trash and debris, and sanitary and domestic waste that could be generated from all vessels associated with the Project. All vessels associated with the Project are expected to comply with the U.S. Coast Guard (USCG) requirements for the prevention and control of oil and fuel spills (MARPOL, Annex V, Pub. L. 100−220 [101 Stat. 1458]).

- A spill prevention, control, and countermeasures plan (SPCC Plan) has been developed for the Project (Appendix B).

- No petroleum products, fresh cement, lime or concrete, chemicals, or other toxic or deleterious materials shall be allowed to enter surface waters.

- Equipment that enters the surface water shall be maintained to prevent any visible sheen from petroleum products appearing on the water.

- There shall be no discharge of oil, fuels, or chemicals to surface water or onto land where there is a potential for reentry into surface waters.

- No cleaning solvents or chemicals used for tools or equipment cleaning shall be discharged to ground- or surface waters.

- The contractor shall regularly check fuel hoses, oil drums, oil or fuel transfer valves, fittings, etc. for leaks and shall maintain and store materials properly to prevent spills.

- Projects and associated construction activities will be designed so potential impacts on species and habitat are avoided and minimized to the extent practicable.

12.0 ARCTIC PLAN OF COOPERATION

Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit either a plan of cooperation or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses. A plan must include the following:

(i) A statement that the applicant has notified and provided the affected subsistence community with a draft plan of cooperation;

(ii) A schedule for meeting with the affected subsistence communities to discuss proposed activities and to resolve potential conflicts regarding any aspects of either the operation or the plan of cooperation;

(iii) A description of what measures the applicant has taken an/or will take to ensure that proposed activities will not interfere with subsistence whaling or sealing; and

(iv) What plans the applicant has to continue to meet with the affected communities, both prior to and while conducting activity, to resolve conflicts and to notify the communities of any changes in the operation.

This section is not applicable. The Project would take place in the Atlantic Ocean in the coastal waters off New York State, specifically the Rockaway Peninsula in Queens County, and no activities would take place in or near a traditional Arctic subsistence hunting area. There are no subsistence uses of marine mammals implicated by this action.

13.0 MONITORING AND REPORTING PLANS

The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding.

13.1 MONITORING PLAN

Transco has developed a marine mammal monitoring plan, described briefly in Section 11.1 and described in more detail here:

Visual Monitoring Procedures

Transco proposes the following Marine Mammal Monitoring Plan in order to estimate Level B acoustic harassment takes and behavioral disturbance from vibratory pile driving activities associated with the Project:

- To verify the required monitoring distance, the vibratory Level B acoustical harassment ZOI will be determined by using a range finder or hand-held GPS device.
- During vibratory pile driving (installation and removal), the source level is expected to attenuate to the 120 dB re 1 μPa RMS threshold within approximately 3 miles (4.6 kilometers) of the source (Figure 11).
- Two NOAA Fisheries-approved observers will be stationed on the escort boat, located approximately 1.5 miles (2.3 kilometers) from the active pile driving.
  - The escort boat will monitor the 1.5 mile (2.3 kilometers) perimeter around the source.
  - Observers will monitor 360° around the vessel:
    - Between the pile driving and the escort vessel and
    - From the escort vessel out to the extent of the ZOI.
  - If marine mammals are observed within the ZOI, the sighting will be fully documented and observers will monitor the animal for any abnormal behaviors (such as aggressive behavior related to noise exposure [i.e., tail/flipper slapping or abrupt directed movement], avoidance of the sound source, or an obvious startle response [i.e., a rapid change in swimming speed, erratic surface movements, or sudden diving associated with the onset of a sound source]) displayed while vibratory pile driving is occurring or shortly after vibratory pile driving has ended.
  - Information recorded during each observation should include (but is not limited to):
    - Overall numbers of individuals observed
    - Frequency of observation
    - Location within the ZOI (i.e. distance from the source)
    - Activity of vibratory pile driver (i.e., soft-start, active, post pile driving, etc.)

  - Reaction of the animal(s) to the pile driving (if any) and any behaviors the animal(s) may display while in the ZOI, including bearing and direction of travel.

- If the Level B acoustical harassment ZOI is obscured by fog or poor lighting conditions, vibratory pile driving will not be initiated until the ZOI is visible. Or if the Level B acoustical harassment ZOI is obscured by fog or poor lighting conditions while pile driving activities are occurring, the pile driving will be shut down until the full Level B ZOI can be monitored by an observer using binoculars or other observation devices.

- The Level B acoustical harassment ZOI for vibratory pile driving will be monitored for the presence of marine mammals 30 minutes before, during, and 30 minutes after any pile-driving activity.

Minimum Qualifications for Marine Mammal Observers

- 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.

- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).

- Experience or training in the field identification of marine mammals (cetaceans and pinnipeds).

- Sufficient analytical and writing skills to interpret and report collected marine mammal data.

- 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.

- A college-level education (bachelor's degree or higher) in marine mammal, wildlife, fisheries, or related fields is recommended, but not required.

13.2 REPORTING PLAN

Transco will provide NOAA Fisheries Service with a draft monitoring report within 90 days of the conclusion of monitoring. This report will include:

- A summary of the activity and monitoring plan (dates, times, locations)

- A summary of mitigation implementation

- Monitoring results and a summary that addresses the goals of the monitoring plan, including (but not limited to)
  - Environmental conditions when observations were made:
    - Water conditions (i.e., Beaufort sea-state, tidal state)
    - Weather conditions (i.e., percent cloud cover, visibility, percent glare)
  - Survey-specific data:
    - Date and time survey initiated and terminated

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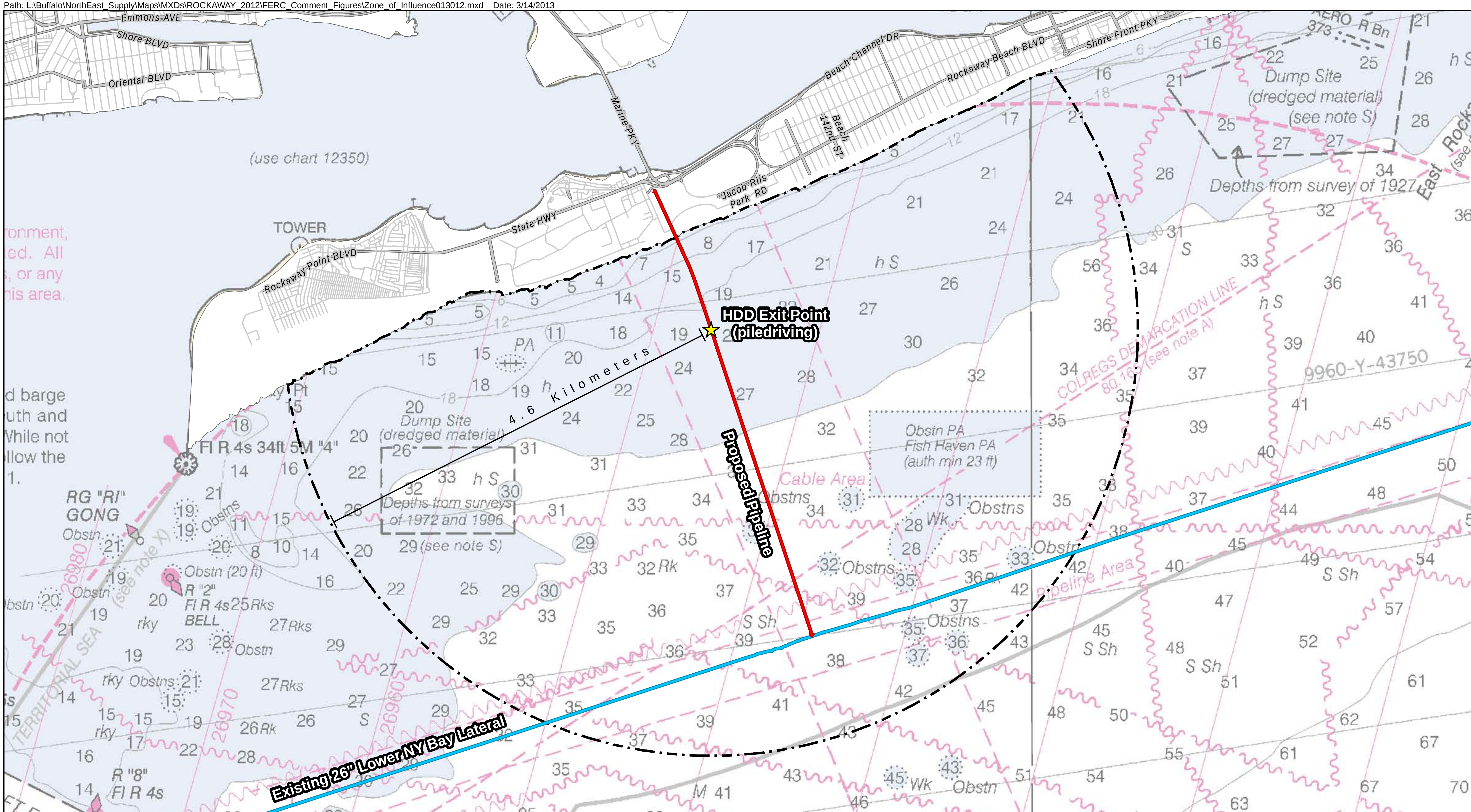

★ Location of vibratory piledriving
Proposed Pipeline
Existing 26" Lower NY Bay Lateral
120 dBRms ZOI

Source: Mustang 2012, NOAA 2009

N / S / E / W
0 — 1 Miles

Figure 11
Rockaway Delivery Lateral Project
120 dB Zone of Influence to be Monitored for Level B Acoustical Harassment

   - Date, time, number, species, and any other relevant data regarding marine mammals observed (for pre-activity, during activity, and post-activity surveys)
   - Description of the observed behaviors (in both the presence and absence of activities):
     - If possible, the correlation to underwater sound level occurring at the time of any observable behavior
   - Estimated exposure/take numbers during activities

- An assessment of the implementation and effectiveness of prescribed mitigation and monitoring measures.

If comments are received from NOAA Fisheries Service on the draft report, a final report will be submitted to NOAA Fisheries Service within 30 days after all comments are received. If no comments are received from NOAA Fisheries Service, the report submitted will be considered the final report.

14.0 COORDINATING RESEARCH TO REDUCE AND EVALUATE INCIDENTAL TAKE

Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.

To encourage learning and coordinate research opportunities related to the incidental taking of marine mammals, any data gathered during in-water construction will be made available to NOAA Fisheries Service, researchers, and other interested parties. Also, if any ESA-listed North Atlantic right whales are observed at any time while observers are present or during the course of all in-water construction, sightings will be reported to the NOAA Fisheries Service NEFSC North Atlantic right whale SAS to aid in alerting other boaters (especially commercial shipping vessels) in the area of the animals' presence. This will also help to increase knowledge of the locations that these animals frequent along the east coast during their winter migration.

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Transcontinental Gas Pipe Line Company, LLC

Appendix
to

Request for an Incidental Harassment Authorization Under the Marine Mammal Protection Act

Rockaway Delivery Lateral Offshore Pipeline Route

October 2013

Submitted to:

National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910

Appendix A

Protected Species Vessel Strike Avoidance

Williams Transco will require all vessels associated with the Project to adhere to NOAA Fisheries Service Northeast Region's Vessel Strike Avoidance Measures and Reporting for Mariners. Additional criteria, including those that may be developed during the federal ESA Section 7 consultation process for this action may also be applicable to vessels associated with the Project.

The requirements are as follows:

1. The vessel operators and crews must maintain a vigilant watch for marine mammals and sea turtles and slow down or stop the vessel to avoid striking protected species.

2. When whales are sighted, maintain a distance of 91 meters (300 feet) or greater from the whale. If the whale is believed to be a North Atlantic right whale, the vessel operator must ensure that the vessel maintains a minimum distance of 500 meters (1,500 feet) from the animal (50 CFR 224.103).

3. When sea turtles or small cetaceans are sighted, the vessel must maintain a distance of 45 meters (150 feet) or greater whenever possible.

4. When cetaceans are sighted while a vessel is under way, the vessel must remain parallel to the animal's course whenever possible. The vessel must avoid excessive speed or abrupt changes in direction until the cetacean has left the area.

5. Reduce vessel speed to 10 knots (18.5 kilometers per hour) or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near an underway vessel when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity of the vessel; therefore, precautionary measures should always be exercised.

6. Whales may surface in unpredictable locations or approach slowly moving vessels. When animals are sighted in the vessel's path or close to a moving vessel, the vessel must reduce speed and shift the engine to neutral. The engines must not be engaged until the animals are clear of the area.

7. The lessee must report sightings of any injured or dead marine mammals or sea turtles to NOAA Fisheries within 24 hours, regardless of whether the injury or death was caused by their vessel as provided in the lease.

Appendix B

Spill Prevention, Control, and Countermeasures Plan

Spill Prevention, Control, and Countermeasures Plan
(SPCC Plan)

Rockaway Delivery Lateral Project

March 2013

Table of Contents

1.0 GENERAL INFORMATION

1.1 PROJECT LOCATION AND DESCRIPTION

This Spill Prevention Control and Countermeasures Plan (Spill Plan) was developed for the Rockaway Delivery Lateral Project (Project), which would extend approximately 3.20 miles from a proposed offshore interconnect with Transcontinental Gas Pipe Line Company, LLC's (Transco's) existing 26-inch diameter Lower New York Bay Lateral (LNYBL) in the Atlantic Ocean to an onshore delivery point for the National Grid pipeline system on the Rockaway Peninsula in Queens County, New York. The offshore portion of pipeline construction will occur entirely within the Atlantic Ocean, which is the only waterbody that could be affected by spills during construction.

As part of the offshore construction planning process, Transco will ensure that any vessel operators performing the work have appropriate plans in place to comply with United States Coast Guard requirements including a Vessel Response Plan (VRP) or a Shipboard Oil Pollution Emergency Plan (SOPEP) as contained in 33 CFR 151 and 33 CFR 155. The specific plan requirements depend on the size of the vessel and the type of cargo and the quantity of oil and fuel that will be carried on board.

Definitions:

Oil is defined in the SPCC regulations as oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredged spoil and oily mixtures.

Hazardous Material as defined by the DOT includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of subchapter C of this chapter. Hazardous Materials typically found on construction projects include, but are not limited to, petroleum oils, hydraulic fluids, engine coolants (ethylene glycol), x-ray film developer, chemical additives, pipe coatings, used abrasive blasting media, etc.

EPA's definition of a **facility** includes any mobile installation, equipment, or pipeline (other than a vessel) in which oil will be used. This SPCC plan is required if the storage or use of oil at the job site is greater than 1,320 gallons. The boundaries of the facilities covered by this

SPCC plan will include all vessels and barges used during the construction and depend on site-specific factors such as equipment used, types of activities at the site, and staging and fueling areas. This generic SPCC plan provides an overview of the project and proposed operational activities.

Contractor Responsibility:

The Contractor shall be familiar with this Spill Plan and its contents prior to commencing any construction-related activities. The Spill Plan will be followed to prevent any spills that may occur during the project and to mitigate any spills that do occur.

Company representatives assigned to this project include:

District Manager (DM):	TBD
Company Inspector (CI):	TBD
Environmental Compliance:	TBD

2.0 DRAINAGE PATTERNS AND SPILL PREVENTION PRACTICES

2.1 DRAINAGE PATTERNS

The general drainage patterns can be determined by the contour drawings shown in the topographic maps.

Responsibility: Construction Inspector / District Manager

Construction and Operations personnel will be familiar with drainage patterns for the project and be prepared to implement measures to control any release.

2.2 SPILL PREVENTION PRACTICES

The Contractor shall take the following precautions to ensure that any oil or hazardous materials spill does not occur:

A. Containers

(1) All containers shall be stored on level ground at least 100 feet from any waterway unless the location is designated for such use by an appropriate governmental authority. All containers should be located within temporary containment.

(2) Temporary containment may include temporary hay bale berms with plastic sheets underlining the entire contained area and over the hay bale berms. Earthen materials may be used in place of hay bales with the method of construction determined by the Environmental Inspector. It is at the discretion of the contractor to comply with the conditions of the spill plan, but at a minimum the contractor must comply with the general conditions outlined in the FERC Plan and Procedures and 40 CFR Part 112, although these requirements do not technically apply to the conditions at a construction site.

(3) Containment areas shall be capable of containing 110% of the volume of hazardous materials being stored.

(4) All container storage areas shall be routinely inspected for integrity purposes.

(5) Leaking and/or deteriorated containers shall be replaced as soon as the condition is first detected with clean-up measures immediately taking place.

(6) No incompatible materials shall be stored in the same containment area.

(7) No container storage areas shall be left unsecured during non-work hours. All hoses and oil containing equipment is required to be secured prior to concluding each day. This includes parking and securing equipment as identified in condition A-1 and fueling equipment must have hoses placed into containment and locked with pad and key if possible.

(8) All containers of oil or hazardous materials should be accompanied by oil spill response kits.

(9) Collected rainwater in containment pads must be inspected prior to release to the ground; it must be free of sheens or other hazardous materials.

B. Tanks

(1) The Contractor shall operate only those tanks that meet the requirements and specifications of applicable regulations and that are surrounded with temporary containment as described above.

(2) Self-supporting tanks shall be constructed of materials compatible with its contents.

(3) All tanks shall be routinely inspected for integrity purposes.

(4) Vehicle mounted tanks shall be equipped with flame/spark arrestors on vents to ensure that self-ignition does not occur.

(5) Tanks will not be used to store incompatible materials in sequence unless first thoroughly decontaminated.

(6) Any tank utilized for storing different products between construction locations will be thoroughly decontaminated prior to refilling.

C. Unloading/Loading Areas

(1) If it is necessary during the project, re-fueling and transferring of liquids shall only occur in pre-designated locations that are on level ground and at least 100 feet from any waterway. Where conditions require construction equipment (e.g., Bobcat/front-end loader/excavator) be re-fueled within 100 feet of any waterway, or as prescribed by a project specific permit, this activity must be continuously manned to ensure that overfilling, leaks or spills do not occur. In addition, all this equipment must be surrounded by temporary containment as described above and inspected on a regular basis to ensure that any hoses or parts containing oil or hazardous materials are in good working order.

(2) All service vehicles used to transport fuel must be equipped with an appropriate number of fire extinguishers and an oil spill response kit. At a minimum, this kit must include:

- Ten 48”x 3” oil socks
- Five 18” x 18” oil pillows
- One 10’x 3” oil boom
- Twenty-five 24” x 24”oil mats/pads
- 1 box garden-size, 6-mil, disposable polyethylene bags (w/ ties)
- 4 pairs of oil-proof gloves
- One 55-gallon PE open-head drum
- Blank drum labels

- 2 shovels

(3) Contractors will be trained in proper handling, refueling, and maintenance practices.

D. Offshore

(1) All vessels will be required to register for the EPA Vessel General Permit, which authorizes discharges incidental to the normal discharge of operations of commercial vessels.

(2) Emergency response procedures for offshore spills will be identified after the contractor has been selected.

3.0 EMERGENCY RESPONSE PROCEDURES

This section provides a generic description of emergency response procedures to be performed to address oil and hazardous materials spills at the job site. Each response will vary depending upon the nature and extent of the incident. However, the general procedures outlined below will be followed.

3.1 CONTRACTOR RESPONSIBILITIES

(1) The Contractor must designate both an Emergency Coordinator (EC) and an Alternate EC for the project.

(2) The Contractor is responsible for appropriately addressing all spills that occur directly as a result of construction-related activities.

(3) For spills (spills that take less than a shovel-full of dirt to clean-up), no internal notification requirements of this Spill Plan need to be followed. However, this does not relieve the Contractor from appropriately remediating the area and reporting the spill in the daily report.

(4) The Contractor shall supply the necessary manpower, PPE, and spill response equipment to appropriately address all spills that directly occur as a result of construction-related activities.

(5) Ensure that all emergency spill response equipment and PPE is well-stocked and in good condition. Replace used materials when necessary.

(6) If the situation warrants it, the Contractor shall immediately notify any local emergency spill response contractors for assistance.

(7) The Contractor shall be responsible for hiring an emergency spill response contractor if the nature of the incident requires it.

(8) The Contractor is responsible for immediately notifying the CI (or the DM) of any reportable spills.

3.2 COMPANY RESPONSIBILITIES

(1) Company shall be responsible for ensuring that the Contractor adequately follows the procedures outlined in this Spill Plan at all times.

(2) Company shall be responsible for all verbal and written external notifications made to any regulatory agency or any local emergency responders.

3.3 EMERGENCY CONTACTS

Table I (Attachment A) provides a list of Company and Contractor emergency contacts.

3.4 DUTIES OF COMPANY INSPECTOR (DISTRICT MANAGER) FOR NON-DE MINIMUS SPILLS

The duties of the CI (or DM) for reportable spills include the following:

(1) Determine the source, character, amount, and extent of the spill.

(2) Assess the potential hazards to the job site, environment, and surrounding community and contact the Safety Representative if any hazards are detected.

(3) Evacuate the area if necessary.

(4) Report the spill in accordance with the internal notification procedures outlined in Section 5.1 and the external notification procedures outlined in Section 5.2.

(5) Commit manpower and equipment for minor incidents that can be reasonably remediated by the Contractor.

(6) Oversee Contractor's spill response efforts to contain and control all spills to ensure they adequately follow the procedures outlined in this Spill Plan.

(7) Document the Contractor's response effort, including taking photographs wherever possible.

(8) Generate an Emergency Incident Report (WGP Form 0187).

4.0 EMERGENCY SPILL RESPONSE AND PERSONNEL PROTECTION EQUIPMENT

Table II (Attachment A) provides a list of the minimally-required Emergency Spill Response Equipment and Personnel Protection Equipment (PPE) for this project. This is in addition to the minimally-required spill response equipment previously specified in Section 2.2.

5.0 SPILL NOTIFICATION PROCEDURES

5.1 INTERNAL NOTIFICATIONS

All spills are to be immediately reported to the CI (or DM) who will contact Gas Control and the Environmental Compliance Department. Table I (Attachment A) includes a list of emergency contacts.

An Emergency Incident Report (WGP Form 0187) must be forwarded to the Environmental Compliance Department as soon as technically feasible by the CI (or DM). The Environmental Compliance Department will determine if the spill constitutes the following:

(1) Reportable Quantity under CERCLA,

(2) Reportable release under the Clean Water Act or RCRA, or

(3) Reportable Threshold Quantity under SARA Title III

(4) State Reportable Incident (Contact Environmental Compliance Department)

(5) Immediately Reportable Incident – Any sheen observed on water

If any reporting is necessary, the Environmental Compliance Department shall be responsible for immediately contacting the appropriate federal and state regulatory authorities and following up in writing, if required. Any spills requiring reporting to state or federal agencies shall also be reported to the impacted landowner.

5.2 EXTERNAL NOTIFICATIONS

Any spills that may pose a threat to human health or the environment shall be immediately reported to the CI (or DM) who will contact the Local Emergency Planning Committee (LEPC) if necessary. When determining if the LEPC should be contacted or not, any gas release to the atmosphere must be taken into consideration. Note: Linear Projects may extend through multiple LEPC jurisdictions. Contractor must insure all jurisdictions are listed.

The appropriate LEPC is:

Name:	TBD
Organization:	TBD
Phone Number:	TBD

The Environmental Compliance Department is responsible for submitting any required written follow-up notifications to the LEPC or any local emergency responders.

5.3 EMERGENCY SPILL RESPONSE CONTRACTORS

The Company has arrangements with several emergency spill response contractors to address emergency responses beyond the capabilities of the Contractor.

If necessary, the following firms could be utilized for this project:

Company: TBD

Name: TBD

Location: TBD

Phone Number: TBD

Company: TBD

Name: TBD

Location: TBD

Phone Number: TBD

5.4 LOCAL EMERGENCY RESPONDERS

The Contractor or the CI (or DM) may call the following local emergency responders should their assistance be required: Note: Linear Projects may extend through multiple Emergency Responder areas. Contractor must insure all jurisdictions are listed.

Service	Telephone Number
Emergency Medical Services	TBD
Hospital	TBD
Fire	TBD
U.S. Park Police	TBD
United States Coast Guard	TBD

6.0 CLEAN-UP PROCEDURES

The following section outlines specific procedures to be followed when addressing spills:

6.1 SPILLS

(1) Small spills and leaks must be remediated as soon as feasible. Use adsorbent pads wherever possible.

(2) Restrict spills to the containment area if possible by stopping or diverting flow.

(3) If the spill exceeds the containment structure's capacity, immediately construct additional containment using sandbags or fill material. Every effort must be made to prevent the spills from entering a water body.

(4) If a spill reaches a water body, immediately place oil booms downstream in order to contain the material. As soon as possible, remove the floating layer with absorbent pads.

(5) After all recoverable oil has been collected and drummed, place all contaminated PPE, spill clean-up equipment, and any impacted soil into appropriate containers.

(6) For significant quantities of impacted soils, construct temporary waste piles using plastic sheets. This material should subsequently be transferred into lined roll-off boxes as soon as feasible.

(7) Environmental Compliance Department will coordinate all waste characterization, profiling, and disposal activities.

6.2 EQUIPMENT CLEANING/STORAGE

(1) Upon completion of remedial activities, the Contractor shall be responsible for decontaminating the used emergency response equipment as well as the PPE.

(2) The Contractor shall be responsible for replacing any spent emergency response equipment and PPE prior to resuming construction-related activities.

(3) Decontamination rinse fluids shall be collected and containerized. The Environmental Compliance Department will coordinate waste characterization and disposal activities.

(4) Reusable PPE shall be tested and inventoried prior to being placed back into service.

6.3 WASTE DISPOSAL

The Contractor is responsible for waste management and waste disposal; however, the Environmental Compliance Department will coordinate all waste characterization, profiling, and disposal activities. All waste management and disposal activities shall conform to the procedures outlined in the O&M Manual (see WGP procedure 35.04.01, “Waste Management”).

The Contractor is permitted to manage routine garbage and construction debris without oversight of the Environmental Compliance Department

ATTACHMENT A

TABLE I: LIST OF EMERGENCY CONTACTS

Names	Job Description	Phone Number
Gas Control	GulfStream	800/440-8457 (24-hrs)
	Northwest	800/972-7733 (24-hrs)
	Transco	800/440-8457 (24-hrs)
TBD	Chief Inspector	TBD
TBD	District Manager	TBD
Mark Bisett, Manager	Environmental Compliance Department	713/215-2781 (off) 713/213-2581 (cell)
Contractor	**Job Description**	**Phone Number**
TBD	Emergency Coordinator	TBD
TBD	Alternate Emergency Coordinator	TBD
Regulatory Agencies	**Name**	**Phone Number**
	National Response Center	800/424-8802
	State Environmental Mgt. Dept. (EMD)	TBD
	National Park Service - Kathleen Cuzzolino	718-354-4609

ATTACHMENT A

TABLE II: EMERGENCY SPILL RESPONSE AND PERSONNEL PROTECTION EQUIPMENT

Equipment	Quantity	Location
(1) chemical spill kit	1	adjacent to work space
(2) oil spill kit	1	adjacent to work space

SPILL RESPONSE EQUIPMENT:

(1)	1 bag loose chemical pulp	3 chemical pillows (18” x 18”)
	3 chemical socks (48” x 3”)	10 chemical mats/pads (24” x 24”)
	1 box garden-sized, 6-mil, disposal polyethylene bags (w/ ties)	
	Blank drum labels	one 30-gallon PE open-head drum
	2 shovels	
(2)	1 oil boom (100’ x 3”)	10 oil pillows (18” x 18”)
	10 oil socks (48” x 3”)	25 oil mats/pads (24” x 24”)
	1 box garden-sized, 6-mil, disposal polyethylene bags (w/ ties)	
	Blank drum labels	three, 55-gallon PE open-head drums
	4 shovels	

PERSONNEL PROTECTION EQUIPMENT:

The inventory of PPE should include enough for at least 4 responders reacting to a significant leak/spill.

Splash goggles, half-face respirators (w/ cartridges for benzene),
Tyvek suits, nitrile gloves, waterproof/ chemical resistant hip-waders