APPLICATION FOR NJDEP

WATERFRONT DEVELOPMENT
&
WETLANDS ACT OF 1970 INDIVIDUAL PERMIT

Including:

STATEMENT OF COMPLIANCE WITH
NJDEP RULES ON COASTAL ZONE MANAGEMENT

For

TRANSCONTINENTAL GAS PIPE LINE CORPORATION, LLC
NORTHEAST SUPPLY ENHANCEMENT PROJECT
OLD BRIDGE TOWNSHIP & SAYERVILLE BOROUGH
MIDDLESEX COUNTY, NEW JERSEY

January 2020

Applicant:

Transcontinental Gas Pipe Line Company
2800 Post Oak Boulevard
Houston, Texas 77056

Prepared by:

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4 Walter E. Foran Boulevard, Suite 209
Flemington, New Jersey

ASGECI #3980

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APPENDICES

List of Acronyms

APE	area of potential effect
ATWS	additional temporary workspace
AU	assessment unit
BMPs	best management practices
C&ME	Construction and Marine Equipment Co., Inc.
CFR	Code of Federal Regulations
cm	centimeter
CP	cathodic protection
d/b/a	doing business as
DLUR	Division of Land Use Regulation
Dth/d	dekatherms per day
EDR	Environmental Data Resources, Inc.
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973
FERC	Federal Energy Regulatory Commission
H:V	horizontal:vertical
HARS	Historic Area Remediation Site
HDD	horizontal directional drill
hp	horsepower
HPO	Historic Preservation Office
IBA	important bird area
ISO	International Organization for Standardizations
LNYBL	Lower New York Bay Lateral
M&R	meter and regulating
mg/L	milligrams per liter
MHW	mean high water
MLLW	mean lower low water
MP	milepost

N.J.A.C	New Jersey Administrative Code
NHPA	National Historic Preservation Act
NJ DF&W	New Jersey Division of Fish and Wildlife
NJDEP	New Jersey Department of Environmental Protection
NLEB	northern long-eared bat
NOAA	National Oceanographic and Atmospheric Administration
NPL	National Priorities List
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Unit
OPR	Office of Protected Resources
Project	Northeast Supply Enhancement Project
RDL	Rockaway Delivery Lateral
ROW	right-of-way
SAP/QAPP	Sampling and Analysis/Quality Assurance Project Plan
SAV	submerged aquatic vegetation
SSFATE	Suspended Sediment FATE
TOY	time of year
Transco Plan	Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan
Transco Procedures	Project-specific Wetland and Waterbody Construction and Mitigation Procedures
Transco	Transcontinental Gas Pipe Line Company, LLC
TSS	total suspended solids
UDP	Unanticipated Discovery Plan
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service

SECTION #1

NJDEP COASTAL ZONE MANAGEMENT APPLICATION CHECKLIST – WATERFRONT DEVELOPMENT and/or COASTAL WETLANDS INDIVIDUAL PERMIT WITH ATTACHMENTS

A. NJDEP COASTAL ZONE MANAGEMENT APPLICATION CHECKLIST – WATERFRONT DEVELOPMENT and/or COASTAL WETLANDS INDIVIDUAL PERMIT
B. Division of Land Use Regulation (DLUR) Application Form
C. Attachment for Item #5 of DLUR Form – Project Description
D. Attachment for Item #12 of Checklist – Proof of Tidelands Instrument

SECTION #1 (CONT.)

ATTACHMENT A OF CHECKLIST:

NJDEP COASTAL ZONE MANAGEMENT APPLICATION CHECKLIST – REQUEST FOR A WATERFRONT DEVELOPMENT and/or COASTAL WETLANDS ACT OF 1970 INDIVIDUAL PERMIT

State of New Jersey
Department of Environmental Protection

Revised: April 15, 2019 **Website: www.nj.gov/dep/landuse**

COASTAL ZONE MANAGEMENT APPLICATION CHECKLIST

Waterfront Development and/or Coastal Wetlands Individual Permit

CALL NJDEP AT (609) 777-0454 IF YOU HAVE ANY QUESTIONS

To apply for a Waterfront Development and/or Coastal Wetlands Individual Permit, please submit the information below to:

Postal Mailing Address	Street Address (Courier & Hand Carry Only)	Electronic Submission
NJ Department of Environmental Protection Division of Land Use Regulation P.O. Box 420, Code 501-02A Trenton, New Jersey 08625-0420 **Attn: Application Support**	NJ Department of Environmental Protection Division of Land Use Regulation 501 East State Street Station Plaza 5, 2nd Floor Trenton, New Jersey 08609 **Attn: Application Support**	Access the submission system at https://njdeponline.com. Follow the registration process and create an account. To submit an application, select the service "Apply for a Land Use Permit or Authorization."

CALL NJDEP AT (609) 777-0454 IF YOU HAVE ANY QUESTIONS

1. A completed application form (Paper submissions ONLY)

2. A completed Property Owner Certification form (Electronic submissions ONLY)
   - Acceptable file formats include pdf, jpg, and png.

3. Public notice:

   - **Electronic Submissions:** A completed Public Notice form. Documentation that notice of the application has been provided in accordance with N.J.A.C. 7:7-24 must be attached to the form (see below for details). Acceptable file formats include pdf, jpg, and png.

   - **Paper Submissions:** Documentation that notice of the application has been provided in accordance with N.J.A.C. 7:7-24 (see below for details).

Both electronic and paper submissions require documentation of public notice as follows:

i. Notice to municipal clerk (N.J.A.C. 7:7-24.3(a))

A copy of the entire application, as submitted to the Department, must be provided to the municipal clerk in each municipality in which the site is located. For electronic submissions, the application consists of a description of the project, the specific permit(s)/authorization(s) being sought, and all items that will be uploaded to the online service, including all required items on this checklist.

- Documentation of compliance with this requirement shall consist of a copy of the certified United States Postal Service white mailing receipt, or other written receipt, for each copy of the application sent.

ii. Notice to governmental entities and property owners (N.J.A.C. 7:7-24.3(b) and (c))

A brief description of the proposed project, a legible copy of the site plan, and the form notice letter described at N.J.A.C. 7:7-24.3(d)1iii must be sent to the following recipients:

A. The construction official of each municipality in which the site is located;
B. The environmental commission, or other government agency with similar responsibilities, of each municipality in which the site is located;
C. The planning board of each municipality in which the site is located;
D. The planning board of each county in which the site is located;
E. The local Soil Conservation District if the regulated activity or project will disturb 5,000 square feet or more of land;
F. The Delaware Coastal Management Program if the activity is within the 12-mile circle with Delaware or is within 200 feet of the 12-mile circle; and
G. Adjacent property owners:

If the application is for one of the following projects (listed at N.J.A.C 7:7-24.3(c)1-5), notice shall be sent to all owners of real property, including easements, located within 200 feet of any proposed above-ground structure that is part of the proposed development, such as a pumping station, treatment plant, groin, bulkhead, revetment or gabion, or dune walkover:

- A linear project of one-half mile or longer
- A shore protection development, including beach nourishment, beach and dune maintenance, or dune creation of one-half mile or longer
- A public project on a site of 50 acres or more
- An industrial or commercial project on a site of 100 acres or more
- Maintenance dredging of a State navigation channel of one-half mile or longer

For any other project, notice shall be sent to all owners of real property, including easements, located within 200 feet of the site of the proposed regulated activity.

The owners of real property, including easements, shall be those on a list that was certified by the municipality, with a date of certification no more than one year prior to the date the application is submitted.

- Documentation of compliance with this requirement shall consist of:

1. A copy of the certified United States Postal Service white mailing receipt for each public notice that was mailed, or other written receipt;
2. A certified list of all owners of real property, including easements, located within 200 feet of the property boundary of the site (including name, mailing address, lot, and block) prepared by the municipality for each municipality in which the project is located. The date of certification of the list shall be no earlier than one year prior to the date the application is submitted to the Department; and
3. A copy of the form notice letter.

- The form notice letter required under N.J.A.C. 7:7-24.3(d)1iii shall read as follows:

"This letter is to provide you with legal notification that an application for a <<waterfront development/coastal wetlands>> individual permit <<has been/will be>> submitted to the New Jersey Department of Environmental Protection, Division of Land Use Regulation for the development shown on the enclosed plan(s). A brief description of the proposed project follows: <<INSERT DESCRIPTION OF THE PROPOSED PROJECT& PROPOSED CHANGES>>

The complete permit application package can be reviewed at either the municipal clerk's office in the municipality in which the site subject to the application is located, or by appointment at the

Department's Trenton Office. The Department of Environmental Protection welcomes comments and any information that you may provide concerning the proposed development and site. Please submit your written comments within 15 calendar days of receiving this letter to:

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, New Jersey 08625
Attn: (Municipality in which the property is located) Supervisor"

iii. Newspaper notice (N.J.A.C. 7:7-24.5)

Newspaper notice, in the form of a legal notice or display advertisement in the official newspaper of the municipality(ies) in which the project site is located, or if no official newspaper exists, in a newspaper with general circulation in the municipality(ies), is required for the following projects:

A. A linear project of one-half mile or longer
B. A shore protection development, including beach nourishment, beach and dune maintenance, or dune creation of one-half mile or longer
C. A public project on a site of 50 acres or more
D. An industrial or commercial project on a site of 100 acres or more
E. Maintenance dredging of a State navigation channel of one-half mile or longer

If your project is not one listed above, newspaper notice is not required.

- Documentation of newspaper notice shall consist of:

  1. A copy of the published newspaper notice; and

  2. The date and name of the newspaper in which notice was published.

- The newspaper notice may be either a legal notice or display advertisement and must read as follows:

"Take notice that an application for an application for a <<waterfront development/coastal wetlands>> individual permit <<has been/will be>> submitted to the New Jersey Department of Environmental Protection, Division of Land Use Regulation for the development described below:

APPLICANT:

PROJECT NAME:

PROJECT & MODIFICATION DESCRIPTION:

PROJECT STREET ADDRESS:

BLOCK: LOT:

MUNICIPALITY: COUNTY:

The complete permit application package can be reviewed at either the municipal clerk's office in the municipality in which the site subject to the application is located, or by appointment at the Department's Trenton Office. The Department of Environmental Protection welcomes comments and any information that you may provide concerning the proposed development and site. Please submit your written comments within 15 calendar days of the date of this notice to:

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A

501 East State Street
Trenton, New Jersey 08625
Attn: (Municipality in which the property is located) Supervisor"

iv. Notice for projects located in the Pinelands Area

For a project in the Pinelands Area as designated by as designated under the Pinelands Protection Act at N.J.S.A. 13:18A-11(a), documentation showing that a copy of the entire application has been provided to the New Jersey Pinelands Commission. For electronic submissions, the application consists of a description of the project, the specific permit(s)/authorization(s) being sought, and all items that will be uploaded to the online service, including all required items on this checklist.

v. Notice for installation of submarine cables or sand mining activities

An applicant applying for a waterfront development individual permit to install a submarine cable in the ocean, or to perform sand mining in the ocean, must provide documentation showing that a copy of the application form and a copy of the NOAA nautical chart showing the proposed cable route or the limits of the proposed sand mining area submitted to the Department as part of this permit application were sent to the entities listed below. For electronic submissions, the "application form" will consist of a description of the project and the specific permit(s)/authorization(s) being sought.

A. Garden State Seafood Association;
B. National Fisheries Institute;
C. North Atlantic Clam Association;
D. Rutgers Cooperative Extension;
E. New Jersey Shellfisheries Council; and
F. New Jersey Marine Fisheries Council.

4. Application fees:

- **Electronic Submissions:** The appropriate application fee, as specified in N.J.A.C. 7:7-25.1, payable through the online service via credit card or e-check, or to receive a bill, select "Bill Me" on the payment screen. Bills will be sent to the Fee Billing Contact identified in the service and must be paid directly to the Department of Treasury.

- **Paper Submissions:** The appropriate application fee, as specified in N.J.A.C. 7:7-25.1, in the form of a check (personal, bank, certified, or attorney), money order, or government purchase order made payable to "Treasurer State of New Jersey."

5. Site plans:

All site plans must include the scale of the site plans, a north arrow, the name of the person who prepared the plans, date the site plans were prepared, and the applicant's name and the block, lot, and municipality in which the site is located. In addition, the site plans shall include the following information, both on and adjacent to the site, in accordance with N.J.A.C. 7:7-23.4(a)4:

i. Existing features such as lot lines, structures, land coverage, vegetation, and location of the mapped coastal wetlands line;

ii. All proposed regulated activities such as changes in lot lines; the size, location, and details of any proposed structures, roads, or utilities; details of any clearing, grading, filling, and excavation; the location and area of any riparian zone vegetation that will be disturbed; cross-sections of regulated waters or water control structures being analyzed; and the anticipated limits of disturbance;

iii. Topography:

A. Existing and proposed topography where necessary to demonstrate that the proposed regulated activity or project meets the requirements of this chapter. All topography must reference NGVD or include the appropriate conversion factor to NGVD.

iv. Tidelands:

A. The limits of any existing or proposed tidelands instrument;

v. Soil erosion and sediment control:

A. Details of any proposed soil erosion and sediment control measures.

vi. Water information:

A. For all applications, as applicable: The mean high, mean low, and spring high water lines of any tidal waters, water depths, and location of navigation channels.

B. Where the regulated activity is the construction of a dock, pier, or mooring area, the site plan must show the location and orientation of the proposed mooring area(s), the water depths at mean low water within the mooring area(s), and cross sections of the dock including the height and width of the structure over the water and crossing wetlands. Except for docks proposed within lagoons, the site plan must also depict water depths at mean low water for a distance of at least 100 feet waterward of the dock. The site plan must include the method, date, and time of all soundings;

C. For dredging activities, the area to be dredged, existing and proposed water depths at mean low water, the water depths at mean low water adjacent to the area to be dredged, the amount of material to be dredged, the method of dredging, the location of the dredged material dewatering and placement site, including the municipal block and lot, and the means of containing the dredged material;

vii. The upper and lower limits of all special areas, as described at N.J.A.C. 7:7-9. For the purposes of this requirement, “upper” refers to the upland or landward limit and “lower” refers to the waterward limit of the special area; and

viii. The location of any existing or proposed public access to lands and waters subject to public trust rights as set forth at N.J.A.C. 7:7-9.48.

- **Electronic Submissions:** Acceptable file formats include pdf and zip. Site plans must be certified in accordance with N.J.A.C. 7:7-23.2(j) and prepared according to the Department’s site plan specifications for electronic site plans. All plans must be digitally signed and sealed by a New Jersey licensed professional engineer, surveyor, or architect, as appropriate, pursuant to N.J.A.C. 13:40-7.2 through 7.4, with signatures and seals that meet the requirements of N.J.A.C. 13:40-8.1A. Site plans with electronic signatures, such as scans of site plans with a handwritten signature, will not be accepted.

- **Paper Submissions:** Three sets of site plans certified in accordance with N.J.A.C. 7:7-23.2(j). Prior to issuance of any permit, the Department will require four to five sets of final site plans. The site plans must be signed and sealed by a New Jersey licensed professional engineer, surveyor, or architect, as appropriate, pursuant to N.J.A.C. 13:40-7.2 through 7.4.

NOTE: In accordance with N.J.A.C. 7:7-23.3(h), an applicant may elect to prepare his or her own plan if both of the following are true: (1) the applicant proposes an activity in a man-made lagoon, or the applicant proposes the construction of a single-family home or duplex or an accessory development located landward of the mean high water line, such as a patio, garage, or shed on his or her own property for his or her own use, and (2) the proposed regulated activity or project is one for which no survey, topography, or calculations are necessary to demonstrate the requirements of N.J.A.C. 7:7 are met.

6. Photographs:
    i. Color photographs depicting the entire project area; and
    ii. A photo location map showing the location and direction from which each photograph was taken.

- **Electronic Submissions:** Acceptable file formats include pdf, doc, docx, jpg, zip, ppt, and pptx.
- **Paper Submissions:** One set of photographs mounted on 8½-inch by 11-inch paper. Copies of photographs are acceptable provided they are color copies. Black and white copies of photographs are not acceptable.

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7. An Environmental Impact Statement (EIS) prepared in accordance with N.J.A.C. 7:7-23.6(b) that:
    i. Describes in narrative form:
        A. The proposed development or activity;
        B. The characteristics of the site and the surrounding region;
        C. The location of all proposed regulated activities, potential impacts from the construction process, and, as applicable the operation of the development after completion; and
        D. Any anticipated impacts of the proposed activity or project, including any monitoring or reporting methods that will be used.
            - For an application for an individual permit for the construction of wind turbines for which, in accordance with the energy facility use rule at N.J.A.C. 7:7-15.4, pre- and/or post-construction monitoring is required, include the proposed monitoring methodology (see Technical Manual for Evaluating Wildlife Impacts of Wind Turbines Requiring Coastal Permits, available at https://www.nj.gov/dep/landuse/guidance.html).
    ii. Discusses the applicability of the Coastal Zone Management rules to the proposed development, including a detailed statement of compliance with each rule applicable to the type of development proposed. Where the applicant believes a rule otherwise applicable to the type of development proposed does not apply, the applicant shall explain the reasons why the rule does not apply to the applicant's development;
    iii. As necessary based on project-specific and site-specific circumstances, provides support by relevant experts for the assessments, discussions, and statements made in the EIS; includes the qualifications of the persons who prepared each part of the EIS; and provides references and citations to all information, reports, or treatises that are mentioned in the EIS but not contained in the EIS; and
    iv. For an activity or project in the Pinelands Area as designated under the Pinelands Protection Act at N.J.S.A. 13:18A-11(a), incudes a Certificate of Filing, a Certificate of Completeness, or a resolution approving an application for public development, issued by the NJ Pinelands Commission.

- **Electronic Submissions:** The EIS should be uploaded under the attachment type "Environmental Report with Site Location Maps." Acceptable file formats include pdf, doc, docx, rtf, and zip.
- **Paper Submissions:** Three copies of the EIS are required.

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8. Color copies of the following maps:
    i. The tax map for the property;
    ii. A copy of the portion of the county road map showing the property location; and
    iii. A copy of the USGS quad map(s) that include the site, with the site clearly outlined to scale.

- **Electronic Submissions:** The required maps should be uploaded with the compliance statement under the attachment type “Environmental Report with Site Location Maps.” Acceptable file formats include pdf, doc, docx, rtf, and zip.

9. Calculations and analyses:

   i. If the project is a major development as defined by N.J.A.C. 7:8-1.2, a demonstration of compliance with the requirements of the Stormwater Management Rules, N.J.A.C. 7:8.

   All calculations or analyses submitted as part of an application must include the certification set forth at N.J.A.C. 7:7-23.2(j). Any necessary stormwater calculations must be signed and sealed by a New Jersey licensed professional engineer.

- **Electronic Submissions:** Acceptable file formats include pdf, doc, docx, rtf, and zip unless stormwater calculations are necessary. Stormwater calculations must be digitally signed and sealed in accordance with N.J.A.C. 13:40-8.1A. Stormwater calculations with electronic signatures, such as scans of calculations with a handwritten signature, will not be accepted. Therefore, when calculations are necessary, the acceptable file formats are limited to pdf and zip.

10. Natural Heritage Program Letter:

    A copy of an NJDEP, Office of Natural Lands Management Natural Heritage Database data request response for endangered or threatened species of flora or fauna, including a Landscape Map report, if available

- **Electronic Submissions:** Acceptable file formats include pdf, jpg, and png.

11. Mitigation:

    For an activity that requires mitigation in accordance with N.J.A.C. 7:7, the applicant may submit a mitigation proposal as part of the application for the individual permit. If the applicant does not submit a mitigation proposal with the application, the applicant must submit the mitigation proposal at least 90 calendar days before the start of activities authorized by the permit, in accordance with N.J.A.C. 7:7-17.

- **Electronic Submissions:** If a mitigation proposal is available at the time of submission, the service will provide an attachment type for “Mitigation Proposal.” Alternatively, it may be uploaded separately at a later time through the service “Submit Additional Information for a Land Use Permit or Authorization.” Acceptable file formats include pdf, doc, docx, rtf, and zip.

12. Additional requirements:

    i. Conservation restriction – applies only if the proposed project is subject to an existing conservation restriction

        - **Electronic Submissions:** Acceptable file formats include pdf, jpg, and png.

    ii. Tidelands license application or documentation – applies only if the proposed project is below the mean high water line or in an area formerly flowed by the tide. Documentation of compliance with the tidelands requirements may include one of the following:

        A. Information regarding the existing Tidelands instrument

        B. Information regarding an intended submission to the Bureau of Tidelands Management for a Tidelands instrument

        C. An explanation regarding why a Tidelands instrument is not required for the project

        - **Electronic Submissions:** Acceptable file formats include pdf, doc, docx, rtf, jpg, and png.

iii. Written consent from municipality – applies only if the project includes a gas pipeline and any section of that pipeline is located within a municipally-owned right-of-way. Written consent shall consist of one of the following:

A. Written consent from the municipality in the form of a resolution of the governing body or an ordinance

B. A municipal designation of the route pursuant to N.J.S.A. 48:9-25.4

C. A Board of Public Utilities designation of route pursuant to N.J.S.A. 48:9-25.4

- **Electronic Submissions:** Acceptable file formats include pdf, jpg, and png.

iv. Traffic impact study – applies only if the proposed project will have the potential to result in the operation of any roadway in excess of Level of Service (LOS) D

- **Electronic Submissions:** Acceptable file formats include pdf, doc, docx, rtf, and zip.

v. A completed Impervious Cover and Vegetative Cover Calculations Spreadsheet Form – applies only if the proposed project is subject to compliance with the impervious and vegetative cover requirements at N.J.A.C. 7:7-13

- **Electronic Submissions:** Acceptable file formats include pdf, xls, and xlsx.

vi. Sediment Sampling Results – applies only to dredging projects. One of the following is required:

A. A copy of an executed Sediment Sampling and Analysis Plan along with:

- Data summary tables that provide a comparison of the bulk sediment chemistry results to the Department's Soil Remediation Standards and the modified elutriate results to the New Jersey Surface Water Quality Criteria. The summary tables shall highlight all results that exceed applicable criteria; and
- Sediment sample core profile/logs (full project depth).

B. Written confirmation from the Office of Dredging and Sediment Technology (ODST) for any testing exclusions identified at N.J.A.C. 7:7 Appendix G

- **Electronic Submissions:** Acceptable file formats include pdf, doc, docx, rtf, and zip.
- **Paper Submissions:** Data packages must be provided electronically along with one hard copy of the data summary tables.

vii. Written consent from property owner – applies only to dredging projects where either temporary or final placement of dredge material will be located on a site not owned by the applicant

- **Electronic Submissions:** Acceptable file formats include pdf, doc, docx, rtf, jpg, and png.

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13. A computer disk containing a copy of the entire application (Paper submissions ONLY)

SECTION #1 (CONT.)

ATTACHMENT B OF CHECKLIST:

Division of Land Use Regulation (DLUR) Application Form

(Copy of DLUR attached here, original provided separately with submission package)

GAS PIPELINE – TRANSCO
Land, GIS & Permits
2800 Post Oak Boulevard, Level 11
Houston, Texas 77056

September 10, 2019

Via Certified Mail
Return Receipt Requested

Ms. Catherine R. McCabe
Commissioner
New Jersey Department of Environmental Protection
P.O. Box 402
Trenton, NJ 08625-0402

Dear Ms. McCabe:

Transcontinental Gas Pipe Line Company, LLC, a Delaware limited liability company, (Transco) hereby notifies the Department of the Delegation of Signature Authority with respect to the Responsible Official Definition provided under the provisions of NEPA (42 USCS 4321, et seq. *and* 40 CFR 6 – implementation thereof). This letter supersedes all previous letters denoting Delegation of Signature Authority.

Persons holding the position of Director, Manager, Environmental Specialist, Environmental Scientist, or Engineer within Transco are recognized as having the ability to perform similar policy or decision making functions as myself for the Company. I hereby Delegate such signing authority to those persons.

Sincerely,

Scott Hallam
Senior Vice President, Atlantic-Gulf
Transcontinental Gas Pipe Line Company, LLC

State of New Jersey
Department of Environmental Protection
Division of Land Use Regulation
Application Form for Permit(s)/Authorization(s)

501 E. State Street Mail Code 501-02A P.O. Box 420
Trenton, NJ 08625-0420
Phone #: (609) 777-0454 Web: www.nj.gov/dep/landuse

Please print legibly or type the following: Complete all sections and pages unless otherwise noted. **Is this project a NJDOT Priority 1 Repair Project?** Yes ☐ No ☒

Initial Application ☒ Response to DLUR Deficiency ☐ Extension / Modification ☐ **Is this project a NJDOT Priority 2 Repair Project?** Yes ☐ No ☒

1. **Applicant Name:** Transcontinental Gas Pipe Line Co. Attn: Tim Powell, Dir. of Land & Permitting E-Mail: Tim.L.Powell@Williams.com
   Address: 2800 Post Oak Blvd., Suite 900 Daytime Phone: 713-215-2719 Ext. ____
   City/State: Houston / Texas Zip Code 77056 Cell Phone: ____
2. **Agent Name:** Mr./Ms./Mrs ____
   Firm Name: ____ E-Mail: ____
   Address: ____ Daytime Phone: ____ Ext. ____
   City/State: ____ Zip Code ____ Cell Phone: ____
3. **Property Owner:** Same as applicant E-mail: ____
   Address: ____ Daytime Phone: ____ Ext. ____
   City/State: ____ Zip Code ____ Cell Phone: ____
4. **Project Name:** Transco Northeast Supply Enhancement Project Address/Location: Multiple
   Municipality: Franklin TWP (CS206)/Old Bridge TWP and Sayerville Boro (Pipeline easement) Somerset/Middlesex Zip Code Multiple
   Block(s): Multiple - see attachment Multiple - see attachment
   N.A.D. 1983 State Plane Coordinates (feet) See USGS Topographic Maps as provided in application documents
   Watershed: Multiple - see attachment Subwatershed: Multiple - see attachment
   Nearest Waterway: Multiple - see attachment
5. **Project Description:** Construction of Compressor Station 206 in Franklin Township, Somerset County, the Madison Loop pipeline in Old Bridge Township and Sayerville Borough, Middlesex County, and the Raritan Loop in Sayerville Borough, Middlesex County, NJ (see attachment for detailed project description).

Provide if applicable: Previous LUR File # (s): 0000-01-1001.3 Waiver request ID # (s): ____

A. SIGNATURE OF APPLICANT (required):

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining and preparing the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment. If the applicant is an organization such as a corporation, municipal entity, home-owners association etc., the party responsible for the application shall sign on behalf of the organization.

T Powell
Signature of Applicant

1-8-2020
Date

Timothy L. Powell
Print Name

Signature of Applicant

Date

Print Name

B. PROPERTY OWNER'S CERTIFICATION

I hereby certify that the undersigned is the **owner of the property** upon which the proposed work is to be done. This endorsement is certification that the owner/easement holder grants permission for the conduct of the proposed activity. In addition, written consent is hereby giver to allow access to the site by representatives or agents of the Department for the purpose of conducting a site inspection(s) or survey(s) of the property in question.

In addition, the undersigned property owner hereby certifies:

1. Whether any work is to be done within an easement? Yes ☒ No ☐
   (If answer is "Yes" – Signature/title of resonsible party is required below)
2. Whether any part of the entire project will be located within property belonging to the State of NewJersey? Yes ☒ No ☐
3. Whether any work is to be done on any property owned by any public agency that would be encumbered by Green Acres? Yes ☐ No ☒
4. Whether this project requires a Section 106 (National Register of Historic Places) Determination as part of a federal approval? Yes ☒ No ☐

Signature of Owner

Date

Tim Powell, Dir. of Land & Permitting
Print Name

Signature of Owner/Easement Holder

Date

Print Name/Title

C. APPLICANT'S AGENT

I _____, the Applicant/Owner and _____, co-Applicant/Owner authorize to act as my agent/representative in all matters pertaining to my application the following person:

Name of Agent

Occupation/Profession of Agent

Signature of Applicant/Owner

Signature of co-Applicant/Owner

AGENT'S CERTIFICATION:

I agree to serve as agent for the above-referenced applicant:

Signature of Agent

Name of Firm

D. STATEMENT OF PREPARER OF PLANS, SPECIFICATIONS, SURVEYOR'S OR ENGINEER'S REPORT

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining and preparing the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment.

Signature

Print Name

Position & Name of Firm

Professional License #

Date

E. STATEMENT OF PREPARER OF APPLICATION, REPORTS AND/OR SUPPORTING DOCUMENTS (other than engineering)

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S Quackenbush

Signature

Sue Quackenbush
Print Name

Department Manager, Amy S. Greene Environmental Consultants, Inc.
Position & Name of Firm

N/A
Professional License # (If Applicable)

12/11/19
Date

B. PROPERTY OWNER'S CERTIFICATION

I hereby certify that the undersigned is the **owner of the property** upon which the proposed work is to be done. This endorsement is certification that the owner/easement holder grants permission for the conduct of the proposed activity. In addition, written consent is hereby giver to allow access to the site by representatives or agents of the Department for the purpose of conducting a site inspection(s) or survey(s) of the property in question.

In addition, the undersigned property owner hereby certifies:

1. Whether any work is to be done within an easement? Yes ☒ No ☐
   (If answer is "Yes" – Signature/title of resonsible party is required below)
2. Whether any part of the entire project will be located within property belonging to the State of New Jersey? Yes ☒ No ☐
3. Whether any work is to be done on any property owned by any public agency that would be encumbered by Green Acres? Yes ☐ No ☒
4. Whether this project requires a Section 106 (National Register of Historic Places) Determination as part of a federal approval? Yes ☒ No ☐

Timothy L Powell
Signature of Owner

1-8-2020
Date

Tim Powell, Dir. of Land & Permitting
Print Name

Signature of Owner/Easement Holder

Date

Print Name/Title

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Occupation/Profession of Agent

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Signature

Sue Quackenbush
Print Name

Department Manager, Amy S. Greene Environmental Consultants, Inc.
Position & Name of Firm

N/A
Professional License #
(If Applicable)

Date

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Signature of Owner

Date

Tim Powell, Dir. of Land & Permitting
Print Name

Signature of Owner/Easement Holder

Date

Print Name/Title

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Print Name

Position & Name of Firm

Professional License # Date

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Signature

David P. Albers
Print Name

Director of Engineering, Ecology and Environment, Inc.
Position & Name of Firm

N/A
Professional License # (If Applicable)

JAN 08, 2020
Date

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Date	Date
Print Name	Print Name/Title

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Signature

William Salmon P.E.
Print Name

Sr. Director, PS & S, LLC
Position & Name of Firm

41319
Professional License #

12/20/19
Date

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Professional License # (If Applicable)

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Signature of Owner

Date

Print Name

Signature of Owner/Easement Holder

Date

Print Name/Title

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Signature

Print Name

Position & Name of Firm

Professional License #

Date

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Stormwater Management Report

Signature

Kevin D. McKeon

Print Name

Associate Vice President, AECOM

Position & Name of Firm

NJ PE# GE32586

Professional License #
(If Applicable)

01/08/2020

Date

FEE CALCULATION TIPS:

- Whenever the calcuation requires an acreage figure (including the Stormwater calculations), you will need to round UP to the nearest whole number, for example: 0.25 acres gets rounded up to one (1) acre or 2.61 acres gets rounded up to three (3) acres.
- The maximum fee for a CAFRA Individual permit, an Upland Waterfront Development permit, or an In-Water Waterfront Development permit is $30,000 per permit type. For example: if you are applying for both an upland and an in-water Waterfront Development the maximum fee is applied to each permit for a maximum total of $60,000 plus any applicable stromwater review fee.
- The stormwater review fee is applied only one time per project, maximum of $20,000, regardless of multiple applications.

APPLICATION(S) FOR: Please check each permit/authorization that you are applying for and fill in the calculated fee (for each) in the "Fee Paid" column

	Coastal General Permits	Fee Amount	Fee Paid
☐	CZMGP1 Amusement Pier Expansion	$1,000.00	
☐	CZMGP2 Beach/Dune Activities	$1,000.00	
☐	CZMGP3 Voluntary Reconstruction Certain Residential/Commercial Dev.	$1,000.00	
☐	CZMGP4 Development of one or two SFH or Duplexes	$1,000.00	
☐	CZMGP5 Expansion or Reconstruction SFH/Duplex	$1,000.00	
☐	CZMGP6 New Bulkhead/Fill Lagoon	$1,000.00	
☐	CZMGP7 Revetment at SFH/Duplex	$1,000.00	
☐	CZMGP8 Gabions at SFH/Duplex	$1,000.00	
☐	CZMGP9 Support Facilities at a Marina	$1,000.00	
☐	CZMGP10 Reconstruction of Existing Bulkhead	$1,000.00	
☐	CZMGP11 Hazard Waste Clean-up	$1,000.00	
☐	CZMGP12 Landfall of Utilities	$1,000.00	
☐	CZMGP13 Recreation Facility at Public Park	$1,000.00	
☐	CZMGP14 Bulkhead Construction & Fill Placement	$1,000.00	
☐	CZMGP15 Construction of Piers/Docks/Ramps in Lagoons	$1,000.00	
☐	CZMGP16 Minor Maintenance Dredging in Lagoons	$1,000.00	
☐	CZMGP17 Eroded Shoreline Stabilization	$1,000.00	
☐	CZMGP18 Avian Nesting Structures	$1,000.00	
☐	CZMGP19 Modification of Electrical Substations	$1,000.00	
☐	CZMGP20 Legalization of the Filling of Tidelands	$1,000.00	
☐	CZMGP21 Construction of Telecommunication Towers	$1,000.00	
☐	CZMGP22 Construction of Tourism Structures	$1,000.00	
☐	CZMGP23 Geotechnical Survey Borings	$1,000.00	
☐	CZMGP24 Habitat Creation, Restoration, Enhancement, Living Shorelines	No Fee	No Fee
☐	CZMGP25 1 to 3 Turbines < 200 Feet	$1,000.00	
☐	CZMGP26 Wind Turbines < 250 Feet	$1,000.00	
☐	CZMGP27 Dredge Lagoon (post storm event)	$1,000.00	
☐	CZMGP28 Dredge post Bulkhead Failure	$1,000.00	
☐	CZMGP29 Dredge Marina (post storm event)	$1,000.00	
☐	CZMGP30 Aquaculture Activities	$1,000.00	
☐	CZMGP31 Placement of Shell (shellfish areas)	$1,000.00	
☐	CZMGP32 Application of Herbicide in Coastal Wetlands	$1,000.00	
☐	CZM Permit-by-Certification *(On-line application ONLY)*	$1000.00	

	Coastal Individual Permits	Fee Amount	Fee Paid
☐	CAFRA – IP SFH or Duplex	$2,000	
☐	CAFRA – IP Residential not SFH/duplex	$3,000 x_____# of units	
☐	CAFRA – IP Commercial, Industrial or Public	$3,000 x_____acres of the site	
☐	WFD - IP SFH or Duplex (Upland/Landward of MHWL)	$2,000	
☐	WFD – IP Residential not SFH/duplex (Upland/Landward of MHWL)	$3,000 x_____# of units	
☒	WFD – IP Commercial, Industrial or Public Development (Upland/Landward of MHWL)	$3,000 x 5 acres of the site	$15,000
☐	WFD - IP SFH or Duplex (Waterward of MHWL)	$2,000	
☐	WFD – IP Residential not SFH/duplex (Waterward of MHWL)	$3,000 x_____acres of water area impacted	
☒	WFD – IP Commercial, Industrial or Public Development (Waterward of MHWL)	$3,000 x 20 acres of water area impacted	$30,000 (capped)
☐	CSW – IP SFH or Duplex	$2,000	
☒	CSW – IP All Development not SFH/duplex	$3,000 x 2 acres of wetlands disturbed	$6,000

	Additional Coastal Authorizations	Fee Amount	Fee Paid
☐	Modification of a Coastal GP	$500	
☐	Minor Technical Modification of a Coastal Wetland Permit	$500 x_____# of items to be revised	
☐	Minor Technical Modification of a CAFRA IP	$500 x_____# of items to be revised	
☐	Minor Technical Modification of a Waterfront IP	$500 x_____# of items to be revised	
☐	Major Technical Modification of a Coastal Wetland Permit	0.30 x_____original fee = Fee (Minimum $500)	
☐	Major Technical Modification of a CAFRA IP	0.30 x_____original fee = Fee (Minimum $500)	
☐	Major Technical Modification of a Waterfront IP	0.30 x_____original fee = Fee (Minimum $500)	
☐	Zane Letter (Waterfront Development Exemption)	$500	
☐	CAFRA Exemption Request	$500	
☐	CZM General Permit Extension	$240 x_____# of GPs to be extended	
☐	Waterfront Development Individual Permit – Extension (Waterward of MHWL)	0.25 x_____original fee = Fee (Maximum $3,000)	
☐	Meadowlands District Water Quality Certificate	$5,000 + ($2,500 x _____ # acres regulated area disturbed)	
☐	Individual Permit Equivalency/CERCLA	No Fee	No Fee

	Consistency Determination	Fee Amount	Fee Paid
☐	Water Quality Certificate (NOTE: No fee required under the coastal program)	$5,000 + ($2,500 x _____ # acres regulated area disturbed)	
☐	Federal Consistency	No Fee	No Fee

APPLICATION(S) FOR: Please check each permit/authorization that you are applying for and fill in the calculated fee (for each) in the "Fee Paid" column

	Freshwater Wetlands General Permits	Fee Amount	Fee Paid
☐	FWGP1 Main. & Repair Exist Feature	$1,000.00	
☐	FWGP2 Underground Utility Lines	$1,000.00	
☐	FWGP3 Discharge of Return Water	$1,000.00	
☐	FWGP4 Hazard Site Invest/Cleanup	$1,000.00	
☐	FWGP5 Landfill Closures	$1,000.00	
☐	FWGP6 Filling of Non-Tributary Wetlands	$1,000.00	
☐	FWGP6A TA Adj. to Non-Tributary Wetlands	$1,000.00	
☐	FWGP7 Human-made Ditches/Swales in Headwaters	$1,000.00	
☐	FWGP8 House Additions	$1,000.00	
☐	FWGP9 Airport Sight-line Clearing	$1,000.00	
☐	FWGP10A Very Minor Road Crossings	$1,000.00	
☐	FWGP10B Minor Road Crossings	$1,000.00	
☐	FWGP11 Outfalls / Intakes Structures	$1,000.00	
☐	FWGP12 Surveying and Investigating	$1,000.00	
☐	FWGP13 Lake Dredging	$1,000.00	
☐	FWGP14 Water Monitoring Devices	$1,000.00	
☐	FWGP15 Mosquito Control Activities	$1,000.00	
☐	FWGP16 Creation/Restoration/Enhancement Habitat	No Fee	No Fee
☐	FWGP17 Trails / Boardwalks	$1,000.00	
☐	FWGP17A Non-Motorized Multi-Use Paths	$1,000.00	
☐	FWGP18 Dam Repairs	$1,000.00	
☐	FWGP19 Docks and Piers	$1,000.00	
☐	FWGP20 Bank Stabilization	$1,000.00	
☐	FWGP21 Above Ground Utility Lines	$1,000.00	
☐	FWGP22 Expansion Cranberry Growing (Pinelands)	No Fee	No Fee
☐	FWGP23 Spring Developments	$1,000.00	
☐	FWGP24 Malfunctioning Individual Septic Systems	No Fee	No Fee
☐	FWGP25 Minor Channel / Stream Cleaning	$1,000.00	
☐	FWGP26 Redevelop Previously Disturbed Site	$1,000.00	
☐	FWGP27 Application of herbicide in wetlands	$1,000.00	

	Highlands	Fee Amount	Fee Paid
☐	Pre-application Meeting	$500.00	
☐	Resource Area Determination Boundary Delineation < one acre	$500.00	
☐	Resource Area Footprint of Disturbance	$500 + ($50 x_____# of acres of the site	
☐	Resource Area Determination Verification (> one acre)	$750 + ($100 x ____# of acres of the site)	
☐	Resource Area Determination Extension	0.25 x_____original fee (Minimum $250)	
☐	HPAAGP 1/ Habitat Creation/Enhance	No Fee	No Fee
☐	HPAAGP 2 Bank Stabilization	$500.00	
☐	Preservation Area Approval (PAA)		
☐	PAA with Waiver (Specify type below)		
	Waiver Type:		
☐	HPAA Extension	$1,000	

	Freshwater Individual Permits	Fee Amount	Fee Paid
☐	FWW IP-SFH/Duplex-Wetlands	$2,000	
☒	FWW IP-Wetlands (not SFH/Duplex)	$5,000 + ($2,500 x ___4__# acres FWW disturbed)	$15,000
☐	FWW IP-SFH/Duplex-Open Water	$2,000	
☐	FWW IP-Open Water (not SFH/Duplex)	$5,000 + ($2,500 x _____# acres FWW disturbed)	

	Freshwater Wetlands Transition Area Waivers	Fee Amount	Fee Paid
☐	TAW Averaging Plan	*With valid LOI* $1,000 + ($100 x _____# acres TA disturbed)	
☐	TAW Hardship Reduction		
☐	TAW Reduction per N.J.A.C. 7:7A-8.1(d)		
☐	TAW Special Activity Individual Permit		
☐	TAW Special Activity Linear Development	*Without valid LOI* $1000 + ($100 x _____acres TA disturbed) + LOI Fee	
☐	TAW Special Activity Redevelopment		
☐	TAW Special Activity Stormwater		

	Letter of Interpretation	Fee Amount	Fee Paid
☐	LOI Presence Absence	$1,000.00	
☐	LOI Footprint of Disturbance (3 Maximum)	$1,000.00 each	
☐	LOI Delineation < 1.00 Acres	$1,000.00	
☐	LOI Verification	$1,000 + ($100 x_____# of acres of the site)	
☐	LOI Partial Site Verification	$1,000 + ($100 x_____# of acres of the site subject to LOI)	
☐	LOI Extension Presence/Absence, Footprint, Delineation < 1 acre (Re-Issuance)	$500	
☐	LOI Extension Line Verification (Re-Issuance)	0.50 x_____original fee (Minimum $500)	

	Additional Freshwater Wetlands Authorizations	Fee Amount	Fee Paid
☐	FWGP Administrative Modification	No fee	No Fee
☐	FWGP Minor technical modification	$500.00	
☐	FWGP Major technical modification	$500.00	
☐	Individual Permit Administrative Modification	No Fee	No Fee
☐	Individual Permit Minor Technical Modification	$500.00	
☐	Individual Permit Major Technical Modification	0.30 x_____original fee (Minimum $500)	
☐	TAW Administrative Modification	No Fee	No Fee
☐	TAW Minor Technical Modification	$500.00	
☐	TAW Major Technical Modification	0.30 x_____original fee (Minimum $500)	
☐	FWGP Extension	$500 x_____# of items to be extended	
☐	Individual Permit/Open Water Permit Extension	0.30 x_____original fee (Minimum $500)	
☐	TAW Extension	$500 x_____# of items to be extended	
☐	Freshwater Wetlands Exemption	$500.00	
☐	TAW Exemption	$500.00	
☐	Permit Equivalency/CERCLA	No Fee	No Fee

APPLICATION(S) FOR: Please check each permit/authorization that you are applying for and fill in the calculated fee (for each) in the "Fee Paid" column

	Flood Hazard Area General Permits	Fee Amount	Fee Paid
☐	FHAGP1 Channel Clean w/o Sediment Removal	No Fee	
☐	FHAGP1 Channel Clean w/Sediment Removal	No Fee	
☐	FHAGP2 Mosquito Control	$1,000.00	
☐	FHAGP3 Scour Protection Bridges/Culverts	$1,000.00	
☐	FHAGP4 Creation/Restoration/Enhancement of Habitat and Water Quality Values and Functions	No Fee	
☐	FHAGP5 Reconstruction and/or Elevation of Building in a Floodway	No Fee	
☐	FHAGP6 Construction of One SFH/Duplex and Driveway	$1,000.00	
☐	FHAGP7 Relocation of Manmade Roadside Ditches for Public Roadway Improvements	$1,000.00	
☐	FHAGP8 Placement of Storage Tanks	$1,000.00	
☐	FHAGP9 Construction/Reconstruction of Bride/Culvert Across Water < 50 Acres	$1,000.00	
☐	FHAGP10 Construction/Reconstruction of Bride/Culvert Across Water > 50 Acres	$1,000.00	
☐	FHAGP11 Stormwater Outfall Along Regulated Water <50 Acres	$1,000.00	
☐	FHAGP12 Construction of Footbridges	$1,000.00	
☐	FHAGP13 Construction of Trails and Boardwalks	$1,000.00	
☐	FHAGP14 Application of herbicide in riparian zone	$1,000.00	

	Flood Hazard Area Individual Permits	Fee Amount	Fee Paid
☐	FHA - IP SFH and/or Accessory Structures	$2,000	
☒	Individual Permit (Fee is calculated by adding the base fee to the specific elements below)	$3,000 Base Fee	$3,000
	FHA – IP Utility*	+ ($1,000 x 8 of # water crossings)	$8,000
	FHA - IP Bank/Channel (No Calculation Review) *	+ $1,000	
	FHA - IP Bank/Channel (With Calculation Review) *	+ ($4,000 + ($400 x_____per 100 linear ft.))	
	FHA - IP Bridge/Culvert/Footbridge/Low Dam (No Calculation Review)*	+ ($1,000 x 4 # of structures)	$4,000
	FHA - IP Bridge/Culvert/Footbridge/Low Dam (WIth Calculation Review) *	+ ($4,000 x_____# of structures)	
	FHA – Review of Flood Storage Displacement (net fill) Calculations*	+ $4,000	
	Total	IP Review Fee	$15,000

	Flood Hazard Area Verifications	Fee Amount	Fee Paid
☐	Verification-Delineation of Riparian Zone Only	$1,000	
☐	Verification-Method 1 (DEP Delineation) *	$1,000	
☐	Verification-Method 2 (FEMA Tidal Method) *	$1,000	
☐	Verification-Method 3 (FEMA Fluvial Method) *	$1,000	
☐	Verification-Method 4 (FEMA Hydraulic Method)	$4,000 + ($400 x _____per 100 linear feet)	
☒	Verification-Method 5 (Approximation Method) *	$1,000	$1,000
☐	Verification-Method 6 (Calculation Method)	$4,000+($400 x _____per 100 linear feet)	

*Fee not applicable to (1) SFH

	Additional Flood Hazard Area Authorizations	Fee Amount	Fee Paid
☐	FHA Hardship Exception Request	$4,000	
☐	FHA GP Administrative Modification	No Fee	No Fee
☐	FHA GP Minor technical modification	$500 x_____# of proejct elements to be revised	
☐	FHA GP Major technical modification	0.30 x_____original fee (Minimum $500)	
☐	FHA Individual Permit Administrative Modification	No Fee	No Fee
☐	FHA Individual Permit Minor Technical Modification	$500 x_____# of proejct elements to be revised	
☐	FHA Individual Permit Major Technical Modification	0.30 x_____original fee (Minimum $500)	
☐	FHA Verification Administrative Modification	No Fee	No Fee
☐	FHA Verification Minor Technical Modification	$500 x_____# of proejct elements to be revised	
☐	FHA Verification Major Technical Modification	0.30 x_____original fee (Minimum $500)	
☐	FHA GP Extension	$240	
☐	FHA Individual Permit Extension	0.25 x_____original fee	
☐	FHA Verification Extension of Methods 1, 2, 3, 5, or Riparian Zone Only	$240	
☐	FHA Verification Extension of Methods 4 or 6	0.25 x_____original fee	
☐	FHA Individual Permit Equivalency/CERCLA	No Fee	No Fee
☐	FHA GP Administrative Modification	No Fee	No Fee

Stormwater Review Fee (Maximum Fee = $20,000)	Fee Amount (Round UP to the nearest whole number)	Fee Paid
☒ Stormwater Review (Fee is calculated by adding the base fee to the specific elements below)	$3,000 Base Fee	$3,000
Review of Groundwater Calculations	+ $250 x 22 # acres disturbed	$5,500
Review of Runoff Quantity Calculations	+ $250 x 22 # acres disturbed	$5,500
Review of Water Quality Calculations	+ $250 x 1 # acres impervious surface	$250
Total	Stormwater Review Fee	$14,250

	Applicability Determination	Fee Amount	Fee Paid
☐	Coastal Applicability Determination	No Fee	No Fee
☐	Flood Hazard Applicability Determination	No Fee	No Fee
☐	Highlands Jurisdictional Determination	No Fee	No Fee
☐	Executive Order 215	No Fee	No Fee

TOTAL FEE:	$96,250
CHECK NUMBER:	4146

*Fee not applicable to (1) SFH

APPLICANT NAME: TRANSCO FILE # (if known):

APPLICATION FORM - APPENDIX I

Section 1: Please provide the following information for the overall project site. All area measurements shall be recorded **in acres to the nearest thousandth** (0.001 acres).

PROPOSED:	*PRESERVED*	*UNDISTURBED*	*DISTURBED*
RIPARIAN ZONE			1.734
CZMRA FORESTED *(CZMRA IP – Only)*			
E & T HABITAT *Endangered and/or Threatened*			
FRESHWATER WETLANDS			3.315

Section 2: Please provide the following information for each permit/authorization requested pursuant to the Freshwater Wetlands Protection Act. All area measurements shall be recorded **in acres to the nearest thousandth** (0.001 acres). Use additional sheets if necessary

PERMIT TYPE: FWW-IP Compressor Station 206 — WETLAND TYPE *Emergent, Forest, Shrub, Etc.*: Forested, Emergent, — RESOURCE CLASSIFICATION *Ordinary, Intermediate, Exceptional, EPA, Etc.*: Exceptional

PROPOSED DISTURBANCE:	*WETLANDS*	*TRANSITION AREA*	*SOW*
FILLED	0.852	0.487	
EXCAVATED			
CLEARED			
TEMPORARY DISTURBANCE	0.149	0.449	

PERMIT TYPE: FWW-IP Madison Loop/Raritan Bay Loop — WETLAND TYPE *Emergent, Forest, Shrub, Etc.*: Forested, Emergent, and Scrub-Shrub — RESOURCE CLASSIFICATION *Ordinary, Intermediate, Exceptional, EPA, Etc.*: Intermediate and Exceptional

PROPOSED DISTURBANCE:	*WETLANDS*	*TRANSITION AREA*	*SOW*
FILLED			
EXCAVATED			
CLEARED	0.327	1.143	
TEMPORARY DISTURBANCE	1.987	4.039	0.157

EXISTING AND ADDITIONAL RIGHTS NEEDED FOR NESE LURP PERMITTING

Landowner	Block	Lot	Freshwater Wetlands	Flood Hazard Area	Waterfront Development	Transco's Existing Rights	Survey Access Obtained?	Additional Rights Obtained For Project	Signed LURP Form or Consent Letter
Madison Loop									
Transco	5001 5001	13.14 13.18	X	X		Original Deed for Block 5001, Lot 13.14 (dated October 24, 2016) (recorded in Bk. 6906, pg. 489) Original Deed for Block 5001, Lot 13.18 (dated November 17, 2006) (recorded in Bk. 5749, pg. 480)	Yes	N/A	N/A
Manzo Industrial Park Association	5001	13.17	X	X		Private Road/Paper Street (Transco is a member of the Association)	Yes	Supplemental Right of Way Agreement (dated January 30, 2018)	N/A
Manzo*	5001	13.16	X	X		Original Right of Way (dated June 8, 1967) (recorded in Bk. 2582, Pg. 861)	Yes	Supplemental Right of Way Agreement (dated January 30, 2018)	N/A
Brunetti*	5000 5000 5000	4 18 23	X	X		Original Right of Way (dated August 11, 1967) (recorded in Bk. 2590, Pg. 475) Addendum (dated July 16, 1968 (recorded in Bk. 2632, Pg. 892)	Yes	Supplemental Right of Way Agreement (dated July 19, 2018)	N/A
Parkwood*	4185	10	X	X		Original Right of Way (dated April 15, 1968) (recorded in Bk. 2616, Pg. 1141) Supplemental Right of Way (dated February 20, 2007) (recorded in Bk. 5803, Pg. 725)	Yes	Supplemental Right of Way Agreement (dated May 23, 2018)	N/A
RDK	4185	28.11	X			Original Right of Way (dated April 15, 1968) (recorded in Bk. 2616, Pg. 1141) Supplemental Right of Way (dated January 26, 1995) (recorded in Bk. 4227, Pg. 387) additional Right of Way (dated May 3, 1996) (recorded in Bk. 4329, Pg.700)	Yes	Supplemental Right of Way Agreement (dated November 18, 2019)	Consent letter dated April 4, 2018
La Mer	449 449 449	12 13.01 10.03	X		X	Original Right of Way (by reservation in deed) (dated May 22, 1980) (recorded in Bk. 3148, Pg. 789) Revised Right of Way (dated August 25, 2000) (recorded in Bk. 4853, Pg. 385)	Yes	Temporary Work Space Permit (dated January 3, 2018)	N/A
Golden Age	451	1.10	X	X	X	Original Right of Way (dated February 8, 2007) (recorded in Bk. 5881, Pg. 576)	Yes	Supplemental Right of Way Agreement (dated March 29, 2018)	N/A
Harbour Club	451	1.08	X	X	X	Original Right of Way (dated March 22, 1967) (recorded in Bk. 2577, Pg. 132), as modified to permit the construction of golf course within Transco's ROW (dated February 8, 1978) (recorded in Bk. 3067, Pg.826)	Yes	Supplemental Right of Way Agreement (dated January 22, 2018) Amendment to Supplemental Right of Way Agreement (dated April 2, 2019)	N/A
Sayreville*	451 454	1.09 1	X	X	X	Lot 1.09 - Original Right of Way (dated March 22, 1967) (recorded in Bk. 2577, Pg. 132), as modified to permit the construction of golf course within Transco's ROW (dated February 8, 1978) (recorded in Bk. 3067, Pg.826) Lot 1 - Original Right of Way (dated June 14, 1996) (recorded in Bk. 4344, Pg. 818)	Yes	Supplumental Right of Way Agreement (dated September 11, 2018)	N/A
Lockwood*	538	13		X	X	Original Right of Way (dated March 21, 1967) (recorded in Bk. 2577, Pg. 127) Amendment to ROW agreement (dated January 31, 2007) (recorded in Bk. 5834, Pg. 39 and Rider recorded in Bk. 5834, Pg. 47)	Yes	Supplemental Right of Way Agreement (dated May 16, 2018)	N/A
Highview*	538	9.02	X		X	Original Right of Way (dated April 10, 1968) (recorded in Bk. 2617, Pg. 599) Amendment to ROW agreement (dated October 13, 2006) (recorded in Bk. 5755, Pg. 658)	Yes	Supplemental Right of Way Agreement (dated December 28, 2017)	N/A
State of New Jersey (Tidelands)*					X		Yes	Transco submitted an application for a Tidelands License on July 18, 2017 (1200-17-0006.1 TDI 170001)	Transco submitted an application for a Tidelands License on July 18, 2017 (1200-17-0006.1 TDI 170001)
Compressor Station 206									
Transco (Compressor Station Site)	5.02	25		X		None	Yes	Obtained in fee from Trap Rock by Deed dated May 25, 2017 (recorded in Bk. 6966, Pg. 2192)	N/A
Higgins (Higgins Farm access road)	5.02	26.01				None	Yes	Option and Settlement Agreement	Consent Letter dated January 21, 2020
Trap Rock (Suction & Discharge Piping)	5.02	20 (formerly 23)	X			None	Yes	In negotiations	Consent Letter dated April 27, 2018
Raritan Bay Loop									
New Jersey Transit*	505.01 505.01 505.01	4 1 3			X		Yes	Permit Received	N/A
Transco*	541 541 553	8-11, 67-70 12-19, 64-66 1			X	Original Deed for Block 553, Lot 1 (dated September 27, 1966) (recorded in Bk. 2560, Pg. 74); Original Deed for Block 541, Lots 8-11 & 67-70 (dated August 9, 2000)(recorded in Bk. 4009, Pg. 93); Original Deed for Block 541, Lot 12	Yes	N/A	N/A
State of New Jersey (Tidelands)*					X		Yes	Transco submitted an application for a Tidelands License on July 18, 2017 (1200-17-0006.1 TDI 170001)	Transco submitted an application for a Tidelands License on July 18, 2017 (1200-17-0006.1 TDI 170001)

Key			
Green			Consent obtained from landowner
Yellow			Negotiations are still pending with landowner
*			Property(ies) currently proposed to be crossed (in whole or in part) via Horizontal Directional Drill

Note:			The proposed Madison Loop and on-shore portion of the Raritan Bay Loop cross several public road rights of way, either via HDD or other trenchless construction methodology. Transco is working with the appropriate entities to obtain the necessary permits to cross these roads.

Prepared by: _____
Mark Stevens, Esq.

Line #: _____
R/W #: _____
Tax #: _____
Municipality: _____
County: _____
State: _____

SUPPLEMENTAL RIGHT OF WAY AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way Agreement (this "Agreement"), made the 30 day of JANUARY, 2018 by and between MANZO OLD BRIDGE PROPERTIES, LLC, a New Jersey limited liability company having an address at 429 Delray Drive, Lavallette, New Jersey 08735 (hereinafter called GRANTOR whether one or more) and TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, TX 77056-6106 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by agreement dated June 8, 1967 and recorded in the Middlesex County Clerk's Office, in Deed Book 2582 at Page 861 as the same may have been heretofore supplemented and amended (herein individually and collectively referred to as the "Original Agreement") the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, operating, repairing, altering, replacing, and removing one or more of its pipelines and appurtenant facilities for the transportation of gas, oil, petroleum and petroleum products or other liquids, gases or substances of any kind which can be transported through pipelines, under, upon, over, through and across those certain lands located in the Township of Madison, Middlesex County, New Jersey, which Township subsequently became known as Township of Old Bridge, Middlesex County, New Jersey and described as follows:

Block 5001, Lot 13.16 as described in deed dated December 30, 2003 and recorded in the Middlesex County Clerk's Office on March 2, 2004 in Deed Book 5285, Page 314.

WHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline is constructed within the permanent right of way and easement hereinafter described. One or more additional pipelines, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the permanent right of way and easement hereinafter described during the course of planning and construction of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, valves, regulators, meters, cathodic protection equipment and facilities, electronic and

communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes.

2. The permanent right of way and easement shall be a strip of land identified as "Area of Existing Right of Way" and "Area of Right of Way", all as shown on a four sheet drawing marked "Exhibit A," attached hereto and made a part hereof.

3. During the course of construction of the first additional pipeline, facilities or improvements authorized above, Grantee shall have the right to enter upon, clear off, and use additional strips of land contiguous to the right of way described above, such strips of land being identified on the attached "Exhibit A" as "Area of Temporary Work Space#1 Outside Existing Right of Way", "Area of Temporary Work Space#2 Outside Existing Right of Way", "Area of Temporary Access Road #AR-MS-001", "Area of Temporary Access Road #AR-MS-002", and "Area of Temporary Access Road #AR-MS-003".

4. Grantor acknowledges that Grantee shall have the option of making reasonable adjustments to the location and area of the permanent right of way and easement, as well as any temporary workspace, based upon issues that may arise after execution of this Agreement, including, but not limited to, design, constructability or field conditions. Upon request of Grantee, Grantor will promptly execute any necessary documents to be recorded. Grantor will be compensated at fair market value for any further expansion of the right of way and easements granted.

5. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described right of way and easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent right of way, without liability for damages naturally resulting from the proper exercise of the rights granted herein.

Grantor specifically covenants and agrees:

(a) The strip of land, first above described, is the permanent right of way granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent right of way or any part thereof, (ii) change the grade of said permanent right of way or any part thereof, (iii) plant trees or shrubs on said permanent right of way or any part thereof, (iv) pave longitudinally along and upon said permanent right of way or any part thereof, (v) use said permanent right of way or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent right of way, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of any additional pipelines, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or any other inspections that may be required by any federal, state or local governmental agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the first additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the first additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

Except as herein modified and amended, the Original Agreement is hereby ratified and confirmed in all respects.

It is agreed that the Original Agreement and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

IN WITNESS WHEREOF, the Grantor has hereunto set their hand this 30th day of January, 2018.

ATTEST / WITNESS:

Silvia Wiehe

MANZO OLD BRIDGE PROPERTIES, LLC

By: Roger Passarella

Roger Passarella, Managing Member

ACKNOWLEDGMENT

STATE OF ~~NEW JERSEY~~ FLORIDA

COUNTY OF LEE

On this _____ day of _____, 2018, before me a Notary Public of the State of ~~New Jersey~~ Florida, the undersigned officer, personally appeared Roger Passarella, who acknowledged him/herself to be the Managing Member of Manzo Old Bridge Properties, LLC, a limited liability company of the State of New Jersey, and that as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company by himself as such officer.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

SZILVIA WIEBE
MY COMMISSION # FF947750
EXPIRES: February 24, 2020

Printed Name

My Commission Expires: 02/24/2020

After recording please return to:
Rutter & Roy, LLP
3 Paragon Way, Suite 300
Freehold, NJ 07728

Prepared by: Mark Stevens, Esq.

Line #: 11-209
R/W #: 6-6B
Tax #:
Municipality: OLD BRIDGE TWP
County: MIDDLESEX
State: NEW JERSEY

SUPPLEMENTAL RIGHT OF WAY AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way Agreement (this "Agreement"), made the 30 day of JANUARY, 2018 by and between MANZO INDUSTRIAL PARK ASSOCIATION, INC., a New Jersey non-profit corporation having an address at 429 Delray Drive, Lavallette, New Jersey 08735 (hereinafter called GRANTOR whether one or more) and TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, TX 77056-6106 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by agreement dated June 8, 1967 and recorded in the Middlesex County Clerk's Office, in Deed Book 2582 at Page 861 as the same may have been heretofore supplemented and amended (herein individually and collectively referred to as the "Original Agreement") the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, operating, repairing, altering, replacing, and removing one or more of its pipelines and appurtenant facilities for the transportation of gas, oil, petroleum and petroleum products or other liquids, gases or substances of any kind which can be transported through pipelines, under, upon, over, through and across those certain lands located in the Township of Madison, Middlesex County, New Jersey, which Township subsequently became known as Township of Old Bridge, Middlesex County, New Jersey and described as follows:

Block 5001, Lot 13.17 as described in deed dated April 18, 2002 and recorded in the Middlesex County Clerk's Office on April 18, 2002 in Deed Book 5036, Page 484.

AWHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline is constructed within the permanent right of way and easement hereinafter described. One or more additional pipelines, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the permanent right of way and easement hereinafter described during the course of planning and construction of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, valves, regulators, meters, cathodic protection equipment and facilities, electronic and

communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes.

2. The permanent right of way and easement shall be a strip of land identified as "Area of Existing Right of Way" and "Area of Right of Way", all as shown on a four sheet drawing marked "Exhibit A," attached hereto and made a part hereof.

3. Grantor acknowledges that, during the course of construction of the first additional pipeline, facilities or improvements authorized above, Grantee has the right to enter upon, clear off, and use an additional strip (or strips) of land contiguous to the right of way described above, such strip (or strips) of land being identified on the attached "Exhibit A" as "Area of Disturbance Within Existing Right of Way", "Area of Temporary Work Space#1 Within Manzo Boulevard", "Area of Temporary Work Space#2 Within Manzo Boulevard", "Area of Temporary Work Space#3 Within Manzo Boulevard", "Area of Disturbance Within Existing Permanent Access Road #AR-MS-010", "Area of Temporary Access Road #AR-MS-001 Within Manzo Boulevard", and "Area of Temporary Access Road #AR-MS-002 Within Manzo Boulevard".

4. Grantor acknowledges that Grantee shall have the option of making reasonable adjustments to the location and area of the permanent right of way and easement, as well as any temporary workspace, based upon issues that may arise after execution of this Agreement, including, but not limited to, design, constructability or field conditions. Upon request of Grantee, Grantor will promptly execute any necessary documents to be recorded. Grantor will be compensated at fair market value for any further expansion of the right of way and easements granted.

5. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described right of way and easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent right of way, without liability for damages naturally resulting from the proper exercise of the rights granted herein.

Grantor specifically covenants and agrees:

(a) The strip of land, first above described, is the permanent right of way granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent right of way or any part thereof, (ii) change the grade of said permanent right of way or any part thereof, (iii) plant trees or shrubs on said permanent right of way or any part thereof, (iv) pave longitudinally along and upon said permanent right of way or any part thereof, (v) use said permanent right of way or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent right of way, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of any additional pipelines, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or any other inspections that may be required by any federal, state or local governmental agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the first additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the first additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

Except as herein modified and amended, the Original Agreement is hereby ratified and confirmed in all respects.

It is agreed that the Original Agreement and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

IN WITNESS WHEREOF, the Grantor has hereunto set their hand this 30th day of January, 2018.

ATTEST/ WITNESS:

Silvia Wiehe

MANZO INDUSTRIAL PARK ASSOCIATION, INC.

By: Roger Passarella

Roger Passarella, President
Board of Trustees

ACKNOWLEDGMENT

STATE OF ~~NEW JERSEY~~ FLORIDA

COUNTY OF LEE

On this 30th day of January 2018, before me a Notary Public of the State of ~~New Jersey,~~ Florida the undersigned officer personally appeared Roger Passarella, who acknowledged him/herself to be the President of the Trustee Board of Manzo Industrial Park Association, Inc., a New Jersey not-for-profit corporation, and that he as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as such officer.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Szilvia Wiebe

Notary Public

SZILVIA WIEBE
MY COMMISSION # FF947750
EXPIRES: February 24, 2020

Szilvia Wiebe

Printed Name

My Commission Expires: 02/24/2020

After recording please return to:

Rutter & Roy, LLP
3 Paragon Way, Suite 300
Freehold, NJ 07728

Prepared by: _____

Line #: 11-207
R/W #: 6-8, 6-9, 6-10 & 6-11
Tax #: 5000/4, 18 & 23
Municipality: Old Bridge
County: Middlesex
State: New Jersey

SUPPLEMENTAL RIGHT OF WAY AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way Agreement (this "Agreement"), made the 19 day of July, 2018 by and between **ESTATE OF JOHN J. BRUNETTI**, having an address at Post Office Box 1004, Old Bridge, New Jersey 08857 (hereinafter called GRANTOR whether one or more) and **TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC**, a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, Texas 77056 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by an agreement dated August 11, 1967 and recorded in the Middlesex County Clerk's Office, in Deed Book 2590 at Page 475, and an addendum dated July 16, 1968 and recorded in the Middlesex County Clerk's Office, in Deed Book 2632 at Page 892, as the same may have been heretofore supplemented and amended (herein individually and collectively referred to as the "Original Agreements") the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, operating, repairing, altering, replacing, and removing its pipeline and appurtenant facilities for the transportation of natural gas, under, upon, over, through and across those certain lands located in the Township of Old Bridge, Middlesex County, New Jersey, and described as follows:

Block 5000, Lots 4, 18, and 23 as described in deed dated January 19, 1970 and recorded in the Middlesex County Clerk's Office on August 18, 1971 in Deed Book 2742, Page 924 and in deed dated January 22, 1970 and recorded in the Middlesex County Clerk's Office on October 22, 1971 in Deed Book 2749, Page 1128.

WHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline is constructed within the permanent right of way and easement hereinafter described. One additional pipeline, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. Should the Federal Energy Regulatory Commission fail to issue a Certificate of Public Convenience and Necessity for the Project for the additional pipeline, facilities or improvements authorized above within five (5) years from the date of this Agreement, this Agreement shall terminate. In such an event, Grantor specifically covenants and agrees that the Original Agreement, and the rights granted thereunder, shall remain in full force and effect.

In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the permanent right of way and easement hereinafter described during the course of planning of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, cathodic protection equipment and facilities, electronic and communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes. No above ground appurtenances (other than test posts, vents, or pipeline markers) shall be constructed within the permanent right of way and easement.

2. The permanent right of way and easement shall be a strip of land identified as "Area of Existing Right of Way", "Area of Right of Way", and "Area of Right of Way Within Existing Right of Way", all as shown on a drawing marked "Exhibit A," attached hereto and made a part hereof.

3. During the course of construction of the additional pipeline, facilities or improvements authorized above, Grantee shall have the right to enter upon, clear off, and use an additional strip (or strips) of land contiguous to the right of way described above, such strip (or strips) of land being identified on the attached "Exhibit A" as "Area of Temporary Work Space Outside Existing Right of Way" and "Area of Temporary Work Space Within Existing Right of Way".

4. Grantor acknowledges that Grantee shall have the option of making reasonable adjustments to the location and area of the permanent right of way and easement, as well as any temporary workspace, based upon issues that may arise after execution of this Agreement, including, but not limited to, design, constructability or field conditions. Upon request of Grantee, Grantor will promptly execute any necessary documents to be recorded. Grantor will be compensated at fair market value for any further expansion of the right of way and easements granted.

5. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described right of way and easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent right of way, without liability for damages naturally resulting from the proper exercise of the rights granted herein.

Grantor specifically covenants and agrees:

(a) The strip of land, first above described, is the permanent right of way granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent right of way or any part thereof, (ii) change the grade of said permanent right of way or any part thereof, (iii) plant trees or shrubs on said permanent right of way or any part thereof, (iv) pave longitudinally along and upon said permanent right of way or any part thereof, (v) use said permanent right of way or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent right of way, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of the additional pipeline, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or

any other inspections that may be required by any federal, state or local governmental agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

Except as herein modified and amended, the Original Agreements are hereby ratified and confirmed in all respects.

It is agreed that the Original Agreements and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

IN WITNESS WHEREOF, the Grantor has hereunto set their hand this 19 day of July, 2018.

ATTEST / WITNESS:

LILLIAN M. ARMELY

DUANE T. CLIBURN

ESTATE OF JOHN J. BRUNETTI

By: _____

John J. Brunetti, Jr.
Co-personal Representative

ACKNOWLEDGMENT

STATE OF Florida

COUNTY OF Miami-Dade

On this, the 19th day of July, 2018, before me, a Notary Public of the State of Florida, the undersigned, John J. Brunetti, Jr, personally appeared, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that s/he executed the same for the uses and purposes therein contained.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

SYLVIA M. MARTINEZ
Notary Public - State of Florida
My Comm. Expires Jan 12, 2019
Commission # FF 159931

Notary Public

Sylvia M. Martinez

Printed Name

My Commission Expires: 1/12/19

After recording please return to:
Williams - Transco Pipeline
99 Farber Road
Princeton, New Jersey 08540

Prepared by: _____

Line #: 11-207
R/W #: 6-14C
Tax #: 4185/10
Municipality: Old Bridge
County: Middlesex
State: New Jersey

SUPPLEMENTAL RIGHT OF WAY AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way Agreement (this "Agreement"), made the 23rd day of May, 2018 by and between **PARKWOOD GARDENS ASSOCIATES/MADISON**, a partnership, having an address at 820 Morris Turnpike – Suite 301, Short Hills, New Jersey 07078 (hereinafter called GRANTOR whether one or more) and **TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC,** a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, TX 77056-6106 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by agreement dated April 15, 1968 and recorded in the Middlesex County Clerk's Office, in Deed Book 2616 at Page 1141 as the same may have been heretofore supplemented and amended (herein individually and collectively referred to as the "Original Agreement") the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, operating, repairing, altering, replacing, and removing one or more of its pipelines and appurtenant facilities for the transportation of gas, oil, petroleum and petroleum products, under, upon, over, through and across those certain lands located in the Township of Old Bridge, Middlesex County, New Jersey, and described as follows:

Block 4185, Lot 10 as described in deed dated December 12, 1977 and recorded in the Middlesex County Clerk's Office on April 20, 1978 in Deed Book 3026, Page 328.

WHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline is constructed within the permanent right of way and easement hereinafter described. One or more additional pipelines, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the permanent right of way and easement hereinafter described during the course of planning and construction of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, valves, regulators, meters, cathodic protection equipment and facilities, electronic and communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes.

2. The permanent right of way and easement shall be a strip of land identified as "Area of Existing Right of Way" and "Area of Right of Way", all as shown on a drawing marked "Exhibit A," attached hereto and made a part hereof.

3. During the course of construction of the first of the additional pipelines, facilities or improvements authorized above, Grantee shall have the right to enter upon, clear off, and use an additional strip (or strips) of land, such strip (or strips) of land being identified on the attached "Exhibit A" as "Area of Temporary Work Space Outside Existing Right of Way" and "Area of Temporary Access Road".

4. Grantor acknowledges that Grantee shall have the option of making reasonable adjustments to the location and area of the permanent right of way and easement, as well as any temporary workspace, based upon issues that may arise after execution of this Agreement, including, but not limited to, design, constructability or field conditions. Upon request of Grantee, Grantor will promptly execute any necessary documents to be recorded. Grantor will be compensated at fair market value for any further expansion of the right of way and easements granted.

5. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described right of way and easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent right of way, without liability for damages naturally resulting from the proper exercise of the rights granted herein.

Grantor specifically covenants and agrees:

(a) The strip of land, first above described, is the permanent right of way granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent right of way or any part thereof, (ii) change the grade of said permanent right of way or any part thereof, (iii) plant trees or shrubs on said permanent right of way or any part thereof, (iv) pave longitudinally along and upon said permanent right of way or any part thereof, (v) use said permanent right of way or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent right of way, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of any additional pipelines, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or any other inspections that may be required by any federal, state or local governmental agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the first additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the first additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

Except as herein modified and amended, the Original Agreement is hereby ratified and confirmed in all respects.

It is agreed that the Original Agreement and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

IN WITNESS WHEREOF, the Grantor has hereunto set their hand this 23rd day of May, 2018.

ATTEST / WITNESS:

Stephanie Green

Stephanie Green
Print Name

PARKWOOD GARDENS ASSOCIATES/MADISON

By: Zygmunt Wilf

Zygmunt Wilf
Print Name

ACKNOWLEDGMENT

STATE OF NEW JERSEY
COUNTY OF Essex

On this 23rd day of May, 2018, before me a Notary Public of the State of New Jersey, the undersigned officer, personally appeared Zygmunt Wilf, who acknowledged him/herself to be a partner of **PARKWOOD GARDENS ASSOCIATES/MADISON**, a partnership, and that he/she as partner, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the partnership by him/herself as partner.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Stephanie Green
Notary Public

Stephanie Green
Printed Name

My Commission Expires: 4/17/23

After recording please return to:
Williams - Transco Pipeline
99 Farber Road
Princeton, New Jersey 08540

STEPHANIE L. GREEN
Notary Public, State of New Jersey
My Commission Expires April 17, 2023

GAS PIPELINE – Transco
2800 Post Oak Blvd. (77056)
P. O. Box 1396
Land Dept., Level 11
Houston, TX 77251-1396

April 27th, 2018

BY FED EX

Bruce Carta
332 Cherry Drive
Steamboat Springs, Colorado 80487-3070

Re: Transcontinental Gas Pipe Line Company, LLC
Northeast Supply Enhancement Project
FERC Docket No. CP17-101
Block 4185, Lots 28.11 and 28.12
Old Bridge Township, Middlesex County, New Jersey

Dear Mr. Carta:

As part of its proposed Northeast Supply Enhancement Project (the "Project"), Transcontinental Gas Pipe Line Company, LLC's ("Transco") will be submitting environmental permit applications to the New Jersey Department of Environmental Protection, which permit applications will, among other properties, impact the above-referenced properties owned by R.D.K. Inc., a New Jersey corporation ("RDK").

As an heir of the Estate of Mary Ann Kerestes (the Secretary of RDK and wife of the late Russell Kerestes, a record owner and President of RDK), we ask that you consent, by counter-signing this letter below, for Transco to apply for the necessary environmental permits and to conduct the Project activities across portions of RDK's property, assuming that those activities are ultimately certificated and ordered by the Federal Energy Regulatory Commission. It is understood that your consent does not constitute a grant of any property rights to Transco, and your right to negotiate with Transco for the permanent and temporary easements needed for the Project and as to the compensation to ultimately be paid for such easements is reserved.

Transco will defend and save harmless Bruce Carta from any claims or suits which may be asserted against the Bruce Carta arising out of any negligent acts of the Transco, its agents or employees, in its exercise of the rights herein granted.

Very truly yours,
Charles Ryan
CHARLES RYAN

Agreed to this 30 day of May, 2018

Bruce Carta

April 4th, 2018

BY FED EX

Laura Carta
320 Lewis Street
Havre de Grace, Maryland 21078-3404

Re: Transcontinental Gas Pipe Line Company, LLC
Northeast Supply Enhancement Project
FERC Docket No. CP17-101
Block 4185, Lots 28.11 and 28.12
Old Bridge Township, Middlesex County, New Jersey

Dear Ms. Carta:

As part of its proposed Northeast Supply Enhancement Project (the "Project"), Transcontinental Gas Pipe Line Company, LLC's ("Transco") will be submitting environmental permit applications to the New Jersey Department of Environmental Protection, which permit applications will, among other properties, impact the above-referenced properties owned by R.D.K. Inc., a New Jersey corporation ("RDK").

As a beneficiary of the Estate of Mary Ann Kerestes (the Secretary of RDK and wife of the late Russell Kerestes, a record owner and President of RDK), we ask that you consent, by counter-signing this letter below, for Transco to apply for the necessary environmental permits and to conduct the Project activities across portions of RDK's property, assuming that those activities are ultimately certificated and ordered by the Federal Energy Regulatory Commission. It is understood that your consent does not constitute a grant of any property rights to Transco, and your right to negotiate with Transco for the permanent and temporary easements needed for the Project and as to the compensation to ultimately be paid for such easements is reserved.

Transco will defend and save harmless Laura Carta from any claims or suits which may be asserted against the Laura Carta arising out of any negligent acts of the Transco, its agents or employees, in its exercise of the rights herein granted.

Very truly yours,

Charles Ryan

CHARLES RYAN

Agreed to this 24th day of April, 2018

Laura Carta

Laura Carta

Prepared by: _____

Line # NJ-MI-18, 19, 21 & 27
R/W # 5A-OL, 5A-1, 5A-1A & 5A3
Parcel # 449.08/103, 449/12, 449/13.01 & 449/10.03
Municipality: Sayreville
County: Middlesex
State: New Jersey

TEMPORARY WORK SPACE PERMIT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

For and in consideration of [redacted] in hand paid, the undersigned **LA MER IIIC, LLC, LA MER V, LLC, and LA MER VI, LLC,** each a New Jersey limited liability company, having an address of 433 River Road, Highland Park, New Jersey 08904 (collectively, with its successors and assigns, the **GRANTOR**), grant to **TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC**, a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, TX 77056-6106, (hereinafter called GRANTEE), the right to clear and use temporarily, during the construction of a natural gas pipeline, the area depicted and described on the attached Exhibit "A" as "Area of Temporary Workspace". This area shall be for Grantee's, its contractors, subcontractors, agents or assigns, use for a one-year period from the date construction activities begin or until all construction and restoration activities have been completed and satisfied in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

Grantor warrants and represents that Grantor owns the Property, and that no other person or entity owns an interest therein. Grantor also acknowledges that Grantee has submitted the necessary environmental applications to the New Jersey Department of Environmental Protection in connection with its proposed Northeast Supply Enhancement Project ("Project"), and hereby consents for Transco to apply for the necessary environmental permits and to conduct the Project activities across portions of this property.

Grantee will restore the area used, as nearly as practicable and permissible, to its prior condition and contour. Grantee will pay for any and all actual physical damages arising from its use of this area.

The Temporary Work Space Permit shall extinguish automatically without any need for further action by either party at midnight on the last day of the twelfth month after the completion of construction on the Grantor's property, unless further restoration is required by the Federal Energy Regulatory Commission or any other governmental agency with jurisdiction to require Grantee to perform restoration work on the property.

Grantor agrees that in the event Grantor enters into a real estate contract for sale of this property at any time during the term of this Temporary Work Space Permit, Grantor will inform the potential purchaser of the existence of this Temporary Work Space Permit and the purchaser's obligations to comply with its terms. Grantor also agrees to inform Grantee that the property is under contract within thirty (30) days of entering into such contract.

Grantee, by the acceptance hereof, covenants and agrees that it will defend and save harmless the Grantor from any claims or suits which may be asserted against the

Grantor arising out of any negligent acts of the Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

All agreements herein contained shall be deemed to run with the land and shall extend to and be binding upon the respective legal representatives, successors and assigns of the parties hereto.

Signed this 3rd day of January, ~~2017~~ 2018.

WITNESS

Bret Kaplan

LA MER IIIC, LLC

Michael Kaplan, President

WITNESS

Bret Kaplan

LA MER V, LLC

Michael Kaplan, President

WITNESS

Bret Kaplan

LA MER VI, LLC

Michael Kaplan, President

ACKNOWLEDGMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

On this 3rd day of January, 2017, before me a Notary Public of the State of New Jersey, the undersigned officer, personally appeared Michael Kaplan, who acknowledged himself to be the President of La Mer IIIC, LLC, La Mer V, LLC and La Mer VI, LLC, each a limited liability company, and that he as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability companies by himself as such officer.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

Liza Ann Glazner
Printed Name

My Commission Expires: 6/27/21

LIZA ANN GLAZNER
A Notary Public of New Jersey
My Commission Expires June 27, 2021

After recording please return to:
Williams - Transco Pipeline
99 Farber Road
Princeton, New Jersey 08540

Prepared by: _____

Line #: 11-207
R/W #: 5A-5.1
Tax #: 451/1.10
Municipality: Sayreville
County: Middlesex
State: New Jersey

SUPPLEMENTAL RIGHT OF WAY AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way Agreement (this "Agreement"), made the 29th day of March, 2018 by and between **GOLDEN AGE DEVELOPMENT GROUP, LLC**, a New Jersey limited liability company, having an address at 60 Monmouth Park Highway, West Long Branch, New Jersey 07764 (hereinafter called GRANTOR whether one or more) and T**RANSCONTINENTAL GAS PIPE LINE COMPANY, LLC,** a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, TX 77056-6106 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by agreement dated February 8, 2007 and recorded in the Middlesex County Clerk's Office, in Deed Book 5881 at Page 575 as the same may have been heretofore supplemented and amended (herein individually and collectively referred to as the "Original Agreement") the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, inspecting, operating, repairing, altering, replacing, changing the size of, and removing its pipeline and appurtenant facilities for the transportation of gas, oil, petroleum and petroleum products or other liquids, gases or substances of any kind which can be transported through pipelines, under, upon, over, through and across those certain lands located in the Borough of Sayreville, Middlesex County, New Jersey, and described as follows:

Block 451, Lot 1.10 as described in deed dated June 27, 2002 and recorded in the Middlesex County Clerk's Office on July 19, 2002 in Deed Book 5070, Page 515.

WHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline is constructed within the permanent right of way and easement hereinafter described. One additional pipeline, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the permanent right of way and easement hereinafter described during the course of planning of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, valves, regulators, meters, cathodic protection equipment and facilities, electronic and communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes.

2. The permanent right of way and easement shall be a strip of land identified as "Area of Existing Right of Way", "Area of Right of Way", and "Area of Right of Way within Existing Right of Way", all as shown on a drawing marked "Exhibit A," attached hereto and made a part hereof.

3. During the course of construction of the additional pipeline, facilities or improvements authorized above, Grantee shall have the right to enter upon, clear off, and use an additional strip (or strips) of land contiguous to and within the right of way described above, such strip (or strips) of land being identified on the attached "Exhibit A" as "Area of Temporary Work Space within Existing Right of Way" and "Area of Temporary Work Space Outside Existing Right of Way".

4. Grantor acknowledges that Grantee shall have the option of making reasonable adjustments to the location and area of the permanent right of way and easement, as well as any temporary workspace, based upon issues that may arise after execution of this Agreement, including, but not limited to, design, constructability or field conditions. Upon request of Grantee, Grantor will promptly execute any necessary documents to be recorded. Grantor will be compensated at fair market value for any further expansion of the right of way and easements granted.

5. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described right of way and easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent right of way, without liability for damages naturally resulting from the proper exercise of the rights granted herein.

Grantor specifically covenants and agrees:

(a) The strip of land, first above described, is the permanent right of way granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent right of way or any part thereof, (ii) change the grade of said permanent right of way or any part thereof, (iii) plant trees or shrubs on said permanent right of way or any part thereof, (iv) pave longitudinally along and upon said permanent right of way or any part thereof, (v) use said permanent right of way or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent right of way, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of the pipeline, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or any other inspections that may be required by any federal, state or local governmental agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

Except as herein modified and amended, the Original Agreement is hereby ratified and confirmed in all respects.

It is agreed that the Original Agreement and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

IN WITNESS WHEREOF, the Grantor has hereunto set their hand this 29th day of March, 2018.

ATTEST / WITNESS:

PETER S. WERSINGER, III, ESQ.,
Secretary

GOLDEN AGE DEVELOPMENT GROUP, LLC

ROBERT M. KAYE
Chairman and CEO

ACKNOWLEDGMENT

STATE OF NEW JERSEY

COUNTY OF MONMOUTH

On this 29th day of March, 2018, before me a Notary Public of the State of New Jersey, the undersigned officer, personally appeared ROBERT M. KAYE, who acknowledged himself to be the Chairman and CEO of **GOLDEN AGE DEVELOPMENT GROUP, LLC**, a New Jersey limited liability company, and that he as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company by himself as such officer.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Laurie DeLong
Notary Public

Printed Name

LAURIE DELONG
Commission # 2211775
Notary Public, State of New Jersey
My Commission Expires
April 03, 2023

My Commission Expires: _____

After recording please return to:
Williams - Transco Pipeline
99 Farber Road
Princeton, New Jersey 08540

Prepared by: _____

Line #: 11-207
R/W #: 5A-5
Tax #: 451/1.08
Municipality: Sayreville
County: Middlesex
State: New Jersey

SUPPLEMENTAL RIGHT OF WAY AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way Agreement (this "Agreement"), made the 22nd day of January, 2018 by and between **HARBOUR CLUB CONDOMINIUM ASSOCIATION, INC.,** a New Jersey non-profit corporation, having an address at 900 Harbour Club Drive, Parlin, New Jersey 08859 (hereinafter called GRANTOR whether one or more) and **TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC,** a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, TX 77056-6106 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by agreement dated March 22, 1967 and recorded in the County Clerk's Office, in Deed Book 2577 at Page 132 as the same may have been heretofore supplemented and amended (herein individually and collectively referred to as the "Original Agreement") the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, inspecting, operating, repairing, altering, replacing, changing the size of, and removing one or more of its pipelines and appurtenant facilities for the transportation of gas, oil, petroleum and petroleum products or other liquids, gases or substances of any kind which can be transported through pipelines, under, upon, over, through and across those certain lands located in the Borough of Sayreville, Middlesex County, New Jersey, and described as follows:

Block 451, Lot 1.08 as described in deed dated October 10, 1984 and recorded in the Middlesex County Clerk's Office on October 11, 1984 in Deed Book 3384, Page 585.

WHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline is constructed within the permanent right of way and easement hereinafter described. One or more additional pipelines, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the permanent right of way and easement hereinafter described during the course of planning and construction of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, valves, regulators, meters, cathodic protection equipment and facilities, electronic and

communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes.

2. The permanent right of way and easement shall be a strip of land identified as "Existing Right of Way" and "Area of Right of Way", all as shown on a drawing marked "Exhibit A," attached hereto and made a part hereof.

3. During the course of construction of the first of the additional pipelines, facilities or improvements authorized above, Grantee shall have the right to enter upon, clear off, and use an additional strip (or strips) of land contiguous to the right of way described above, such strip (or strips) of land being identified on the attached "Exhibit A" as "Area of Temporary Work Space Outside Existing Right of Way."

4. Grantor acknowledges that Grantee shall have the option of making reasonable adjustments to the location and area of the permanent right of way and easement, as well as any temporary workspace, based upon issues that may arise after execution of this Agreement, including, but not limited to, design, constructability or field conditions. Upon request of Grantee, Grantor will promptly execute any necessary documents to be recorded. Grantor will be compensated at fair market value for any further expansion of the right of way and easements granted.

5. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described right of way and easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent right of way, without liability for damages naturally resulting from the proper exercise of the rights granted herein.

Grantor specifically covenants and agrees:

(a) The strip of land, first above described, is the permanent right of way granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent right of way or any part thereof, (ii) change the grade of said permanent right of way or any part thereof, (iii) plant trees or shrubs on said permanent right of way or any part thereof, (iv) pave longitudinally along and upon said permanent right of way or any part thereof, (v) use said permanent right of way or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent right of way, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of any additional pipelines, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or any other inspections that may be required by any federal, state or local governmental agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the first additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the first additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

Except as herein modified and amended, the Original Agreement is hereby ratified and confirmed in all respects.

It is agreed that the Original Agreement and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

IN WITNESS WHEREOF, the Grantor has hereunto set their hand this 22nd day of January, 2018.

ATTEST / WITNESS:

HARBOUR CLUB CONDOMINIUM ASSOCIATION, INC.

By: Joseph McDermott

Print Name

Joseph McDermott

Print Name

ACKNOWLEDGMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

On this 22 day of ~~February~~ January 19, 2018, before me a Notary Public of the State of New Jersey, the undersigned officer, personally appeared Joseph McDermott, who acknowledged him/herself to be the President of **HARBOUR CLUB CONDOMINIUM ASSOCIATION, INC.**, a New Jersey non-profit corporation, and that he/she as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by him/herself as such officer.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Dawn M Myers
Notary Public

Dawn M Myers
Printed Name

My Commission Expires: July 18, 2018

DAWN M. MYERS
A Notary Public of New Jersey
My Commission Expires July 18, 2018

After recording please return to:
Williams - Transco Pipeline
99 Farber Road
Princeton, New Jersey 08540

Prepared by: _____

Line #: 11-207
R/W #: 5A-9
Tax #: 538/13
Municipality: Sayreville
County: Middlesex
State: New Jersey

SUPPLEMENTAL RIGHT OF WAY AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way Agreement (this "Agreement"), made the 16th day of May, 2018 by and between **LOCKWOOD MARINA, LLC**, a New Jersey limited liability company, having an address at 1825 Highway 35, South Amboy, NJ 08879 (hereinafter called GRANTOR whether one or more) and **TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC**, a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, TX 77056-6106 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by agreement dated March 21, 1967 and recorded in the County Clerk's Office, in Deed Book 2577 at Page 127 as the same may have been heretofore supplemented and amended (herein individually and collectively referred to as the "Original Agreement") the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, inspecting, operating, repairing, altering, replacing, changing the size of, and removing one or more of its pipelines and appurtenant facilities for the transportation of gas, oil, petroleum and petroleum products or other liquids, gases or substances of any kind which can be transported through pipelines, under, upon, over, through and across those certain lands located in the Borough of Sayreville, Middlesex County, New Jersey, and described as follows:

Block 538, Lot 13 as described in deed dated December 3, 2002 and recorded in the Middlesex County Clerk's Office on February 6, 2003 in Deed Book 5144, Page 368

WHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline(s) is/are constructed within the permanent right of way and easement hereinafter described. One or more additional pipelines, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the permanent right of way and easement hereinafter described during the course of planning and construction of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, valves, regulators, meters, cathodic protection equipment and facilities, electronic and

communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes.

2. The permanent right of way and easement shall be a strip of land identified as "Existing Right of Way" and "Proposed Right of Way", all as shown on a drawing marked "Exhibit A," attached hereto and made a part hereof.

3. During the course of construction of the first of the additional pipelines, facilities or improvements authorized above, Grantee shall have the right to enter upon, clear off, and use an additional strip (or strips) of land contiguous to the right of way described above, such strip (or strips) of land being identified on the attached "Exhibit A" as "Temporary Work Space."

4. Grantor acknowledges that Grantee shall have the option of making reasonable adjustments to the location and area of the permanent right of way and easement, as well as any temporary workspace, based upon issues that may arise after execution of this Agreement, including, but not limited to, design, constructability or field conditions. Upon request of Grantee, Grantor will promptly execute any necessary documents to be recorded. Grantor will be compensated at fair market value for any further expansion of the right of way and easements granted.

5. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described right of way and easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent right of way, without liability for damages naturally resulting from the proper exercise of the rights granted herein.

Grantor specifically covenants and agrees:

(a) The strip of land, first above described, is the permanent right of way granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent right of way or any part thereof, (ii) change the grade of said permanent right of way or any part thereof, (iii) plant trees or shrubs on said permanent right of way or any part thereof, (iv) pave longitudinally along and upon said permanent right of way or any part thereof, (v) use said permanent right of way or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent right of way, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of any additional pipelines, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or any other inspections that may be required by any federal, state or local governmental agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the first additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the first additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

Except as herein modified and amended, the Original Agreement is hereby ratified and confirmed in all respects.

It is agreed that the Original Agreement and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

IN WITNESS WHEREOF, the Grantor has hereunto set their hand this 16th day of May, 2018.

ATTEST / WITNESS:

LOCKWOOD MARINA, LLC

By: William Lockwood

ACKNOWLEDGMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

On this 16th day of May, 2018, before me a Notary Public of the State of New Jersey, the undersigned officer, personally appeared William Lockwood, who acknowledged him/herself to be the President of **LOCKWOOD MARINA, LLC**, a limited liability company, and that he as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company by himself as such officer.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Catherine Wisneski
Notary Public

Catherine Wisneski
Printed Name

My Commission Expires: CATHERINE WISNESKI NOTARY PUBLIC OF NEW JERSEY My Commission Expires 4/16/2019

After recording please return to:
Williams - Transco Pipeline
99 Farber Road
Princeton, New Jersey 08540

Prepared by: _____

Line #: 11-207
R/W #: 5A-10
Tax #: 538/9.02
Municipality: Sayreville
County: Middlesex
State: New Jersey

SUPPLEMENTAL RIGHT OF WAY AND EXCLUSIVE EASEMENT AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way and Exclusive Easement Agreement (this "Agreement"), made the 28th day of December, 2017 by and between **HIGHVIEW PROPERTIES AT SAYREVILLE URBAN RENEWAL LLC**, a New Jersey limited liability company, having an address at c/o John Giunco, Esq., 125 Half Mile Road – Suite 300, Red Bank, NJ 07701 (hereinafter called GRANTOR whether one or more) and **TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC**, a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, TX 77056-6106 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by agreement dated April 10, 1968 and recorded in the Middlesex County Clerk's Office, in Deed Book 2617 at Page 599 as the same may have been heretofore supplemented and amended (herein individually and collectively referred to as the "Original Agreement") the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, operating, repairing, altering, replacing, and removing one or more of its pipelines and appurtenant facilities for the transportation of gas, oil, petroleum and petroleum products, upon, under, or across those certain lands located in the Borough of Sayreville, Middlesex County, New Jersey, and described as follows:

Block 538, Lot 9.02 as described in deed daled September 23, 2014 and recorded in the Middlesex County Clerk's Office on October 2, 2014 in Deed Book 6620, Page 305

WHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline(s) is/are constructed within the permanent right of way and easement hereinafter described. One or more additional pipelines, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the permanent right of way and easement hereinafter described during the course of planning and construction of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, valves, regulators, meters, cathodic protection equipment and facilities, electronic and communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes.

2. The permanent right of way and easement shall be a strip of land identified as "Area of Existing Right of Way" and "Area of Right of Way", all as shown on a drawing marked "Exhibit A," attached hereto and made a part hereof.

3. Grantor also grants to Grantee an exclusive easement for the purposes of constructing, maintaining, operating, repairing, altering and replacing pipe lines, valves, regulators, fences, poles, wire lines, meters, meter runs, houses, compressors, drips, tanks, radio towers and communications equipment and any and all other devices, equipment and structures incident, necessary or convenient to the regulation, control, measurement, transportation and distribution of gas, oil, petroleum and petroleum products under, upon, over, through and across the lands of Grantor.

4. The exclusive easement shall be the area of land identified as "Area of Exclusive Easement within Existing Right of Way", all as shown on the drawing marked "Exhibit A" attached hereto and made a part hereof.

5. The Grantor also grants to Grantee a right of way and easement for the purpose of locating, opening, constructing, repairing, maintaining and using a roadway for access to the above described exclusive easement as identified as "Area of Permanent Access Road within Existing Right of Way", all as shown on the drawing marked "Exhibit A" attached hereto and made a part hereof.

5. During the course of construction of the first of the additional pipelines, facilities or improvements authorized above, Grantee shall have the right to enter upon, clear off, and use an additional strip (or strips) of land contiguous to the right of way described above, such strip (or strips) of land being identified on the attached "Exhibit A" as "Area of Temporary Work Space Outside Existing Right of Way."

6. Grantor acknowledges that Grantee shall have the option of making reasonable adjustments to the location and area of the permanent rights of way and exclusive easement, as well as any temporary workspace, based upon issues that may arise after execution of this Agreement, including, but not limited to, design, constructability or field conditions. Upon request of Grantee, Grantor will promptly execute any necessary documents to be recorded. Grantor will be compensated at fair market value for any further expansion of the right of way and easements granted.

7. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described rights of way and exclusive easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent rights of way and exclusive easement, without liability for damages naturally resulting from the proper exercise of the rights granted herein. Grantee shall also have all other rights and benefits necessary or convenient for the full enjoyment or use of the exclusive easement herein granted, including the right to fence in said land so as to exclude other persons and animals therefrom.

Grantor specifically covenants and agrees:

(a) The areas of land, first above described, are the permanent right of way and exclusive easements granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent rights of way, exclusive easement or any part thereof, (ii) change the grade of said permanent rights of way, exclusive easement or any part thereof, (iii) plant trees or shrubs on said permanent rights of way, exclusive easement or any part thereof, (iv) pave longitudinally along and upon said permanent rights of way, exclusive easement or any part thereof, (v) use said permanent rights of way, exclusive easement or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent rights of way or exclusive easement, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of any additional pipelines, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or any other inspections that may be required by any federal, state or local governmental agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the first additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the first additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor.

(c) It will indemnify the Grantor from any claims or suits which may be asserted by the Borough of Sayreville against the Grantor arising out of the use and restoration of the firehouse parking lot by Grantee in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or negligence of Grantor or a third party other than Grantee, its agents or employees.

During the course of construction of the first of the additional pipelines, facilities or improvements authorized above, Grantee further covenants and agrees to install safety fencing along each side of the work area that is adjacent to the apartments on Grantor's property, which fencing shall be removed at any time as determined by Grantee in its sole discretion. Such fencing will consist of the type and size to be determined by Grantee in its sole discretion.

Except as herein modified and amended, the Original Agreement is hereby ratified and confirmed in all respects.

It is agreed that the Original Agreement and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been

contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the Grantor has hereunto set their hand this 28th day of December, 2017.

ATTEST / WITNESS:

Nadine Carter

HIGHVIEW PROPERTIES AT SAYREVILLE URBAN RENEWAL LLC

By: John A. Giunco, Managing Member

ACKNOWLEDGMENT

STATE OF NEW JERSEY

COUNTY OF ~~MIDDLESEX~~ MONMOUTH

On this 28th day of December, 2017, before me a Notary Public of the State of New Jersey, the undersigned officer, personally appeared John A. Giunco, who acknowledged him/herself to be the Co-Manager of **HIGHVIEW PROPERTIES AT SAYREVILLE URBAN RENEWAL LLC**, a limited liability company, and that he/she as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company by him/herself as such officer.

Although the instrument transferring the easement interest herein is to be recorded in a deed book, the instrument or interest transferred is not a "deed" as defined in N.J.S.A. 46:15-5, and no realty transfer fee is applicable.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Denise M. Wegryniak
Notary Public

DENISE M. WEGRYNIAK
NOTARY PUBLIC STATE OF NEW JERSEY
MY COMMISSION EXPIRES 8/30/19

Denise M. Wegryniak
Printed Name

My Commission Expires: 8/30/19

After recording please return to:
Williams - Transco Pipeline
99 Farber Road
Princeton, New Jersey 08540

Rubin
Ehrlich &
Buckley

Rubin, Ehrlich & Buckley
A Professional Corporation

Crossroads Corporate Center
3150 Brunswick Pike, Suite 310
Lawrenceville, NJ 08648
Tel: (609) 637-9500
Fax: (609) 637-0001

lawreb.com

August 11, 2017
via email

Christopher Jones, Manager
Bureau of Urban Growth & Redevelopment
NJDEP Division of Land Use Regulation
501 East State Street
Station Plaza 5, 2nd Floor
Trenton, New Jersey, 08609

Re: Transcontinental Gas Pipe Line Company LLC
Northeast Supply Enhancement Project ("Project")
Proposed Compressor Station 206

Dear Mr. Jones:

This office represents Trap Rock Industries, LLC and Trap Rock Industries, Inc. (collectively "Trap Rock"), which own Block 5.02, Lots 9, 10, 11.02, 12, 16, and 17 in the Township of Franklin, Somerset County, New Jersey, across which Transcontinental Gas Pipe Line Company, LLC ("Transco") proposes to construct a permanent access road to reach its proposed Compressor Station 206. Transco entered into an agreement on April 11, 2017 with Trap Rock for an option to acquire an exclusive permanent easement across these properties.

Please accept this letter as Trap Rock's acknowledgment that, assuming Transco exercises its option to acquire the easement, Trap Rock consents to Transco's use of portions of the properties listed above as a permanent access road to reach its proposed compressor station to be located on Block 5.02, Lot 25. Please note that, to best of my knowledge, no portion of the proposed permanent easement will be located within property belonging to the State of New Jersey or on any property owned by a public agency that would be encumbered by Green Acres. To my knowledge, based upon representations from Transco's attorneys, Transco's Project does not require a Section 106 (National Register of Historic Places) Determination as part of a federal approval.

Very truly yours,
RUBIN, EHRLICH & BUCKLEY, P.C.

By: Bruce Lubitz /klt
Bruce Lubitz, Esq.

BL/klt
cc Mark Stevens, Esq. via email

Rubin
Ehrlich &
Buckley

Rubin, Ehrlich & Buckley
A Professional Corporation

731 Alexander Road
Princeton, New Jersey 08540
Tel: (609) 452-7300
Fax: (609) 452-2077

lawreb.com

DIRECT CORRESPONDENCE TO:
BRUCE LUBITZ
E-MAIL: BLUBITZ@LAWREB.COM

***Via* Email**

April 27, 2018

Christopher Jones, Manager
Bureau of Urban Growth & Redevelopment
NJDEP Division of Land Use Regulation
501 East State Street
Station Plaza 5, 2nd Floor
Trenton, New Jersey, 08609

Re: Transcontinental Gas Pipe Line Company LLC
Northeast Supply Enhancement Project ("Project")
Proposed Compressor Station 206

Dear Mr. Jones:

This office represents Trap Rock Industries, LLC ("Trap Rock"), which owns Block 5.02, Lot 23 ("Property") in the Township of Franklin, Somerset County, New Jersey, across which Transcontinental Gas Pipe Line Company, LLC ("Transco") proposes to expand its existing permanent right of way for purposes of constructing a valve site and suction and discharge piping ("Proposed Activity") to serve proposed Compressor Station 206.

Please accept this letter as Trap Rock's acknowledgment that, with the understanding that Trap Rock and Transco will enter into an agreement for the Proposed Activity on the Property which, among other matters, specifies the terms and conditions under which Transco may use the Property for the Proposed Activity, as well as the compensation to be paid by Transco for such use, Trap Rock consents to Transco's Proposed Activity which will serve Transco's proposed compressor station to be located on Block 5.02, Lot 25. Trap Rock's consent does not constitute a present grant of any property rights to Transco. Track Rock reserves its right to negotiate with Transco for the permanent and

temporary easements needed for the Project and the compensation to ultimately be paid for such easements.

Very truly yours,

RUBIN, EHRLICH & BUCKLEY, P.C.

By: _____
Bruce Lubitz, Esq.

cc: Mark Stevens, Esq. (via email)
Michael Crowley (via email)

Line #:
R/W #:
Tax #: Block 451, Lot 1.09
Block 454, Lot 1
Municipality: Sayreville
County: Middlesex
State: New Jersey

Prepared by: Monica N. Stahl, Esq.

SUPPLEMENTAL RIGHT OF WAY AGREEMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

This Supplemental Right of Way Agreement (this "Agreement"), made the 11th day of September, 2018 by and between BOROUGH OF SAYREVILLE, a municipal corporation of the State of New Jersey, having an address at 167 Main Street, Sayreville, New Jersey 08872 (hereinafter called GRANTOR) and TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company having an office at 2800 Post Oak Boulevard, Houston, Texas 77056-6106 it successors and assigns (hereinafter called GRANTEE).

WHEREAS, by agreements dated March 22, 1967 and recorded in the Middlesex County Clerk's Office in Deed Book 2577 at Page 132, and dated June 14, 1996 and recorded in the Middlesex County Clerk's Office in Deed Book 4344 at Page 818, as the same may have been heretofore supplemented, modified and amended (collectively referred to as the "Original Agreement"), the Grantor or Grantor's predecessor in title granted, bargained, sold and conveyed unto the Grantee's predecessor in interest, its successors and assigns, a right of way and easement therein more particularly described or referred to for the purpose, among other things, of laying, constructing, maintaining, operating, repairing, altering, replacing, changing the size of, and removing its pipeline(s) and appurtenant facilities for the transportation of natural gas under, upon, over, through and across those certain lands located in the Borough of Sayreville, Middlesex County, New Jersey, and described as follows:

Block 451, Lot 1.09 as described in deed dated October 3, 1977 and recorded October 5, 1977 in the Middlesex County Clerk's Office in Deed Book 3000, Page 291 and deed dated October 10, 1984 and recorded October 11, 1984 in the Middlesex County Clerk's Office in Deed Book 3384, Page 581; and

Block 454, Lot 1 as described in Final Decree for Foreclosure of Tax Certificate recorded November 27, 1940 in the Middlesex County Clerk's Office in Deed Book 1183, Page 28;

WHEREAS, at the request of the Grantee, the Grantor has consented and agreed to further modify, amend, supplement and enlarge said Original Agreement in the manner hereinafter set forth:

NOW, THEREFORE, in consideration of the sum of [redacted] and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, said Grantor does hereby by general warranty grant, bargain, sell, convey, ratify and confirm unto the Grantee, its successors and assigns, all that right of way and easement with the appurtenant rights and privileges and subject to the duties and obligations, all as described or referred to in the Original Agreement, except that the said right of way and easement is hereby modified, amended, supplemented and enlarged as follows:

1. Grantee's existing pipeline(s) is/are constructed within the permanent right of way and easement hereinafter described. One additional pipeline, facilities or improvements may be constructed under the provisions of this Agreement and shall be located within the permanent right of way and easement hereinafter described. In addition, and without limiting the generality of the foregoing, Grantor acknowledges that Grantee shall also have the right to use (and survey), without any further payment to Grantor, the

permanent right of way and easement hereinafter described during the course of planning of any additional pipelines, facilities or improvements. For purposes of this Agreement, the term "facilities" includes, by way of illustration and without limitation, valves, regulators, meters, cathodic protection equipment and facilities, electronic and communications equipment for pipeline facilities, piping and fittings, pipeline markers and vent pipes.

2. The permanent right of way and easement shall be a strip of land identified as "Area of Existing Right of Way", "Area of Right of Way" and "Area of Right of Way Within Existing Right of Way" (collectively, referred to herein as "permanent right of way"), all as shown on two drawings, comprising Drawing No. 24-1947-80-06A-B/NJ-MI-33, revised through April 9, 2018 (two sheets, each marked "Exhibit A-1") and Drawing No. 24-1947-80-06A-B/NJ-MI-34, revised through April 9, 2018 (two sheets, each marked "Exhibit A-2"), and attached hereto and made a part hereof.

3. During the course of construction of the additional pipeline, facilities or improvements authorized above, Grantee shall have the right to enter upon, clear off, and use additional strips of land contiguous to the permanent right of way described above, such strips of land being identified (i) on the attached Exhibit A-1 as "Area of Temporary Work Space Outside Existing Right of Way" and (ii) on the attached Exhibit A-2 as "Total Areas of Temporary Workspace Outside Existing Right of Way" and "Total Areas of Temporary Workspace Within Existing Right of Way."

4. Should the Federal Energy Regulatory Commission fail to issue a Certificate of Public Convenience and Necessity for the Project for the additional pipeline, facilities or improvements authorized above within five (5) years from the date of this Agreement, this Agreement shall terminate. In such an event, Grantor specifically covenants and agrees that the Original Agreement, and the rights granted thereunder, shall remain in full force and effect.

5. Grantee shall have all other rights and benefits necessary or convenient for the full enjoyment or use of the rights herein granted, including, but without limiting same to, the free and full right of ingress, and egress over and across the land of Grantor to and from the described right of way and easement, by means of roads or other access areas utilized by Grantor, and the right, from time to time as it may find convenient, to cut or remove all trees, undergrowth and other obstructions from the permanent right of way, without liability for damages naturally resulting from the proper exercise of the rights granted herein.

Grantor specifically covenants and agrees:

(a) The strip of land, described in Paragraph 2 above, is the permanent right of way granted.

(b) Without Grantee's prior written consent, Grantor will not, and will not permit any other person to, (i) build or place any structures or other encroachments on said permanent right of way or any part thereof, (ii) change the grade of said permanent right of way or any part thereof, (iii) plant trees or shrubs on said permanent right of way or any part thereof, (iv) pave longitudinally along and upon said permanent right of way or any part thereof, (v) use said permanent right of way or any part thereof in such a way as to interfere with Grantee's immediate and unimpeded access to said permanent right of way, or (vi) otherwise interfere with Grantee's lawful exercise of any of the rights herein granted.

(c) Following construction of the additional pipeline, facilities or improvements, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property and access the right of way and easements granted, at all times and as needed, to perform any and all restoration activities in connection with the construction of the additional pipeline, facilities or improvements, or in accordance with any federal, state or local restoration requirements, including but not limited to, any requirements set forth by the Federal Energy Regulatory Commission.

(d) Upon 3 days' notice to Grantor, Grantee, its agents, employees and contractors, shall have the right to enter Grantor's property from time to time to conduct certain investigations and inspections in the immediate area adjacent to Grantee's existing pipeline right of way and easement, including but not limited to, civil surveys, topographical surveys, archeological and cultural resources surveys, biological surveys, environmental surveys, or any other inspections that may be required by any federal, state or local governmental

agency. Grantee shall restore or repair Grantor's property, as nearly as practicable and permissible, to its condition prior to the commencement of the survey work.

TO HAVE AND TO HOLD said right of way and easement unto said Grantee, its successors and assigns, for so long as a pipeline is maintained thereon.

Grantor acknowledges that part of the consideration above recited is payment in full for any damages caused or to be caused by the construction of the additional pipeline, facilities or improvements hereunder.

Grantee, by its acceptance hereof, covenants and agrees:

(a) Except for the damages caused by the construction of the existing pipeline(s) and the additional pipeline, facilities or improvements authorized hereunder, Grantee will reimburse the Grantor for any loss or damage to property which Grantor may suffer as a consequence of the laying, constructing, altering, repairing, removing, changing the size of, or replacing any pipelines, facilities or improvements, in the exercise of the rights herein granted except that neither the Grantor nor any persons or firms holding under the Grantor shall assert any claims for severance or consequential damages.

(b) It will defend and save harmless the Grantor from any claims or suits which may be asserted against the Grantor arising out of any negligent acts of Grantee, its agents or employees, in its exercise of the rights herein granted, except to the extent and in proportion that such claims or suits are attributable, in whole or in part, to the fault, failure or gross negligence of Grantor.

(c) During the course of construction of the additional pipeline, facilities or improvements authorized above, Grantee shall, at its own expense, procure and maintain in effect the following insurance:

(i) Workers' Compensation insurance in accordance with statutory limits, as required by the state in which the work is to be performed and Employer's Liability insurance with limits of One Million ($1,000,000) Dollars per occurrence.

(ii) Commercial General Liability insurance providing coverage for premises, bodily injury, property damage, personal injury, blanket contractual liability, covering Grantee's insurable indemnification obligations under this Agreement, products and completed operations coverage for independent contractors and broad form property damage coverage with a combined single limit of Two Million ($2,000,000) Dollars each occurrence with an annual aggregate of Ten Million ($10,000,000) Dollars.

(iii) Business Automobile Liability insurance providing coverage for all owned, non-owned and hired automobiles used by Grantee in the performance of this Agreement with a combined single limit of One Million ($1,000,000) Dollars for each occurrence of bodily injury and property damage.

(iv) Excess or Umbrella Liability insurance with a limit of Ten Million ($10,000,000) Dollars for each occurrence with an annual aggregate of Ten Million ($10,000,000) Dollars. This limit applies in excess of each of the insurances set forth above in paragraphs (i) (Employer's Liability), (ii) (Commercial General Liability) and (iii) (Business Automobile Liability), which are scheduled as primary.

(v) Pollution/Environmental Liability insurance with a limit of Two Million ($2,000,000) Dollars each occurrence where the work involves or includes Grantee handling, transporting, disposing or performing work or operations with hazardous substances, contaminates, waste, toxic materials or any potential pollutants. Grantee may satisfy Pollution Liability insurance under the Commercial General Liability insurance.

If any insurance is provided on a claims-made basis, Grantee shall maintain continuous coverage during construction of the additional pipeline, facilities or improvements authorized above and in addition to the coverage requirements above, such policy shall provide that: (i) policy retroactive date coincides with or precedes the insured's initial work under this Agreement (including subsequent policies purchased as renewals or replacements; (ii) policy allows for reporting of circumstances or incidents that might give rise to future claims; (iii) Grantee shall maintain similar insurance for at least two (2) years following work completion, including the requirement of adding Grantor as an additional insured; and (iv) if insurance is terminated for any reason, Grantee agrees to purchase an extended reporting provision of at least two (2) years to report claims arising from work performed in connection with this Agreement.

All above-mentioned policies shall provide the following: be primary to any other insurance or self-insurance carried by Grantor; contain standard cross-liability provisions, where applicable; and provide for a waiver of all rights of subrogation against Grantor by Grantee and its insurers. All above-mentioned insurance policies, with the exception of workers' compensation, shall include Grantor and its respective successors and assigns as additional insureds.

Prior to the start of construction of the additional pipeline, facilities or improvements authorized above, Grantee shall deliver to Grantor evidence of the required insurance in the form of Certificates of Insurance. The Certificates of Insurance and the insurance policies required by this Agreement shall contain a provision that coverage afforded under the policies will not be cancelled or allowed to expire until prior written notice has been given to Grantor per the terms of the policy(ies). Grantee shall notify Grantor of any reduction of coverage limits in any of the insurance policies providing the required insurance under this Agreement but shall be obligated to retain or obtain new policies which meet these coverage limits.

All insurance required under this Agreement shall have ratings of A-/VII or better in the Best's Key Rating Insurance Guide, or equivalent if not rated by A.M. Best, as of the date of the certificates evidencing such required insurance. Failure to obtain and maintain the insurance required under this Agreement shall constitute a material breach of this Agreement and Grantee will be liable for any and all costs, liabilities and damages (including attorneys' fees, court costs and settlement expenses) resulting to Grantor from such breach. The required liability insurance can be met under a primary or an excess policy or any combination thereof.

Except as herein modified and amended, the Original Agreement is hereby ratified and confirmed in all respects.

It is agreed that the Original Agreement and this Agreement, cover all the agreements between the parties with respect to the subject matter and no representations or statements, verbal or written, have been made, modifying, adding to, or changing the terms thereof.

It is further agreed that if any term of this Agreement is found to be void or invalid, such provision shall be fully severable herefrom and such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect, and this Agreement shall be reformed and construed as if such invalid provision had never been contained herein, and if possible, such provision shall be reformed to the maximum extent permitted under applicable law to render same valid, operative and enforceable to reflect the intent of Grantor and Grantee as expressed herein.

It is further agreed that the several terms, covenants, conditions and agreements herein contained shall in every case be binding upon and inure to the benefit of the respective parties hereto, their respective heirs, executors, successors and assigns, with the same force and effect as if specifically mentioned in each instance where a party is named.

IN WITNESS WHEREOF, the Grantor has hereunto set its hands this 11th day of September, 2018.

ATTEST / WITNESS:

Theresa A Farbaniec

Theresa Farbaniec
Municipal Clerk

BOROUGH OF SAYREVILLE

By: _____
Kennedy O'Brien
Mayor

ACKNOWLEDGMENT

STATE OF NEW JERSEY

COUNTY OF MIDDLESEX

On this 11th day of September, 2018, before me a Notary Public of the State of New Jersey, the undersigned, personally appeared Kennedy O'Brien, who acknowledged himself to be the Mayor of the Borough of Sayreville, the municipality named in this instrument, and that he as Mayor, being authorized to do so by a proper resolution of its municipal governing body, executed the foregoing instrument for the purposes therein contained by signing the name of the municipality by himself as Mayor.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Joan Marie Kemble
Notary Public

Joan Marie Kemble
Printed Name

My Commission Expires

Joan Marie Kemble
Notary Public
New Jersey
My Commission Expires July 17, 2023
No. 2375739

After recording please return to:
Williams - Transco Pipeline
99 Farber Road
Princeton, New Jersey 08540

Cullen | Dykman

HERBERT B. BENNETT
PARTNER
HBennett@cullenllp.com

Cullen and Dykman LLP
229 Nassau Street
Princeton, NJ 08542
T: 609.279.0900
F: 609.497.2377

January 21, 2020

Joslin C. Tamagno, Environmental Supervisor
Bureau of Urban Growth and Redevelopment
NJDEP Division of Land Use Regulation
Department of Environmental Protection
Division of Land Use Regulation
501 E. State Street, Second Floor
Trenton, New Jersey 08609

Terry Turpin, Director of the Office of Energy Projects
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

RE: Transcontinental Gas Pipe Line Company LLC
Northeast Supply Enhancement Project
Access Road to Compressor Station 206
Block 5.02, Lot 26.01 ("the Higgins property")
Franklin Township, Somerset County, New Jersey
FERC Docket No. CP17-101-000

Dear Ms. Tamagno & Mr. Turpin:

I represent Julie and Clifford Higgins (the Higgins) with regard to the above-referenced matter. I understand that Transcontinental Gas Pipe Line Company, LLC (Transco) will be submitting applications to the Federal Energy Regulatory Commission (FERC) and to the New Jersey Department of Environmental Protection (NJDEP) for authorization to use an access road across the Higgins property in connection with Transco's proposed Northeast Supply Enhancement Project (Project). A portion of the road will be located within the footprint of the existing access road utilized by the United States Environmental Protection Agency and then will be extended to reach Transco's compressor station site.

This letter serves as confirmation that the Higgins have given their consent for Transco to apply for the necessary FERC and NJDEP approvals as to the proposed access road on the Higgins property, and to construct the proposed access road on said property if and when approved by all applicable regulatory agencies. The Higgins also give their consent for access to the site by representatives or agents of FERC and NJDEP for the purpose of conducting a site inspection(s) or survey(s) of the Higgins property.

Very truly yours,
CULLEN AND DYKMAN LLP

Herbert B. Bennett

HBB/

SECTION #1 (CONT.)

ATTACHMENT C OF CHECKLIST:

Attachment for Item #5 DLUR Application Form – Project Description

This application was prepared to address proposed crossings of areas below mean high water (MHW), as well as adjacent areas within the Upland Waterfront Development Area (as described at New Jersey Administrative Code ([N.J.A.C.] 7:7-2.4(a)3ii.) associated with the proposed Transcontinental Gas Pipe Line Company, LLC (Transco) Northeast Supply Enhancement Project (Project). This application also addresses proposed disturbances to wetlands mapped pursuant to the Coastal Wetlands Act of 1970 (referred to herein as "mapped coastal wetlands"). Applications for a New Jersey Freshwater Wetlands Individual Permit and Flood Hazard Area Individual Permit are being submitted concurrently with this application.

1.0 Statement of Project Purpose and Need

Transco proposes to construct, install, and operate the Project facilities "to provide 400,000 dekatherms per day (Dth/d) of incremental firm natural gas transportation services to Brooklyn Union Gas Company and KeySpan Gas East Corporation (collectively referred to as National Grid) in order to serve National Grid's residential and commercial customers in the New York City area." (FERC accession #20190125-3001), p. 1-3. National Grid is a regulated entity that is obligated by the New York State Public Service Commission to provide safe, reliable energy service upon request. In order to meet that obligation, National Grid has reported that it identified the need for incremental gas transportation capacity to serve load growth in the boroughs of Brooklyn, Queens and Staten Island in New York City, as well Nassau and Suffolk Counties on Long Island. To support this growth, National Grid entered into an agreement with Transco to construct the NESE Project in order to enhance reliability of service to existing customers, as well as to satisfy growing demand for natural gas in its downstate New York service territory.

In 2017, the New York Independent System Operator forecasted that additional natural gas pipeline capacity would be needed in New York City due to increased population growth and the closure of two Indian Point nuclear power plants. Resource Report 1 p. 25 (FERC accession #20170907-5176), citing the 2017 Electricity Outlook: Powering New York City's Future. National Grid has stated that the Rockaway Transfer Point is the only delivery point that could serve their projected load growth and enhance reliability in its downstate service territories. National Grid May 14, 2019 Letter to the New York State Department of Environmental Conservation (NYSDEC); Final EIS, Appendix M, p. M-117. In March 2019, National Grid warned that during the 2018-19 winter season its infrastructure was again "put to the test," as its gas system was called on to deliver unprecedented volumes of gas to millions of customers. National Grid May 14, 2019 Letter to NYSDEC. According to National Grid, most of its nearly two million customers in Nassau and Suffolk counties and in Brooklyn, Queens, and Staten Island, are residential customers that rely on natural gas for critical basic needs including

heating, cooking, and hot water. National Grid April 2, 2019 Letter to FERC (FERC accession #20190402-5186).

National Grid has entered into 15-year contracts for 100% of the capacity that will be created by the Project. According to National Grid, the Project, together with the existing Rockaway Delivery Lateral, will serve almost 40% of National Grid's peak day requirements in downstate New York and is necessary to satisfy growing demand. National Grid March 14, 2019 Letter to NYSDEC. The Project will also improve system reliability by providing a needed supply path and maintaining supply in the event of a loss of service or maintenance repairs to the existing lateral, which is the only pipeline that currently serves the Rockaway and Long Beach delivery points. Final EIS, p. 1-3; National Grid March 14, 2019 Letter to NYSDEC.

The Project will enhance the reliability of the local, state, and regional natural gas supply system and is designed to improve public health and enhance the environment by improving existing air quality, replacing less environmentally friendly fuels such as heating oil, and integrating an impact avoidance and minimization premise into all Project component siting and design while mitigating any remaining impacts to the surrounding environment. The existing Transco system delivers ONE HALF of the natural gas consumed in the Garden State and the Project improves the reliability/resiliency of the system in New Jersey, and therefore benefits local residents and businesses. The system has reliably served New Jersey since 1951 providing fuel to heat and cool homes, cook food, and address other basic public needs.

- The New Jersey facilities will provide redundancy during planned and unplanned maintenance activities on Transco's natural gas infrastructure within the State.
    - The Project is designed to provide 400,000 Dth/d under peak conditions, however, shippers (especially LDC type shippers) do not typically require their full contractual volume except during an abbreviated time period during extreme weather conditions. Under normal conditions, the facilities constructed as part of the Project will enable Transco to manage maintenance outages and repairs; thus, minimizing impacts or interruption to all shippers on the system, especially those in New Jersey.

- In the event that the permits for the Project are denied and the Project is not constructed the anticipated increase in the average deliveries off of the Transco system could result in material degradation of delivery pressures at existing delivery points and challenges associated with delivering existing firm shipper entitlements in New Jersey.
    - Without the Project, utility providers would continue signing up customers to their service territory because they are obligated by the New York State Public Service Commission to provide safe, reliable energy service upon request.
    - This could, in turn, result in an increase in the normal load from the interstate pipeline transmission grid, resulting in an overall increase in average deliveries off of the Transco pipeline system in New Jersey.
    - An increase in the average load would lead to operational challenges related to the scheduling of maintenance activities and a greater chance of impacts to all shippers in the northeast region, including those in New Jersey.
    - As noted in Transco's Alternatives Analysis for the Project (see Appendix A), the purpose of the new Compressor Station 206 is to offset the pressure drop

associated with transporting the additional volume of natural gas flowing through the pipeline

It should also be noted that because the Project arises under Section 7(c) of the Natural Gas Act of 1938, authorizing the Federal Energy Regulatory Commission ("FERC") to issue certificates of "public convenience and necessity" for "the construction or extension of any facilities…for the transportation in interstate commerce of natural gas," the Energy Policy Act of 2005 ("EPAct") designates FERC as the lead agency for coordinating applicable Federal authorizations and for National Environmental Policy Act ("NEPA") compliance. In order to satisfy its NEPA obligations for the Project, FERC prepared both a draft and final Environmental Impact Statement ("EIS") including a statement of the Projects purpose and need, and description of all reasonable alternatives to meet that purpose and need, a description of the environment that would be affected by those alternatives, and an analysis of the direct and indirect effects of the alternatives, including cumulative impacts.

As the lead agency, FERC solicited and obtained input from other agencies, including NJDEP, with jurisdiction by law or special expertise regarding any environmental impact associated with the Project. In this context it is important to recognize that FERC makes its determination of public convenience and necessity based on a variety of factors as required by its Policy Statement, including but not limited to whether the Project will provide the following public benefits: meeting unserved demand, eliminating bottlenecks, access to new supplies of natural gas, lower costs to consumers, providing new interconnects that improve the electrical grid, providing completive alternative, increasing electric reliability and advancing clean air objectives. This project will advance all of these public needs.

As the lead agency FERC cooperated with and obtained input from other agencies, including NJDEP, with jurisdiction by law or special expertise regarding any environmental impact associated with the Project. In this context it is important to recognize that FERC makes its determination based on national interests, and it is with that lens that each of the other agencies considering the project must view it.

The Department has historically found that the FERC Certificate satisfies the regulatory requirement that an interstate natural gas pipeline project is in the public interest. This is because FERC, as the lead agency, goes through a similar and arguably more extensive public interest analysis that includes both an economic and environmental review of the Project. As set forth in the May 3, 2019 FERC Certificate in paragraphs 12 through 18, the Certificate Policy Statement establishes criteria for determining whether there is a need for a proposed project and whether the proposed project will serve the public interest. The Commission balances the public benefits against the potential adverse consequences. Among other things, FERC must determine whether (1) the pipeline company can financially support the project without relying on subsidization from existing customers and (2) the pipeline company has made efforts to eliminate or minimize any adverse effects the project might have on its existing customers, existing pipelines in the market and their captive customers, or landowners and communities affected by the proposed route or location of the new pipeline facilities. If the benefits outweigh the adverse effects on economic interests, then FERC will proceed to complete the environmental analysis where other interests are considered.

FERC ultimately concluded that based on the benefits the project will provide and the minimal adverse impacts on existing shippers, other pipelines and their captive customers, and landowners, surrounding communities, and the environment, that the public convenience and necessity required approval of the Project.

Project Benefits

The Project has economic benefits to the State and local communities. Transco's formal economic impact study concludes that the Project would:

- Generate approximately $240 million in additional economic activity (GDP) in New Jersey,
- Support more than 2,400 local New Jersey jobs and 3,186 regional jobs during the project construction period. Generating approximately $172 million in potential income for New Jersey workers,
- Add $418,300 in local tax revenues in Somerset County and $16 million total in new local and state tax revenue,
- Have minimal impact on surrounding neighbors and the environment. In its proposed location the facilities will be largely out of sight, with virtually zero impact on noise or air quality.

FERC analyzed these economic impacts of the Project and concluded in the FEIS that the Project would have beneficial economic effects on state and local economies. FERC specifically found that the Project will create "a short-term stimulus to the affected areas through payroll expenditures, local purchases of consumables and project-specific materials, and sales tax" and that "operation of the Project would result in long-term property tax and submerged land easement fee benefits in the counties and localities in New Jersey and New York in the Project area." Final EIS, p. 4-278.

In addition, the Project will result in more than double the permanent offset of temporary construction emissions and the ongoing operational emissions at Compressor Station 206, a significant health and safety benefit to the surrounding area in New Jersey:

- According to National Grid, the conversions that will occur as a result of the Project will displace 900,000 barrels of oil per year and reduce CO_2 emissions by more than 200,000 tons per year. This is the equivalent of removing 500,000 cars from the road. National Grid 3/14/19 Letter to NYSDEC. Specifically, the project will displace the use of No. 4 fuel oil in New York City and Long Island, significantly reducing ozone precursors of nitrogen oxides (NOx), sulfur dioxide (SO_2), and particulate matter (PM). Reducing emissions of these compounds will improve air quality within the Northern New Jersey-New York-Connecticut air quality control region. These emissions reductions and associated public health benefits will be shared across this airshed.
- In addition, assuming the Project is constructed, Transco has committed to implement long term emission reduction projects to more than offset short term construction emissions in Northern New Jersey by providing grants and financial assistance for the purchase of new and more fuel-efficient trucks to eligible owners of existing drayage trucks that transport goods at the New Jersey ports, and additionally to provide financial assistance to New Jersey Transit in order that it may retrofit locomotive engines or electrify its buses. Transco will commit to replacing up to 450 of the worst emitting

drayage trucks around the Port of Newark and replacing them with 2014 or newer models that are virtually zero emissions. The truck replacement program will result in a potential NOx reduction of more than 121 tons annually- a tremendous step forward for Newark and other communities impacted by port emissions. Transco will also commit to upgrade and/or modify for increased efficiency up to 33 of NJ Transit's worst polluting diesel engines and replacing them with vastly cleaner EPA certified Tier 3 engines – resulting in a potential NOx reduction of 1,282 tons annually. A capital investment of millions of dollars, these long-term emissions reduction projects will reduce diesel-related emissions in the immediate region of the Project and will more than offset the air emissions associated with construction and operation of the Project, improving local air quality and benefitting public health. In fact, these voluntary long-term emissions reduction projects, coupled with Transco's retiring of Emission Reduction Credits, would result in more than double the permanent offset of temporary construction emissions and the ongoing operational emissions at Compressor Station 206.

Currently no other Project is proposed that could meet the purpose and need of the Project and enable to conversion of National Grid customers from heavy heating oil to natural gas.

2.0 Project Description

This section describes all proposed Project facilities and components that are the subject of Transco's current application to FERC for a Certificate Public Convenience and Necessity.

Transco, a subsidiary of Williams Partners L.P., is proposing to expand its existing interstate natural gas pipeline system in Pennsylvania and New Jersey and its existing offshore natural gas pipeline system in New Jersey and New York waters. The Project's capacity is fully subscribed by two entities of National Grid: Brooklyn Union Gas Company (d/b/a [doing business as] National Grid NY) and KeySpan Gas East Corporation (d/b/a National Grid), collectively referred to herein as "National Grid."

To provide the incremental 400,000 Dth/d of capacity, Transco plans to expand portions of its system from the existing Compressor Station 195 in York County, Pennsylvania, to the Rockaway Transfer Point in New York State waters. As defined in executed precedent agreements with National Grid, the Rockaway Transfer Point is the interconnection point between Transco's existing Lower New York Bay Lateral (LNYBL) and existing offshore RDL.

A description of the Project facilities is provided below. Note that the mileposts (MPs) given for the onshore pipeline facilities correspond to the existing Transco Mainline and Lower New York Bay Lateral (also referred to as Lower Bay Loop C). The offshore pipeline facility MPs are unique to the Raritan Bay Loop. The starting MP for the Raritan Bay Loop corresponds to MP12.00 of the Lower New York Bay Lateral, and the end MP corresponds to the Rockaway Transfer Point.

Transco proposes to conduct Project construction and restoration activities from fall 2020 through spring 2022. The Project has an anticipated fourth quarter 2021 in-service date.

2.1 Project Facilities and Construction Workspaces

2.1.1 Onshore Pipeline Facilities

Quarryville Loop (Pennsylvania)

- 10.17 miles of 42-inch-diameter pipeline from MP1681.00 near Compressor Station 195 to MP1691.17 co-located with the Transco Mainline in Drumore, East Drumore, and Eden Townships, Lancaster County, Pennsylvania. Once in service, the Quarryville Loop will be referred to as Mainline D.

Madison Loop (New Jersey)

- 3.43 miles of 26-inch-diameter pipeline from Compressor Station 207 at MP8.57 to MP12.00 southwest of the Morgan meter and regulating (M&R) Station on the Lower New York Bay Lateral Loop C in Old Bridge Township and the Borough of Sayreville, Middlesex County, New Jersey. Once in service, the Madison Loop will be referred to as Lower New York Bay Lateral Loop F.

Raritan Bay Loop (New Jersey)

- 0.16 mile of 26-inch-diameter pipeline from MP12.00 west-southwest of the Morgan M&R Station to the Sayreville shoreline at MP12.16. Additionally, a cathodic protection (CP) power cable will be installed from a rectifier located at the existing Transco Morgan M&R Station near MP12.10 and extending to a connecting point on the proposed 26-inch-diameter pipeline at MP12.00. The approximately 545-foot-long power cable will be installed by horizontal directional drill (HDD).

2.1.2 Offshore Pipeline Facilities

Raritan Bay Loop (New Jersey and New York)

- 23.33 miles of 26-inch-diameter pipeline from MP12.16 at the Sayreville shoreline in Middlesex County, New Jersey, to MP35.49 at the Rockaway Transfer Point in the Lower New York Bay, New York, south of the Rockaway Peninsula in Queens County, New York. Additionally, a 1,831-foot-long CP power cable will be installed via HDD from a rectifier at the existing Transco Morgan M&R Station near MP12.10 to an offshore anode sled located approximately 1,200 feet north of MP12.32. Once in service, the Raritan Bay Loop will be referred to as Lower New York Bay Lateral Loop F.

2.1.3 Aboveground Facilities

New Compressor Station 206 (New Jersey)

- Construction of a new 32,000 ISO (International Organization for Standardization) horsepower (hp) compressor station and related ancillary equipment in Franklin Township, Somerset County, New Jersey, with two Solar Mars® 100 (or equivalent) natural-gas-fired, turbine-driven compressors.

Modifications to Existing Compressor Station 200 (Pennsylvania)

- Addition of one electric-motor-driven compressor (21,902 hp) and related ancillary equipment to Transco's existing Compressor Station 200 in East Whiteland Township, Chester County, Pennsylvania.

Modifications to Existing Mainline Valve Facilities (Pennsylvania and New Jersey)

- Existing Valve Site 195-5 – Installation of a new mainline valve, launcher/receiver and tie-in facilities at the start of the Quarryville Loop in Pennsylvania (MP1681.00).
- Existing Valve Site 195-10 – Installation of a new mainline valve, launcher/receiver, and tie-in facilities at the end of the Quarryville Loop in Pennsylvania (MP1691.17).
- Existing Valve Site 200-55 – Installation of a new mainline valve, launcher/receiver, and tie-in facilities at the start of the Madison Loop in New Jersey (MP8.57).

New Mainline Valve Facilities (Pennsylvania and New Jersey)

- Proposed Valve Site 195-8 – Installation of a new intermediate mainline valve for the Quarryville Loop in Pennsylvania (MP1687.86).
- Proposed Valve Site 200-59 – Installation of a new mainline (isolation) valve for the Madison Loop in New Jersey (MP11.90).

2.1.4 Access Roads

Transco will use existing roads and construct new roads to access Project workspaces. Transco will construct temporary access roads as part of the construction phase of the Project and will then restore temporary access roads to pre-construction conditions following Project completion. Transco will maintain new permanent access roads for use when operating the Project.

2.1.5 Additional Temporary Workspace

Typically, pipeline construction requires additional temporary workspace (ATWS) areas at road crossings, wetlands, waterbodies, and agricultural land locations, and in areas where specialized construction techniques are required, such as on steep slopes. The configurations and sizes of ATWS areas are site-specific and vary in accordance with the construction method, crossing type, and other construction needs.

2.1.6 Pipeline Rights-of-Way

To minimize the Project footprint, Transco will co-locate the pipeline facilities with existing Transco facilities to the extent possible. One hundred percent of the Madison Loop will be co-located with (adjacent to and partially overlapping) existing Transco right-of-way (ROW). Permanent ROW adjacent to the existing ROW is proposed where needed to accommodate a 25-foot offset between pipe centerlines. A typical 90-foot-wide construction ROW is proposed for installation of the 26-inch-diameter Madison Loop. In wetland areas, the construction ROW will be reduced to 75 feet, where feasible (in accordance with Occupational Safety and Health Administration regulations [29 Code of Federal Regulations (CFR) 1926.650-1926.652, Subpart P] and the Interstate Natural Gas Association of America's workspace guidelines [INGAA 1999]).

2.1.7 Horizontal Directional Drill

The land disturbance associated with the onshore portion of the Raritan Bay Loop will be confined to the workspace required for the upland HDD entry location for the pipeline and HDD

entry for the CP power cable and the exit location for the onshore only portion of the CP power cable, the HDD tracking wires (monitoring corridor), and the tie-in with the Madison Loop.

Tracking wires for the installation of the Madison, and onshore portion of the onshore Raritan Bay Loop HDD crossings may be placed on the surface along the proposed alignment in the area of the HDD crossings. During construction, the land surface associated with these activities will be used for HDD tracking wires only; therefore, construction impacts will be limited to foot traffic. Transco will not clear these areas (other than minor hand cutting to provide line of sight) during construction, nor conduct vegetative maintenance in these areas during operation of the Project. Alternatively, an HDD guidance system that uses a full inertial navigation system (INS) located close to the drill head may be used. The INS is a tracking aid that uses a computer, motion sensors (accelerometers), and rotation sensors (gyroscopes) to continuously calculate via dead-reckoning the position, orientation, and velocity (direction and speed of movement) of a moving object without the need for external references. Transco may use one or both of these guidance systems for the onshore HDD crossings.

Temporarily disturbed areas that are not part of the permanent ROWs will be restored to pre-construction contours, stabilized, and revegetated in accordance with approved restoration plans following construction. Permanent ROWs will be maintained in an herbaceous state for the operational life of the pipeline (with the exception of forested wetlands).

Table 1-1 summarizes the proposed New Jersey pipeline components by length and county:

Table 1-1
Summary of New Jersey Pipeline Facilities

Facility	Size	Onshore/ Offshore	State	County	Length (miles)
Madison Loop	26-inch-diameter pipeline	Onshore	New Jersey	Middlesex County	3.43
Raritan Bay Loop	26-inch-diameter pipeline	Onshore	New Jersey	Middlesex County	0.16
Raritan Bay Loop	26-inch-diameter pipeline	Offshore	New Jersey	Middlesex County	1.87
Raritan Bay Loop	26-inch-diameter pipeline	Offshore	New Jersey	Monmouth County	4.09

Table 1-2 summarizes the Project components subject to the New Jersey Coastal Zone Management Rules at N.J.A.C. 7:7, which are the subject of this application. Locations are also depicted on the Permit Plans, included as Appendix E of this application.

Table 1-2
New Jersey Coastal Zone Management Areas

Project Component	Approximate Milepost	Proposed Activity	Regulated Area(s)	Surface Water Crossing(s)	Permit Plan Set	Plan Sheet ID
Madison Loop	10.69–10.74	Pipeline Installation (trenching & associated workspace)	Mapped Coastal Wetlands	N/A	Waterfront Development – Madison Loop	4

Table 1-2
New Jersey Coastal Zone Management Areas

Project Component	Approximate Milepost	Proposed Activity	Regulated Area(s)	Surface Water Crossing(s)	Permit Plan Set	Plan Sheet ID
Madison Loop	10.87–10.94	Pipeline Installation (trenching & associated workspace)	Mapped Coastal Wetlands	N/A	Waterfront Development – Madison Loop	4–5
Madison Loop	11.43–11.50	Pipeline Installation (HDD, entry point & associated workspace)	Mapped Coastal Wetlands; Upland Waterfront Development; Waterfront Development below MHW.	N/A	Waterfront Development – Madison Loop	7
Madison Loop	11.50–11.83	Pipeline Installation (HDD – Foot traffic/hand trimming only)	Mapped Coastal Wetlands; Upland Waterfront Development; Waterfront Development below MHW	Unnamed Tributary to Cheesequake Creek, Crossway Creek	Waterfront Development – Madison Loop	7–8
Madison Loop	11.75	Hydrotest Withdrawal and Discharge Location	Mapped Coastal Wetlands; Waterfront Development below MHW	Unnamed Tributary to Cheesequake Creek	Waterfront Development – Madison Loop	8
Madison Loop	11.81–11.85	Pipeline Installation (HDD, exit point & associated workspace)	Mapped Coastal Wetlands; Upland Waterfront Development	N/A	Waterfront Development – Madison Loop	8
Madison Loop	11.85–11.96	Pipeline Installation (trenching & associated workspace)	Mapped Coastal Wetlands; Upland Waterfront Development	N/A	Waterfront Development – Madison Loop	8–9
Raritan Bay Loop	12.08–12.50	Pipeline Installation (HDD)	Upland Waterfront Development; Waterfront Development below MHW	Raritan Bay	Waterfront Development – Raritan Bay Loop	3
Raritan Bay Loop	12.50–14.02 (NJ/NY State Boundary)	Pipeline Installation (trenching and associated workspace)	Waterfront Development below MHW	Raritan Bay	Waterfront Development – Raritan Bay Loop	3

Table 1-2
New Jersey Coastal Zone Management Areas

Project Component	Approximate Milepost	Proposed Activity	Regulated Area(s)	Surface Water Crossing(s)	Permit Plan Set	Plan Sheet ID
Raritan Bay Loop	26.55–30.40	Pipeline Installation (trenching and associated workspace)	Waterfront Development below MHW	Raritan Bay/Ambrose Channel	Waterfront Development – Raritan Bay Loop	4–5
Raritan Bay Loop	30.40	Pipeline Installation (HDD entry pit and associated workspace)	Waterfront Development below MHW	Raritan Bay/Ambrose Channel	Waterfront Development – Raritan Bay Loop	5
Raritan Bay Loop	30.40–30.64 (NJ/NY State Boundary)	Pipeline Installation (HDD)	Waterfront Development below MHW	Raritan Bay/Ambrose Channel	Waterfront Development – Raritan Bay Loop	5

Key
HDD horizontal directional drill
ID identifier
MHW mean high water
N/A not applicable
NJ New Jersey
NY New York

2.2 Construction Methods

2.2.1 Madison Loop

This section describes the general procedures for the onshore pipeline construction of the Madison Loop. Transco will use conventional techniques to ensure safe and reliable transmission facilities, consistent with all applicable safety standards and regulations.

Conventional Pipeline Sections:
Track-mounted excavators will excavate the trench for the pipeline. Generally, the bottom of the trench will be approximately 14 to 24 inches wider than the diameter of the pipe, depending on the nature of the substrate. The depth will vary, as required, to accommodate the minimum cover requirements from the top of the pipeline, in accordance with U.S. Department of Transportation (USDOT) regulations pursuant to the Natural Gas Pipeline Safety Act of 1968.

Except as depicted on site-specific plans or as required by permit conditions, the depth of cover for the pipeline will comply with Transco's standard minimum specifications, which are consistent with or exceed federal regulations. Transco typically will install the pipeline with a minimum of 36 inches of cover, except where consolidated rock prevents this depth of cover.

Horizontal Directional Drill

A portion of pipe will be installed using the HDD method. HDD will be used to install the pipeline crossing in three steps: drilling a pilot hole, opening or reaming the hole, and pulling back the HDD pipe. The HDD method of drilling a hole significantly below conventional pipeline depth and pulling the pipe through the pre-drilled hole allows trenchless construction across an area.

The HDD feasibility summary for the onshore proposed HDD within the New Jersey coastal zone is provided in "26-inch Northeast Supply Enhancement Project, Madison Loop – Lockwood marina HDD Feasibility Review," prepared by GeoEngineers, and dated May 2, 2018 (provided as an enclosure with this application submittal). The Onshore HDD Contingency Plan (see Appendix J) outlines the measures that Transco will take in the event that there is a failure during the pilot hole drilling, hole reaming, swabbing, or pullback process. In the event that one of these elements of the HDD process is unsuccessful, Transco will review an alternative crossing profile or location for the HDD.

To prepare for initiating the pilot hole operation, the entry/exit pits will be excavated and the excavated material deposited next to the entry/exit pits. HDD equipment will then be set up to drill a pilot hole through to the pre-excavated exit pit. The HDD entry and exit pits will collect any drilling fluid released in the containment pit at the end of the pilot hole phase. Through the reaming and pullback stages, drilling fluid will be recycled during HDD operations.

The entry side of the drill workspace usually consists of the drill rig and entry hole, control cab, drill string pipe storage, site office and storage trailers, power generators, bentonite storage, bentonite mixing equipment, pump, cuttings separation equipment, cutting return/settlement pit, water trucks and water storage, and the heavy construction equipment necessary to support the operation.

The exit side consists of the exit hole and containment pit, cuttings return/settlement pit, cuttings separation and reclamation equipment, drill string pipe storage, and heavy construction equipment necessary to support the operation. In addition to the drill operations in the exit side workspace, ATWS adjacent to the construction ROW will be needed to provide a straight corridor for handling pipe at HDD locations where the ROW changes direction. This allows the pipe to be prefabricated into one or more sections in preparation for the pull-back operation. Once assembled, the pipe is placed on rollers so it can be conveyed into the drill hole.

To facilitate HDD, an electric guidewire coil (tracking wire) typically is placed along the ground surface between each HDD entry and exit point, where possible, and is used to track the location of the down-hole drilling equipment and to determine steering inputs when advancing the pilot bore. Wireline guidance systems for HDD crossings typically require two guide wires that parallel the centerline of an installation, with a variable spacing or offset on each side of the centerline, depending on the depth of the HDD installation. Transco will place these wires prior to beginning the HDD and remove them once the HDD is complete. The wires will be laid and removed with the assistance of flaggers. The wires are small and can be placed across active roadways without disruption to or from traffic. The HDD tracking wires will be laid using foot traffic only and would not require any excavation and only limited hand trimming of vegetation.

Alternatively, an HDD guidance system that uses a full inertial navigation system located close to the drill head may be used. The inertial navigation system is a tracking aid that uses a computer, motion sensors (accelerometers), and rotation sensors (gyroscopes) to continuously calculate via dead-reckoning the position, orientation, and velocity (direction and speed of movement) of a moving object without the need for external references. Transco may use one or both of these guidance systems for the onshore HDD crossings.

Following completion of the pilot hole, reaming tools are used to enlarge the hole to accommodate the pipe diameter that will be installed. The reaming tools are attached to the drill string at the exit pit and simultaneously rotated and drawn back to enlarge the pilot hole incrementally. During this process, drilling mud consisting of bentonite clay and water is continuously pumped into the hole to remove cuttings and maintain the integrity of the hole. Multiple reaming passes may be required to achieve the desired hole diameter for the pipeline. For both onshore and offshore HDD methods, Transco will use water-based drilling fluids and will not use petroleum-based drilling fluid additives. To solicit the approval of applicable state permitting authorities, Transco will also provide information on all HDD fluid additives prior to use.

After the reaming operations are complete, a swab pass will be completed to help condition the enlarged HDD hole and to evaluate whether it is ready for the pipeline (i.e., the "HDD pipe string") to be installed. When the hole has been sufficiently enlarged, a prefabricated segment of pipe is attached behind the reaming tool on the exit side and pulled back through the drill hole toward the drill rig. The pipe segment will be protected from damage during pullback by the abrasion resistant overlay coating on the pipe.

2.2.2 Raritan Bay Loop

Transco is proposing to construct a new 26-inch-diameter pipeline loop beginning at MP12.00 of the proposed Madison Loop, west-southwest of the Morgan M&R Station, on the Lower Bay Loop C in Middlesex County, New Jersey. This new pipeline loop will include a 0.16-mile onshore component, including a portion of a land-to-water HDD, extending from MP12.00 southwest of the Morgan M&R Station to the Sayreville shoreline in Middlesex County, New Jersey (MP12.16).

The offshore Raritan Bay Loop will extend from the Sayreville shoreline (MP12.16), with a land-to-water HDD, approximately 23.33 miles across Raritan Bay and Lower New York Bay to the Rockaway Transfer Point. Approximately 5.95 miles of the offshore Raritan Bay Loop route crosses New Jersey waters, while the remaining 17.38 miles cross New York waters. Transco considered a variety of offshore trenching and installation tools and techniques for installation of the Raritan Bay Loop. Transco has selected a suite of offshore construction methods, including pre-lay clamshell, post-lay jet trencher, and HDD, for the Raritan Bay Loop to complement the site-specific conditions located along the pipeline route, with particular focus on installation efficiency, minimization of sediment disturbance in conjunction with site-specific burial depth requirements, and future success of facility operations (see Table 2-1 for a breakdown of construction methods by MP and Table 2-2 for a summary of the constraints and requirements for use associated with each tool).

Each construction method included in Table 2-1 is described in detail below, along with a discussion of the selection process for the application of the three offshore installation techniques along the various portions of the Raritan Bay Loop. The construction techniques described in detail below have been selected to ensure safe and reliable transmission facilities, consistent with applicable U.S. Army Corps of Engineers (USACE), FERC, U.S. Coast Guard (USCG), and USDOT specifications, safety standards, and regulations in place at the time of construction. The entire offshore portion of the Project constitutes a waterbody crossing.

Table 2-1
Offshore Raritan Bay Loop Installation and Backfill Methods, New Jersey

Milepost Start	Milepost End	Proposed Trenching Method[d]	Proposed Backfill Method	Total Estimated Volume (cubic yards)
CP HDD Pit Excavation ~1,200 feet north of 12.30		Clamshell Dredge	Clamshell Dredge	461
12.10	12.30	HDD (CP Power Cable)	N/A	N/A
MSA HDD Pit Excavation at 12.50		Clamshell Dredge	Clamshell Dredge	9,931
12.20	12.50	HDD (MSA)	N/A	N/A
12.50	14.02	Clamshell Dredge	Clamshell Dredge	63,868
Neptune Cable Crossing at 13.88		Hand Jet	Hand Jet[a]	1,676
26.55	29.52	Jet trencher	Clamshell Dredge[b]	51,548
AC HDD Pit Excavation at 29.52		Clamshell Dredge	Clamshell Dredge	14,050
29.52	30.40	HDD (AC)	N/A	N/A
AC HDD Pit Excavation at 30.40		Clamshell Dredge	Clamshell Dredge	32,450
30.40	30.64	Jet trencher	Clamshell Dredge[b]	4,187
			Total Volume	178,171[c]

Notes:

[a] If the hand jet or mass flow excavator is unable to adequately backfill the area using the sediments previously excavated from the trench, or if supplemental backfill is required, then a clamshell dredge will be used to backfill.

[b] Sediment loss from areas installed via jet trencher is expected to be minimal (maximum of 5% trench volume loss). However, if supplemental backfill is required following pipeline installation/final pass, a clamshell dredge will be used to backfill.

[c] Total may not sum exactly due to rounding.

[d] Clamshell bucket to be equipped with an environmental bucket for trenching activities.

Key:

AC = Ambrose Channel
CP = Cathodic protection
HDD = Horizontal directional drill
MSA = Morgan Shore Approach
N/A = Not applicable

Table 2-2
Subsea Pipeline Installation Methods

Consideration	Clamshell Dredger[a, b]	Jet Trencher	Horizontal Directional Drill	Comment
Application Pre-Lay or Post-Lay[c]	Pre- and Post-Lay	Post-Lay Only	NA	None
Water Depth Limitation(s)	None	Draft limitation for vessel needed to deploy and recover tool and depth required to avoid navigational hazard associated with post-lay methodology.	None	None
Substrate Limitations	None	Soils containing high peat content	Soils containing significant quantities of gravels, cobbles, and/or boulders; very soft or very loose soil conditions; highly fractured or inconsistent bedrock formations; solution cavities (karst formation)	None
Typical Equipment Size (length x width x height)	20–50 cubic foot bucket	24 x 18 x 10 feet	90 x 10 feet	Actual equipment size, not the vessel it is deployed from
Tool Deployment Methodology	Clamshell dredge mounted on barge, 160 x 60 feet	Jet trencher deployed from vessel, 250 x 75 feet	Drill rig mounted on jack up barge 190 x 140 feet and supported by 11 piles or mounted on temporary fixed platform composed of three smaller platforms, each 25 x 60 feet, supported by 18 piles and 4 reaction piles. Approximately 10 to 12 piles needed for goal posts to support the HDD string at each HDD pit.[d]	None
Material Deposit Location	Disposed of upland	Majority of material remains in trench with 5% or less of trench material dispersed.	Disposed of upland	None
Estimated Installation Speed	Maximum of 417 cubic yards/hour	656 ft/hr	4 ft/hr[e]	Jet trencher: trench speed is an average over multiple passes
Trench Top Width (feet)	59 - 91	9	150 (MSA HDD exit pit) 137/235 (Ambrose Channel HDD pits)	Number presented for HDD is maximum width of HDD pit.
Suspended Sediment Plume – Upper Water Column	small to medium[f]	small	small to medium[f]	None

Table 2-2
Subsea Pipeline Installation Methods

Consideration	Clamshell Dredger[a, b]	Jet Trencher	Horizontal Directional Drill	Comment
Suspended Sediment Plume – Lower Water Column	small to medium[f]	medium	Small to medium[f,g]	
Extent of Sedimentation	small to medium	medium	small to medium	Clamshell: does not include placement of material as sedimentation. Extent may be variable depending on barge dewatering requirements.

Notes:

[a] Clamshell dredger equipment based on information received from New York Bay Dredgers.

[b] Actual trench will be excavated for post-lay operation. Pre-lay information is for comparison only.

[c] Pre-lay installation methods require the trench is first excavated and the pipeline string is subsequently laid directly into the excavated trench. Post-lay installation methods require laying the pipeline on the seafloor prior to lowering the pipeline into the trench.

[d] For pile descriptions, see Table 2-3.

[e] Drill rate is based upon combined average duration for the Morgan Shore Approach and Ambrose Channel HDDs.

[f] Medium suspended sediment plumes assume the use of a conventional clamshell bucket for backfilling activities. The use of an environmental bucket with and without barge overflow is expected to result in low suspended sediment plumes in the upper and lower water column.

[g] Sedimentation associated with HDD activities is related to the excavation and backfilling of the HDD pits via clamshell.

Key:

ft/hr feet per hour

HDD horizontal directional drill

MSA Morgan Shore Approach

Clamshell Dredge with Environmental Bucket

As described in Table 2-1, above, Transco will use a clamshell dredge with an environmental bucket to perform the pre-lay trenching between MP12.50 and MP14.02. This method will also be used to excavate the three offshore HDD pits in New Jersey (MP12.50, MP29.52, and MP30.40). Pre-lay trenching refers to an installation technique whereby the trench is first excavated, then the pipeline string is laid directly into the excavated trench. Transco has elected to use the clamshell dredge method for the HDD pits, as it is the tool best suited to excavate the pits to the necessary dimensions. The rate of excavation of the clamshell dredge is slower than that of the jet trencher, the alternative subsea trenching tool that Transco will use for trench excavation along the Raritan Bay Loop. Therefore, to minimize the duration of the in-water construction activities and disturbances, Transco does not consider it feasible to use a clamshell dredge to excavate the entirety of the offshore trench. However, suspended sediment plumes generated when clamshell dredging with an environmental bucket are expected to be smaller than those generated during jet trenching, thereby limiting the application of the jet trencher to

use in specific tidal and sediment compositions, including those found from MP12.50 to MP14.02 (see N.J.A.C. 7:7-16.3 for further discussion of water quality impacts that are relevant to the Project). Additionally, there are safety and navigational concerns in the ultra-shallow waters between MP12.50 and MP14.02 (depths range from 7 to 12 feet above mean lower low water [MLLW]), as further described below. For these reasons, Transco abandoned the jet trencher as a potential trenching technique in this area and has elected to use the clamshell dredge for trenching along this portion of the Raritan Bay Loop.

Transco consulted with the USCG Harbor Safety Navigation and Operations Committee Energy Subcommittee, and the USACE regarding user conflicts and regulatory requirements during the siting and design stages of the offshore route. As described in Table 2-2, above, and in the narrative below, the jet trencher is a post-lay installation method that requires laying the pipeline on the seafloor prior to lowering the pipeline into the fluidized sediments within the trench. In the shallow water depths from MP12.50 to MP14.02, laying the pipeline on the seafloor prior to lowering it into the underlying seabed for any length of time would create a potential navigational safety hazard for recreational boaters traversing the area. Given this navigational safety concern, a pre-lay installation technique, such as the clamshell dredge, is the preferred construction alternative between MP12.50 and MP14.02.

Transco has analyzed the geotechnical data for sediment samples collected along the proposed route to assess whether adjustments to the trench side slopes would be possible as a means of reducing the areas of disturbance. Through this analysis, Transco has determined that areas to be trenched using a clamshell dredge with an environmental bucket (including the anode sled installation and Neptune Cable crossings) are expected to have side slopes of 3H:1V (horizontal:vertical). However, to limit the duration of in-water activities, balance schedule constraints, and avoid navigational hazards in the shallow waters, Transco plans to lay the pipe strings for MP12.5 to MP14.02 and the Morgan Shore Approach HDD string adjacent to one another in the excavated trench between MP12.50 and MP14.02 prior to pullback of the HDD string. Therefore, the base of the trench from MP12.50 to MP14.02 must be 7 feet wide to accommodate both pipe strings. Therefore, the area of disturbance proposed for the areas excavated by a clamshell dredge represent the smallest practicable area of disturbance.

Transco intends to dispose of all dredged material upland, see N.J.A.C. 7:7-12.9 for further discussion of dredge material disposal. However, Transco is in the process of obtaining agency comments and the necessary approvals from the USACE regarding offshore disposal sites. If USACE provides authorization for Transco to utilize the Historic Area Remediation Site (HARS) in the future, Transco would seek to modify the NJDEP permit accordingly, with guidance provided by the NJDEP DLUR.

Transco conducted the sampling campaign for the characterization of dredge material for an upland disposal facility in October and November 2018. Upon completion, results of this effort were provided to Donjon Marine Co. Inc. and Clean Earth, Inc. On December 27, 2018 Donjon Marine Co. Inc. provided a letter of acceptance for the expected dredged materials from the construction of the Raritan Bay Loop as part of the NESE Project. In addition, on January 22, 2019 Clean Earth, Inc. provided a letter confirming their ability to accept the expected dredged materials from construction of the Raritan Bay Loop and part of the NESE Project. These facility approvals are conditional upon final evaluation of the material after it has been dredged. See Appendix K for the Sediment Sampling and Analysis Plan (SSAP) specific to this sampling

campaign, Appendix D-4 for results of the sampling and analysis effort, and Appendix H for copies of correspondence with these facilities.

Transco's survey campaign to characterize the chemical composition of offshore sediments planned for disposal at the HARS was completed in May 2018, and laboratory analysis required as part of Transco's for a permit under Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 to dispose of materials at the HARS was completed in April 2019.

Based on communications with the USACE, Transco understands that the Project has reached a technical milestone with an indication that the dredged material proposed for disposal at the HARS passed a technical review. On October 17, 2019, the USACE issued a Supplemental Public Notice for the Project with the results of the chemical, physical, and biological testing of the offshore sediments planned for disposal at the HARS with a public comment period ending November 18, 2019. On November 20, 2019 the USACE issued an extension on the public comment period through January 17, 2020. Transco anticipates issuance of the Section 103 permit by the USACE soon thereafter. As stated above, in the event that USACE provides authorization for Transco to utilize the HARS, Transco would seek to modify the NJDEP permit accordingly, with guidance provided by the NJDEP DLUR.

Jet Trencher

Transco will use a jet trencher to lower the pipeline to the depths needed for the Project in New Jersey between MP26.55 and MP29.52, and MP30.40 and MP30.64. Transco has elected to use the jet trencher along these portions of the Raritan Bay Loop as this installation tool reduces the total area and volume of sediment disturbance and installs the pipe more quickly than a clamshell dredge, thereby reducing the duration of in-water activities, as well as air emissions in comparison with clamshell dredging.

The jet trencher is a bottom-crawling remotely operated vehicle with highly precise controls, multiple video cameras, and operating sensors to allow operations in challenging weather conditions. In this method, once the pipeline has been placed on the seafloor, the hydraulically powered remotely operated vehicle is deployed overboard from the anchored Project vessel and straddles the pipeline. An armored umbilical provides power, hydraulics, and communications from the Project vessel to the subsea jet trencher. The umbilical allows the jet trencher to traverse laterally from the Project vessel (depending on weather conditions and currents). The jet trencher is equipped with two retractable cutting swords that extend beneath the seafloor, one on each side of the pipeline. High-pressure seawater is pumped through a series of small-diameter nozzles located on the front/forward side of each cutting sword to loosen the soils. Larger-diameter nozzles located on the rear/trailing side of each cutting sword expel low pressure, high-volume seawater that fluidizes the sediments, emulsifying the seabed to facilitate lowering of the pipeline. This process allows the pipeline to be lowered under its own weight while eliminating the need to directly remove and/or displace the soils. Because a trench is not excavated, a minimal amount of material is expected to be lost (maximum 5%). In the event that backfill is required (based on post-construction bathymetric surveys), a separate Project vessel will provide the backfill material needed to meet the Project's requirements. Based on the existing sediment characteristics along the Raritan Bay Loop, it is expected that two passes by the jet trencher may be needed to achieve the depths required for the Project.

Hand Jets/Mass Flow Excavator

To avoid the risk of damaging existing infrastructure that is associated with other dredging methods, divers using hand jets will expose existing subsea infrastructure at active cable crossings (i.e., the Neptune Cable crossing at MP13.88). Transco will also use hand jetting to install the pipe at other cable crossings if it is determined that any of the additional cables cannot be cut. Transco may also use hand-jetting and/or a crane-operated mass flow excavator (i.e., a small-scale submersible suction pump) to excavate the location where the tie-in skid and spools will be placed to connect the Raritan Bay Loop to the subsea manifold. Material that accumulates adjacent to these excavated areas may be recovered for backfill.

Horizontal Directional Drilling

In addition to the pipeline installation techniques discussed above, Transco will use HDD in New Jersey offshore areas with construction constraints, including the Ambrose Channel HDD and the Morgan Shore Approach HDD. Horizontal directional drill by design is a technically and environmentally feasible avoidance method, but only when employed under appropriate site-specific conditions that allow construction and do not cause HDD activities to result in increased impacts. Land-to-water and water-to-water HDDs require a fixed work area, excavation for entry and exit pits at fixed locations, fixed installation equipment, sediment and soil disturbance, and, most importantly, suitable geologic conditions indicating that the local substrate will support the installation technology successfully. Considerations during the design of the Morgan Shore Approach HDD and the Ambrose Channel crossing included, but were not limited to, site and surface conditions, workspace and access (logistics) considerations, HDD geometry, subsurface conditions (i.e., evaluation of geology/geotechnical conditions), installation stress analysis, operating stress analysis, hydraulic fracture and inadvertent returns analysis, and design of entry/exit pits.

The Morgan Shore Approach and Ambrose Channel crossing drill profiles have been designed according to industry best management practices (BMPs), including evaluating subsurface conditions, substrate characterization, and approximate HDD geometry in order to maximize chances for drill success and minimize the installation and operating stress on the pipe. As designed, the Ambrose Channel crossing HDD extends approximately 840 feet beyond the Ambrose Channel to the west and approximately 650 feet beyond the Ambrose Channel to the east, for a total of approximately 4,643 horizontal feet (0.88 mile). This HDD profile geometry has been determined to be the most suitable for this crossing location while following the BMPs of the HDD industry, minimizing the risks associated with the installation and the stresses imposed on the pipe. The approach of expanding the areas for HDD installation was determined to be infeasible early in the evaluation of installation methods, not only from a construction feasibility standpoint, but also (and more importantly) due to the marked increase in duration of in-water construction and additional ecosystem impacts this would cause, including those associated with pile installation and removal to support HDD operations.

The Morgan Shore Approach and Ambrose Channel HDDs will be installed using the HDD method described for the Madison Loop, above, with additional offshore methods, as described below.

In preparation for initiating the pilot hole operation, a clamshell barge will excavate a pit at the offshore exit point location. This subsea pit serves as a container for both drilling fluid and borehole cuttings, and it affords a smooth, angled transition (4 to 6 degrees) between the drill exit and the seafloor. Transco has calculated an estimated volume of drilling fluid and cuttings that would be contained within the offshore HDD pits based on a conceptual drill plan and corresponding penetration rates and pump rates expected during construction and has determined the excavation dimensions required for the equivalent volume, plus a contingency to ensure that all materials are contained within the HDD pits. The Morgan Shore Approach HDD pit will be able to accommodate approximately 9,931 cubic yards of material, which includes a 30% contingency volume. Turbidity controls at the HDD pits will include the use of casing installed at all offshore HDD pits to promote the return of drilling fluids and the use of an environmental bucket, which, as described in the sediment modeling discussion below, will effectively limit suspended sediment plumes resulting from clamshell dredging activities (see N.J.A.C. 7:7-16.3 for further discussion of water quality impacts associated with the Project).

While the pilot hole operation is under way, a marine support barge will be used to install goal posts between the exit point and the anticipated offshore location where a temporary fixed platform will be staged during the HDD activities. The marine support barge will most likely use spuds that are placed into the seafloor for increased stability when working with heavy equipment in marine environments. The marine support barge and other support vessels (i.e., tugs and equipment barges) will assist with goal post installation and drill activities.

The goal posts, which will likely consist of hollow steel piles 14 to 16 inches in diameter, will likely be installed using a vibratory device unless gravity/pressure is sufficient to sink the piles to a suitable depth in the given substrate. Goal posts are required to support the downhole drill pipe string and casings to be used and to extend between the HDD equipment on the temporary fixed platform and the seafloor during the HDD installation process. During goal post installation, dolphin or fender piles will also be installed adjacent to the final position of the temporary fixed platform (positioned during reaming operations) to prevent the support vessel from contacting the temporary fixed platform support piles. Transco's pile-driving installation plan is described further below and provided in Table 2-3, below. Once the borehole is complete, the inclined drill pipe string will be saddled through the goal post supports to transition the drill pipe string from the offshore exit point to the deck of the temporary fixed platform for reaming activities.

The pipelay barge will move into position to support connecting the offshore end of the drill pipe string to the HDD pipe pullhead. Once this connection is made, the pipelay barge will assist in aligning the pipe's angle to the drilled hole for easy entry of the HDD pipe string to the prepared HDD hole (the marine support barge may assist in this activity). The HDD rig stationed onshore will pull the HDD pipeline section through the hole to the onshore HDD entry point. During HDD pipe installation, the temporary fixed platform and other support vessels will assist in aligning the pipeline string as it is pulled into the HDD hole. The pipe segment will be protected while on the seabed through proper anchor placement and lighted buoys that mark the pipe position. During pullback, the pipeline string will be protected through the utilization of an abrasion-resistant coating.

HDD for the Ambrose Channel crossing will be similar to the Morgan Shore Approach HDD, except Transco will use the intersect method to cross the Ambrose Channel, and drilling equipment will be staged on and operated from a liftboat at both the east and west HDD pits. The

intersect method utilizes two drill rigs—a primary and a secondary rig—drilling from opposite ends of the HDD path toward the middle. The primary and secondary rigs operate simultaneously, drilling the pilot borehole toward a predetermined intersect location using a downhole pilot hole survey system. Similar to the methods described above for the Morgan Shore Approach, the dredge will excavate pits at the entry point and the exit point and then a vibratory device will be used to install piles ("goal posts") on opposite sides of the Ambrose Channel. Following goal post installation, liftboats, dolphin/fender piles, and a casing will be set up at both HDD pits extending up to the deck of the drill barge. The casing will be removed before pipe string pullback.

Pile Installation and Removal

The Project will include the installation and removal of 163 piles (135 in New Jersey waters), some of which have been introduced above. The pile type, diameter, quantity, and installation purpose are shown in Table 2-3, below. See the Waterfront Development Permit Plans for the Raritan Bay Loop sheets 3, 5, and 8 for a depiction of the pile configuration (Appendix E). The goal posts and fender piles will remain in the offshore environment only for the duration of the HDD portion of offshore construction (approximately 5 to 10 weeks, throughout the HDD activities). The temporary fixed platform piles will remain in the offshore environment only for the duration of the Morgan Shore Approach HDD. All other piles would remain in the offshore environment only for the duration of each related construction activity.

Diesel impact hammers and vibratory devices are commonly used for in-water pile installation and removal. Impact pile drivers are piston-type drivers that use various means to lift a piston to a desired height and drop the piston against the head of the pile to drive it into the substrate (ICF Jones & Stokes, and Illingworth and Rodkin, Inc. 2009). Diesel impact hammers will be used to install approximately 30 steel piles, as outlined in Table 2-3. The vibratory device is considered a continuous low-frequency noise source because it continuously vibrates the pile into the substrate until the desired depth is reached. A vibratory device uses spinning counterweights, causing the pile to vibrate at a high speed. The vibrating pile causes the soil underneath it to "liquefy" and allow the pile to move easily into or out of the sediment. Vibratory devices will be used to install and remove 135 steel pipe piles, as outlined in Table 2-3.

2.3 Sequence of Construction Activities

2.3.1 Madison Loop

Conventional Pipeline Trenching

Following pre-construction surveying and staking activities, Transco will clear and grade the construction corridor to remove vegetation, brush, trees, roots, and other obstructions such as large rocks and stumps. Crews will also grade the ROW, where necessary, to create a level workspace safe for construction work. Transco will install temporary fences and gates, as needed. As appropriate, the clearing and grading operations will incorporate special construction procedures to minimize the amount of vegetation removed from stream banks and slopes, prevent undue disturbance of the soil profile, restore the original contours of the natural ground, and prevent topsoil erosion. Following establishment and clearing of workspace boundaries, Transco will install temporary soil erosion- and sediment-control measures in accordance with the approved Soil Erosion and Sediment Control Plans.

Track-mounted excavators will excavate the trench for the pipeline. Generally, the bottom of the trench will be approximately 14 to 24 inches wider than the diameter of the pipe, depending on the nature of the substrate. The depth will vary, as required, to provide at least sufficient depth for the minimum cover requirements from the top of the pipeline, in accordance with USDOT regulations pursuant to the Natural Gas Pipeline Safety Act of 1968. Except as depicted on site-specific plans or as required by permit conditions, the depth of cover for the pipeline will comply with Transco's standard minimum specifications, which are consistent with or exceed federal regulations. Transco typically will install the pipeline with a minimum of 36 inches of cover, except where consolidated rock prevents this depth of cover.

Transco will procure factory-coated steel pipe in nominal 40-foot and 60-foot lengths. (The beveled ends will be left uncoated for welding.) Stringing operations involve moving pipe sections into position along the prepared ROW. Typically, Transco will use trucks to deliver the pipe to approved construction workspaces. Transco will string individual joints of pipe along the ROW parallel to the centerline and arrange them so they are easily accessible by construction personnel. The amount of pipe necessary for waterbody or road crossings typically will be stockpiled in contractor yards or other approved workspace areas near each crossing.

Once the pipe has been welded together, coated, and inspected, it will be lowered into the trench. If the bottom of the trench is rocky, Transco will protect the pipe by using sandbags or support pillows at designated intervals along the trench. Trench dewatering may be necessary in certain locations to prevent the pipe from floating and to allow certain limited activities to be performed in the trench. Transco will dewater trenches in accordance with applicable permits and BMPs, included in Transco's Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan (Transco Plan) and Project-specific Wetland and Waterbody Construction and Mitigation Procedures (Transco Procedures).

At selected locations (e.g., waterbody crossings, road crossings, terrain changes along the pipeline), the pipe will be lowered into the trench in segments. Welders will then weld the segments together or tie them in prior to backfilling. A crew will be assigned to make these tie-ins at designated locations ahead of the backfill operations.

After the pipe is lowered into the trench, the trench will be backfilled. Backfill usually consists of the material originally excavated from the trench; however, in some cases, additional backfill from other sources may be required. Transco will use a conventional backfill and/or a padding machine, or an equivalent backfilling process, depending on the composition of the soil, that will prevent rock material mixed with subsoil from making direct contact with the pipe. Transco anticipates that padding operations will provide 6 inches of screened subsoil cover below and along the sides of the pipe. Once the pipe is adequately protected with screened subsoil, conventional backfilling operations will occur. In areas where topsoil has been segregated, the subsoil will be placed in the trench first, and then the topsoil will be placed over the subsoil. Backfilling will be to approximate grade; however, Transco may place a soil crown above the trench to accommodate any future soil settlement.

Table 2-3
Pile Driving Summary for the Raritan Bay Loop[a,b]

Milepost	Site	Pile Type	Purpose	Diameter (in.)	Quantity	Permanent / Temporary	Installation Method	Installation		Removal	
								Driving Time Per Pile[c]	Duration (days)[d]	Removal Time	Duration (days)[d]
12.59	Morgan Shore Approach HDD	Platform Piles (for temporary fixed platform)	Temporary fixed platform for the Morgan Shore Approach HDD in lieu of a jack up barge.	36	18	T	Vibratory & Diesel Impact Hammer	V -15 Min/Pile I - 52-62 Min / Pile [e]	4.5	30 min/pile	3
12.59	Morgan Shore Approach HDD	Platform Reaction Piles	Provide additional lateral capacity for pipeline pulling winch.	36	4	T	Vibratory & Diesel Impact Hammer	V -15 Min/Pile I - 52-62 Min / Pile [e]	2	30 min/pile	
12.59	Morgan Shore Approach HDD	Support Barge Fender Piles	To tie up and breast support barge alongside HDD operations.	36-48	4	T	Vibratory Hammer	V-15 Min/Pile	2	15 min/pile	
12.59	Morgan Shore Approach HDD	Water Barge Fender Piles	To tie up and breast water barge alongside HDD operations.	36-48	4	T	Vibratory Hammer	V-15 Min/Pile		15 min/pile	
12.59	Morgan Shore Approach HDD	HDD String Goal Posts	Support HDD string.	24	10	T	Vibratory Hammer	V-15 Min/Pile	3	5 min/pile	3
13.84	Neptune Power Cable Crossing (MP13.84)	Sleeper Vertical Pile	Provide mechanical protection to ensure there is separation between the Neptune Power cable and the pipeline during shallow water pipe-laying activities.	10	8	T	Vibratory Hammer	V-15 Min/Pile	2	15 min/pile	1.5
14.5 to 16.5	MP14.5 to MP16.5	Morgan Shore Pull Vertical Guide Piles	Ensures pipeline stays within pipeline corridor during surface tow between MP14.5 to MP16.5.	24	22	T	Vibratory Hammer	V-15 Min/Pile	5	15 min/pile	1.5
28.0 to 29.36	MP28.0 to MP29.36	Pipelay Barge Mooring Pile	Assist the pipelay barge with mooring in the vicinity of the Ambrose Shipping Channel.	34	12	T	Vibratory Hammer	V-15 Min/Pile	3	30 min/pile	2
29.4	Ambrose Channel HDD West Side	W750 Side Piles	Landing of small barges/vessels alongside prior to fender piles being installed.	36	3	T	Vibratory Hammer	V-15 Min/Pile	1.5	15 min/pile	0.5
29.4	Ambrose	Reaction Frame	Provide additional	36-60	8	T	Vibratory & Diesel	V -15 Min/Pile	4	30 min/pile	0.5

Table 2-3
Pile Driving Summary for the Raritan Bay Loop[a,b]

Milepost	Site	Pile Type	Purpose	Diameter (in.)	Quantity	Permanent / Temporary	Installation Method	Installation		Removal	
								Driving Time Per Pile[c]	Duration (days)[d]	Removal Time	Duration (days)[d]
	Channel HDD West Side	Piles	lateral capacity for HDD pipeline pull.				Impact Hammer	I- 38 Min / Pile [ef]			
29.4	Ambrose Channel HDD West Side	Support Barge Fender Piles	To tie up and breast support barge alongside HDD operations.	36-48	4	T	Vibratory Hammer	V-15 Min/Pile	1.5	15 min/pile	1
29.4	Ambrose Channel HDD West Side	Water Barge Fender Piles	To tie up and breast water barge alongside HDD operations.	36-48	4	T	Vibratory Hammer	V-15 Min/Pile		15 min/pile	
29.4	Ambrose Channel HDD West Side	HDD String Goal Posts	Support HDD string.	24	12	T	Vibratory Hammer	V-15 Min/Pile	1.5	5 min/pile	2
30.48	Ambrose Channel HDD East Side	Ambrose East Vertical Stabilization Piles	Ensures HDD string is secured while awaiting pullback.	24	22	T	Vibratory Hammer	V -15 Min/Pile	5	15 min/pile	0.5
30.48	Ambrose Channel HDD East Side	W751 Side Piles	Landing of small barges/vessels alongside prior to fender piles being installed.	36	3	T	Vibratory Hammer	V-15 Min/Pile	0.5	15 min/pile	0.5
30.48	Ambrose Channel HDD East Side	Support Barge Fender Piles	To tie up and breast support barge alongside HDD operations.	36-48	4	T	Vibratory Hammer	V-15 Min/Pile	1	15 min/pile	1
30.48	Ambrose Channel HDD East Side	Water Barge Fender Piles	To tie up and breast water barge alongside HDD operations.	36-48	4	T	Vibratory Hammer	V-15 Min/Pile		15 min/pile	
30.48	Ambrose Channel HDD East Side	HDD Drill String Goal Posts	Support HDD string.	24	10	T	Vibratory Hammer	V-15 Min/Pile	1.5	5 min/pile	2
30.48	Ambrose Channel HDD East Side	Pipelay Barge Mooring Pile	Assist the pipelay barge with mooring when recovering the HDD tail string at Ambrose East.	60	1	T	Vibratory Hammer	V-15 Min/Pile[f]	0.5	15 min/pile	1
34.5 to 35.04	MP34.5 to MP35.04	Pipelay Barge Mooring Pile	Assist the pipelay barge with mooring in the vicinity of the Rockaway Manifold.	34	4	T	Vibratory & Diesel Impact Hammer	V -15 Min/Pile I- 52 Min/ Pile [e]	3	15 min/pile	2
35.04	Neptune Power Cable Crossing	Crossing Pile	To ensure temporary stability	10	2	T	Vibratory Hammer	V-15 Min/Pile	1	15 min/pile	1

Table 2-3
Pile Driving Summary for the Raritan Bay Loop[a,b]

Milepost	Site	Pile Type	Purpose	Diameter (in.)	Quantity	Permanent / Temporary	Installation Method	Installation		Removal	
								Driving Time Per Pile[c]	Duration (days)[d]	Removal Time	Duration (days)[d]
	(MP35.04)		of the pipeline at the crossing location.								

Notes:
[a] Noise propagation modeling accounts for actual pile-driving and removal durations.
[b] Jack up barge legs, barge spuds, and similar structures are assumed not to be considered piles and are not included in the above quantities.
[c] For vibratory hammer for pile sizes 10 to 48-inches, handling time (no in-water noise production) ranges from 15 to 45 minutes.
[d] Duration (days) includes pile driving/removal as well as additional activities associated with installation/removal.
[e] Assume approximately 30 minutes handling time (no in-water noise production) between each impact hammer duration (unless specified differently in notes).
[f] For vibratory hammer periods for 60-inch piles, the minimum handling time is 1 hour and 45 minutes.

Key:
HDD = horizontal directional drill
in. = inches
I = impact
min = minutes
MP = milepost
T = temporary
V = vibratory

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After backfilling, Transco will grade disturbed areas and will properly dispose of any remaining trash and debris. Transco will protect the construction workspaces by implementing permanent erosion-control measures, including site-specific contouring, slope breakers, mulching, and reseeding to establish soil-holding vegetation. Transco will use acceptable excess soils from construction for contouring.

Transco's cleanup and restoration activities will be in accordance with the Transco Plan, the Transco Procedures, and in accordance with an NJDEP-approved restoration plan. In accordance with the Transco Plan, cleanup operations will begin immediately following backfill operations. Transco will complete final grading, topsoil replacement, and installation of permanent erosion-control structures within 20 days of backfilling the trench and within 10 days in residential areas. If seasonal or other weather conditions prevent compliance with these timeframes, Transco will maintain temporary erosion-control devices until the cleanup is completed.

Horizontal Directional Drill

Approximately 0.35 mile of the loop from MP11.48 to MP11.83 will be installed via HDD (as described above), crossing under the Lockwood Marina (see Appendix E, Waterfront Development Permit Plans for the Madison Loop, sheets 7 to 8). Transco will cross the two waterbodies and portions of two wetlands between MP11.48 and MP11.83 via HDD, thereby avoiding impacts on the waterbodies and minimizing impacts on the wetlands. The HDD pipeline will be pulled through the pre-drilled HDD hole from the exit (east) point at approximately MP11.48 to the HDD entry (west) point at approximately MP11.83.

2.3.2 Raritan Bay Loop

Pre-trenching, Cable Crossings, and Initial Pipelay

The section of buried offshore pipeline in New Jersey will extend from the exit pit for the Morgan Shore Approach HDD crossing at MP12.50 to MP14.02, where it crosses into New York waters; from MP26.55 to the exit pit of the Ambrose Channel HDD crossing at MP29.52; and from the entry pit for the HDD Ambrose Channel crossing at MP30.40 to MP30.64, where it again crosses back into New York waters. This section of externally concrete-weight coated pipeline will be buried to a minimum depth of 4 feet and in accordance with any permit conditions as directed by the USACE. If Transco cannot achieve the required burial depth, (e.g., at the Neptune Cable crossing near offshore MP13.88), then the pipeline will be covered with concrete (or equivalent) mattresses.

Trenching for the offshore (subsea) pipeline will take place between MP12.50 and MP14.02. One clamshell dredge with an environmental bucket and its supporting scows will be mobilized to first excavate a pit at the offshore HDD exit point for the Morgan Shore Approach HDD crossing, then proceed eastward to excavate a trench from the offshore HDD exit pit to approximately MP16.60; the portion of the trench within New Jersey waters ends at MP14.02. The bottom of the trench in this area will extend to a minimum depth required for safe installation of the pipeline, as directed by the USACE. The pipelay barge will then be moored at MP14.50, as the limited working water depths make it infeasible for the pipelay barge to enter the waters to the west of MP14.50. At MP14.50, the pipelay barge will feed out the pipeline string for MP12.50 through MP14.50, and the Morgan Shore Approach HDD string.

For the Morgan Shore Approach HDD string, a combination of the pipelay barge and a temporary fixed platform (described below) will be used to lay the HDD string and pipeline strings from MP12.50 to MP14.50. The winch wire from the temporary fixed platform will be attached to the HDD string and will pull the pipe as it is paid out from the barge. The temporary fixed platform will provide a solid foundation needed to withstand the anticipated pull-in loads of the pipe strings. Buoyancy modules will also be installed on the HDD string during this process. The tail end section of the HDD string will be transferred to a tug, so that the pull-in winch on the temporary fixed platform can pull the HDD string until it reaches the required location. Once in place, the buoyancy modules will be removed from the HDD string to allow the string to lay down in the trench, where the string will be flooded to provide on-bottom stability until it is ready to be pulled through the pre-drilled HDD hole.

The 2-mile section of pipe from MP12.50 to MP14.50 will be installed using the same methods, without the tug connected to the tail end. Rather, the pipelay barge will remain connected to the tail end of the pipe string as it is paid out, and the pipeline will be directly laid down within the trench upon removal of the buoyancy modules.

Transco will use a jet barge at approximately MP30.40 and proceed eastward toward MP30.64 to cut and remove existing, inactive cables. If Transco identifies any additional active cables during the course of construction, divers will remove sediment covering the cable and install concrete mattresses on either side of the cable to create a bridge above it.

Following assembly and installation of the Ambrose Channel HDD described below, an anchored pipelay barge will begin laying pipe on the seafloor beginning at MP29.52 (New Jersey), extending in a westerly direction to approximate MP16.60 (New York). Divers will measure the distance between the end of the previously laid pipe section discussed above at approximate MP16.60 and the newly laid pipe; subsequently, a tie-in spool will be fabricated and installed to connect the two sections. After Transco has laid the pipeline segment, a jet trencher will be used to lower the pipeline, and the clamshell dredge will be used to backfill the trench. The anchored pipelay barge will then relocate to lay pipe on the seafloor east of the Ambrose Channel entry HDD point, toward MP35.49 (New Jersey), after which a jet trencher will be used to lower the pipeline.

Horizontal Directional Drill

Morgan Shore Approach HDD

The Morgan Shore Approach HDD will be installed using the HDD method described for the Madison Loop, above, with additional offshore steps described below. A section of pipeline will be pulled through the pre-drilled HDD hole from the subsea exit point at approximately MP12.50 to the onshore HDD entry point at approximately MP12.00 and connected onshore with the proposed Madison Loop.

For the Morgan Shore Approach HDD, Transco will mobilize a marine-support barge loaded with the HDD equipment and crew to the HDD exit point location in Raritan Bay. A clamshell dredge with an environmental bucket will excavate the exit point, and then a vibratory device will be used to install piles ("goal posts") at the exit pit. Following drilling, reaming, and swabbing of the borehole, the HDD pipe string will be pulled through the borehole toward the onshore HDD entry point. All offshore HDD activities will take place 24 hours per day, seven

days per week, while activities associated with rigging up at the onshore entry workspace will take place during daylight shift.

The Morgan Shore Approach temporary fixed platform will provide approximately 4,600 square feet of deck space and will require the use of a crane barge to lift and install piles and trestle girders, a material barge to transport and store installation components, and a location barge to provide installation support. See Waterfront Development Permit Plans for the Raritan Bay Loop, sheet 7 for a depiction of the temporary fixed platform (Appendix E). Major deck equipment on the temporary fixed platforms will include the HDD drill rig, a small crane, a pull-in winch, contingency generator, sheaves, and light packs. Additionally, the fixed platforms will be equipped with solar navigation lights on the corners. The temporary fixed platforms will remain in place for the duration of HDD activities between June 2021 and August 2021, for approximately 50 days. To date, Transco has consulted with the USCG, National Oceanographic and Atmospheric Administration (NOAA), and Harbor Operations Steering Committee regarding this modification of the planned installation methods for the Raritan Bay Loop, as noted below. The meetings were held as follows: USCG on August 15, 2017, and February 26, 2018; Harbor Operations Steering Committee on October 4, 2017, and April 4, 2018; and NOAA on February 7, 2018. Transco will continue to consult with appropriate agencies regarding the installation and use of a temporary fixed platform at the Morgan Shore Approach offshore HDD pit.

Ambrose Channel HDD

For the Ambrose Channel crossing, Transco will mobilize a clamshell dredge with an environmental bucket mounted on a crane barge and two liftboats with drilling equipment to the Lower New York Bay. Transco will use the intersect method to cross the Ambrose Channel, as described above.

This prefabricated HDD string will be hydrotested and remain parked on the seabed awaiting pull-back into the reamed HDD hole. In order to temporarily stabilize the HDD string, Transco will install 11 pairs of 24-inch piles along the alignment of the Ambrose Channel HDD string from the Ambrose Channel HDD east pit extending approximately 6,375 feet eastward prior to laying of the Ambrose Channel HDD string. Each pair will be installed approximately 30 feet offset to the proposed centerline of the Ambrose Channel HDD string, at an elevation of approximately 3 to 4 feet above the seafloor. Following installation of the anchor piles, the pipe string will be laid on the seafloor between the piles and then affixed to the piles using soft slings and chains to keep the Ambrose Channel HDD string in place prior to pullback. See Waterfront Development Permit Plans for the Raritan Bay Loop, sheets 3, 5, and 8 for a depiction of the pile configuration (Appendix E). Installation of the piles is outlined in Table 2-3, above. Prior to pullback of the HDD string, the slings will be cut, and the slings and chains affixing the pipe string to the piles will be disconnected. Following successful installation of the Ambrose Channel HDD, all 11 pairs of piles will be removed.

Transco will conduct the Ambrose Channel HDD, including drilling, reaming, and swabbing of the borehole, 24 hours per day, seven days per week, until completion. During the Ambrose Channel HDD, an anchored lay barge will be set up near the Ambrose Channel HDD exit point to assemble the HDD pipe string, lay the pipe string near the HDD pit (east), and then complete a hydrostatic test of the pipeline segment. Following drilling, reaming, and swabbing of the borehole, Transco will remove the casing and pull the pipe string through the borehole.

The 5,875-foot Ambrose HDD string will consist of the length of the approximately 4,655 feet of HDD pipe, a 1,140-foot "tail" length to allow S-lay retrieval and continuation of pipelay by the lay barge once the pull-in is completed, and an additional 80-foot length of pipe to allow for the tie-in on the east side of the HDD.

Cathodic Protection HDD

Installation of the CP system will require two HDDs, both in New Jersey. The first will begin at MP12.10 and end approximately 1,200 feet from the pipe centerline seaward of the Morgan shoreline in Sayreville, New Jersey, north of MP12.35. Transco will mobilize a marine support barge to the HDD exit point location in Raritan Bay to the north of MP12.32, and a dredge will excavate the area where the anode sled will connect to the CP power cable. Following drilling of the borehole, the CP power cable will be pulled through toward the onshore HDD entry point. The offshore HDD activities will take place 24 hours per day, seven days per week, until the HDD is complete, while activities associated with rigging up at the onshore entry workspace will take place during daylight shifts. Following completion of the HDD, the anode sled will be installed and backfilled to a minimum depth of 4 feet. Following completion of the CP HDD east of MP12.10, a second onshore CP HDD will begin, starting at MP12.10 and ending near the junction between the Raritan Bay Loop and Madison Loop at MP12.00. The activities associated with the onshore drilling will take place 24 hours per day until the HDD is complete, while activities associated with rigging up at the onshore entry workspace will take place during daylight shifts.

Backfill

For any supplemental offshore backfill activities, selected material will be predominantly sandy and have only a limited amount of silt and clay, which will help ensure stability and minimize deposition outside of the target backfill area. Transco has been advised that enough suitable material can be commercially obtained from Ambrose Channel seaward of the Raritan Bay Loop to fulfill Project needs for offshore supplemental backfill. This material will be acquired from one or more existing commercial vendors that currently operate under active permits to dredge Ambrose Channel. Example permits from the USACE and NJDEP for such channel-dredging activity are included in Appendix B. As reflected in the example permits, the portion of Ambrose Channel that can be dredged for the Project by such a vendor has the demonstrated material availability and suitability (e.g., less than 5% silt/clay, suitable for placement at the HARS or at other in-water restoration site, as described below) for backfill. The dredging may be conducted with equipment that includes, but may not be limited to, a self-loading hopper barge and a (mechanical) clamshell dredge. See the example permits in Appendix B for the type of conditions that the vendor would need to follow when performing the channel-dredging activity under their existing permit.

Transco expects the material from the Ambrose Channel to be suitable for placement as backfill at the HARS and requests NJDEP's concurrence that no further testing for contaminants is necessary based on the following information:

- Per the April 2016 USACE and U.S. Environmental Protection Agency (EPA) Guidance for Performing Tests on Dredged Material Proposed for Ocean Disposal, material tested from the designated channel identified as having less than 12% fine sediment (i.e., silt and clay passing the #200 sieve) is considered HARS-suitable without further testing.

- Samples for material collected from the proposed Ambrose Channel site in 2000 contained 90% to 97% sand, with only 0% to 3% fine sediment and 0% to 10% gravel (passing the #4 sieve) (USACE 2000). Transco collected core boring samples from Ambrose Channel in late 2016 approximately 0.75 mile shoreward (northwest) of the proposed Ambrose Channel backfill source site; these samples indicate that the sediment consists of predominantly medium dense to dense sand with less than 10% fine sediment to depths of at least 30 feet (and up to 60 feet) below the channel bottom.
- The vendor would only obtain backfill material from within previously evaluated dredge prisms (i.e., previously authorized channel dredging dimensions).

Transco would account for Project impacts from the time when Project-dedicated scows have been loaded with material for placement as backfill and acknowledges that these activities, including placement of supplemental backfill, would continue to be subject to review and approval as part of the federal and state permitting processes.

After the pipe has been laid in the trench, the clamshell dredge will backfill the trench between the Ambrose Channel exit HDD point and approximate MP16.6 and between the Ambrose Channel HDD entry point and MP35.49 (New York tie-in location). The three offshore HDD pits will be backfilled with clean, compatible material that has a grain-size distribution suitable for preventing re-suspension under typical current conditions at these sites. Transco will bury the pipe to a minimum depth of 4 feet and will restore the excavated offshore areas by backfilling to match surrounding contours, consistent with any permit requirements. Supplemental backfill will be used as needed following completion of commissioning activities. Transco will use a clamshell dredge for supplemental backfill activities.

Following completion of backfilling, Transco will conduct a post-construction survey of the entire route to identify and address areas that may require supplemental backfill, including jet-trenched segments. Similar to the Rockaway Delivery Lateral Project in New York waters, which has a 5-year post construction survey requirement, Transco will also resurvey the entire Raritan Bay Loop route at routine intervals to determine if the route requires further supplemental backfill.

2.4 Hydrodynamic and Sediment Transport Modeling

2.4.1 Sediment Modeling Methodology

Transco conducted project-specific hydrodynamic and sediment transport and dispersion modeling for a suite of installation methods proposed for the Raritan Bay Loop to numerically predict the suspended sediment plumes and areas of deposition that may be generated by the offshore construction, to better estimate potential impacts from suspended and deposited sediments, and to help determine appropriate avoidance and minimization measures. This consisted of two interconnected modeling tasks, which are described in detail in the Hydrodynamic and Sediment Transport Modeling Results (Modeling Reports) (see Appendix F):

- Development and calibration of a three-dimensional hydrodynamic model for the New York/New Jersey Harbor Estuary and nearby waters of the Atlantic Ocean; and

- Simulations of the suspended sediment fate, transport, plumes, and deposition that could result from Project-specific offshore construction activities.

2.4.2 Model Description

The following is a summary of the Suspended Sediment FATE (SSFATE) modeling system and results. A description of the WQMAP/BFHYDRO modeling system and the full summary of the results are presented in the Hydrodynamic and Sediment Transport Modeling Reports (Appendix F).

The SSFATE model is a three-dimensional Lagrangian (particle) model that was developed cooperatively by the USACE Environmental Research and Development Center and Applied Science Associates. SSFATE was initially developed to simulate and compute total suspended solids (TSS) concentrations (sediment resuspension) and deposition from marine dredging operations. The model was developed further to simulate cable and pipeline installations with water jet trenchers and mechanical ploughs, in addition to sediment dumping and dewatering. One of the inputs required of the SSFATE is a spatial- and time-varying circulation field, which is obtained from a hydrodynamic model. Currently, SSFATE works with a geographic information system–based interface that allows for visualization and spatial analysis of model results.

SSFATE has been applied to more than a dozen sediment-dispersion modeling studies in the vicinity of the Project, including portions of the lower Hudson River, Upper New York Bay, Gowanus Bay, Arthur Kill, the Long Island Sound, and the Great South Bay. The majority of these previous studies used a modeling approach similar to that used for the Project, which included the use of the WQMAP/BFHYDRO and SSFATE models to evaluate sediment resuspension and deposition from sediment-disturbing activities. Examples of these previous studies are provided in the Modeling Reports (Appendix F).

2.4.3 Sediment Modeling Results

Transco performed modeling summaries and corresponding modeling reports for the following iterations of offshore construction scenarios:

- Hydrodynamic and Sediment Transport Modeling Results – Base Case Simulations (August 2017) (Base Case): 14 excavation scenarios using a conventional clamshell bucket, provided as Appendix F-1;
- Hydrodynamic and Sediment Transport Modeling Results – Addendum 1 (October 2017) (Addendum 1): 13 backfill-related scenarios, using a conventional clamshell bucket, provided as Appendix F-2;
- Hydrodynamic and Sediment Transport Modeling Results – Addendum 2 (April 2018) (Addendum 2): 22 construction scenarios incorporating multiple adjustments to previously modeled scenarios, including use of an environmental bucket, and reductions in clamshell dredge loss and scow overflow rates, provided as Appendix F-3; and
- Hydrodynamic and Sediment Transport Modeling Results – Addendum 3 (September 2018) (Addendum 3): 13 construction scenarios incorporating multiple adjustments to

previously modeled scenarios, including deeper burial across navigation channels and an anchorage area and reductions in clamshell dredging rates, provided as Appendix F-4.

The results of Transco's hydrodynamic sediment modeling provide the predicted TSS concentrations of 50 milligrams per liter (mg/L) and 100 mg/L above ambient levels (see Table 2-4, below). Transco conducted the modeling using these TSS concentration thresholds because they represent default values for chronic and acute toxicity thresholds, respectively, for aquatic organisms (i.e., for dredged material that has not undergone suspended phase toxicity testing) (NYSDEC 2004). However, New Jersey surface water quality standards (SWQSs) (N.J.A.C. 7:9B-1.14(d)) dictate a maximum (instantaneous) turbidity threshold of 30 nephelometric turbidity units (NTU) for SE1 class waters and a maximum turbidity threshold of 10 NTU for SC class waters (i.e., the classifications for waters that will be crossed by the Raritan Bay Loop. SE1 waters are crossed between MP12.16 and MP14.01 and between MP26.55 and MP28.30, while SC class waters are crossed between MP28.30 and MP30.64). As described above, the model used for the Project was designed to simulate and compute TSS concentrations and deposition and therefore does not predict levels of turbidity. Applying a standard direct conversion between TSS concentrations and turbidity for the entire length of the Raritan Bay Loop is not feasible, as the relationship between TSS concentration and turbidity is site-specific and can vary depending on concentrations of suspended particles, as well as other particle characteristics such as size, shape, surface area, color, etc. Typically, however, a general relationship between TSS and turbidity can be established for relatively homogenous sediments. Turbidity-to-TSS correlations ranging from approximately 1 NTU to 1 mg/L and 1 NTU to 6 mg/L have been reported for other freshwater and marine environments around the United States (Anchor Environmental CA, L.P. 2003; Holliday et al. 2003). Although site-specific correlation(s) between turbidity and TSS would need to be established to definitively describe Transco's modeling results in the context of New Jersey's state SWQSs, Transco's modeling results describing TSS concentration values of 50 mg/L may be roughly equivalent to a turbidity level of 30 NTUs (i.e., New Jersey's water quality standard for the maximum turbidity threshold in SE1 waters). The numerical relationship between TSS (measured in mg/L) and turbidity (measured in NTUs) varies widely depending on site-specific sediment characteristics, and has been observed to range up to approximately 6 mg/L per 1 NTU for previous dredging projects (Anchor Environmental 2003). Assuming a ratio of 2 mg/L per 1 NTU, a concentration of 50 mg/L would yield a result of roughly 25 NTU. Assuming a ratio of 6 mg/L per 1 NTU, a concentration of 50 mg/L would yield a result of roughly 8 NTU. In comparison, the turbidity standard listed in NJAC 7:9B is a maximum of 30 NTUs at any time for Class SE1/SE2 saline waters and 10.0 NTUs for Class SC saline waters. Therefore, use of the modeling results for TSS concentrations of 50 mg/L appears to be a reasonable proxy for identifying the distance at which compliance with the NJDEP water quality standard for turbidity would be achieved. The following summaries of each modeling report are discussed with respect to TSS concentrations of 50 mg/L and 100 mg/L above ambient levels.

Summary of "Base Case" Results

For modeling purposes, offshore construction activities were divided into 14 distinct scenarios. Modeling results are based on conservative (i.e., overestimated) but realistic assumptions from contractor estimates and field observations. For a full discussion of modeling results and model output figures, see the Base Case modeling report (Appendix F-1).

Each scenario was modeled under the following assumptions:

- Continuous operation will occur for all construction phases, with short breaks for activities involving multiple equipment passes or equipment changes;
- Reported sediment concentrations will be above ambient concentration in the Project area; and
- Sediment concentrations are calculated with a horizontal grid resolution of 20 by 20 meters and a vertical grid resolution of 0.5 meter.

The sediment dispersion and deposition modeling results for sedimentation rates and the extent of sedimentation for each scenario are provided in Table 2-4.

Suspended Sediment Summary

The predicted sediment plumes and TSS concentrations for "base case" scenarios varied in magnitude and scale along the entire offshore route (see Table 2-4, above). Sediment modeling results of the "base case" clamshell dredge activities indicated that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 0 and 4,331 feet from the source, and TSS concentrations would return to ambient conditions within 2.0 to 12.5 hours after the associated dredging has ceased. Sediment modeling results of the "base case" jet trencher activities indicated that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 262 and 1,345 feet from the source, and TSS concentrations would return to ambient conditions within 1.4 to 7.9 hours. Sediment modeling results for the hand jet and submersible pump indicated that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 197 feet and 1,378 feet from the source, and TSS concentrations would return to ambient conditions within 0.7 to 3.4 hours.

The modeling results are generally consistent with monitoring of several dredging events associated with recent deepening of the New York–New Jersey Harbor. In particular, turbidity plumes generated during the harbor-dredging activities dissipated to ambient conditions within 656 feet in the upper water column and within 2,625 feet in the lower water column, even when dredging sediments were predominantly silt and clay (50% to 95%) (USACE 2015b). However, the maximum predicted extent of Project-generated TSS concentrations over 100 mg/L above ambient level is 4,331 feet from the source, suggesting that the "base case" modeling assumptions are conservative (i.e., overestimated). Nonetheless, the predicted plumes would be temporary, with TSS concentrations returning to ambient conditions within 12.5 hours after the associated dredging or trenching has ceased. Therefore, only localized and short-term impacts on water quality are expected from construction of the Raritan Bay Loop.

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
Excavation/Dredging/Trenching Activities																		
(i) MP12.50 (ii)~1,200 ft north of MP12.32 NJ	Base Case	Scenario 1	Excavation activities at Morgan Shore	Excavation of Morgan Shore HDD pit (MP12.50)	Clamshell	11,250	23.8	10	993	3.33	1,969	1,099	482	269	154	7.4	2.7	0.9
				Excavation of anode sled burial area (~1,200 ft north of MP12.32)	Clamshell	11,250	1.2	10	49									
	Addendum 2	Scenario B-4	Excavation activities at Morgan Shore (0.5% loss)	--	Clamshell (Environmental Bucket w/ no scow overflow)	11,250	24.9	0.5	52	0.4	328	148	102	0	0	0.5	0	0
MP12.50 - MP16.60 NJ/NY	Base Case	Scenario 2	Pre-lay trenching between Morgan HDD exit and the Midline tie-in	--	Clamshell	11,250	513.8	10	21,408	9.87	5,233	4,331	148	108	62	39.9	16.9	5.2
	Addendum 2	Scenario B-1	Pre-lay trenching between Morgan HDD pit and the Midline tie-in (2.5% loss)	--	Clamshell (Environmental Bucket w/ scow overflow)	11,250	422.3	2.5	4,392	1.7	2,428	591	89	26	0	11.1	0.5	0
	Addendum 2	Scenario B-2	Pre-lay trenching between Morgan HDD pit and the Midline tie-in (0.5% loss; no scow overflow)	--	Clamshell (Environmental Bucket w/ no scow overflow)	11,250	422.3	0.5	878	0.4	262	0	0	0	0	0	0	0
	Addendum 2	Scenario B-3	Post-lay trenching between Morgan HDD pit and the Midline tie-in (2 passes; 5% loss)	--	Jet Trencher	29,135	66	5	3,559	0.2	2,018	1,476	97	0	0	13.0	0	0

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
MP 13.88 NJ	Base Case	Scenario 3	Jetting at the Neptune Cable crossing point in Raritan Bay	--	Hand Jet	360	149.2	100	1,989	3.35	2,592	1,378	958	413	236	10.7	3.9	1.1
MP 16.60 - MP 17.23 NY	Base Case	Scenario 4	Post-lay trenching between the Midline tie-in and Raritan Channel transition @ 29,135 ft^3/hr	Pass 1 (W to E)	Jet Trencher	29,135	5.8	5	311	6.91	1,591	1,001	36	0	0	0.1	0	0
				Pass 2 (E to W)	Jet Trencher	29,135	5.8	5	311									
MP17.23 - MP17.97[d] NY	Base Case	Scenario 8	Pre-lay trenching across the Raritan Channel	--	Clamshell	11,250	456.8	10	19,031	7.58	5,446	2,822	427	112	23	29.7	7.8	0
	Addendum 2	Scenario B-5	Pre-lay trenching across the Raritan Channel (0.5% loss)	--	Clamshell (Environmental Bucket w/ no scow overflow)	11,250	321.6	0.5	668	0.5	0	0	0	0	0	0	0	0
	Addendum 3	Scenario C-1	Clamshell dredge Raritan Channel deep prism (15-ft cover depth) with no scow overflow	--	Clamshell (Environmental Bucket w/ no scow overflow)	11,250	858	0.5	1,788	0	131	--	0	0	0	0	0	0
MP17.89 - MP24.00 NY	Base Case	Scenario 5	Post-lay trenching between Curve 1 and Anchorage area (2 passes)	Pass 1 (W to E)	Jet Trencher	29,135	49.3	5	2,658	7.9	1,329	853	99	0	0	69.3	0	0
				Pass 2 (E to W)	Jet Trencher	29,135	49.3	5	2,658									
MP24.00 - MP25.20[d] NY	Base Case	Scenario 9	Pre-lay trenching between the anchorage area and the Chapel Hill Channel	--	Clamshell	11,250	299.9	10	12,497	4.39	722	131	197	148	109	49.4	35.3	19.2

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
	Addendum 2	Scenario B-6	Pre-lay trenching between the anchorage area and the Chapel Hill Channel (0.5% loss)	--	Clamshell (Environmental Bucket w/ no scow overflow)	11,250	270	0.5	562	0	0	0	15	0	0	0.6	0	0
	Addendum 3	Scenario C-2	Clamshell dredge anchorage deep prism (15-ft cover depth) with no scow overflow	--	Clamshell	11,250	390.8	0.5	814	0.1	131	--	85	0	0	9.9	0	0
	Addendum 3	Scenario C-4	Clamshell dredge anchorage deep prism (15-ft cover depth) with scow overflow	--	Clamshell	11,250	390.8	2.5	4,071	0.5	262	197	174	112	13	24.1	14.7	0.2
MP24.00 to MP24.78[c] NY	Addendum 2	Scenario B-17	Side-cast across the anchorage area (100% loss)	--	Clamshell	11,250	154	100	64,311	0.9	6,283	3,084	390	259	161	53.8	36	22.8
MP24.70 - MP25.61 NY	Addendum 3	Scenario C-3	Clamshell dredge extended Chapel Hill Channel deep prism (15-ft cover depth) with no scow overflow	--	Clamshell	11,250	491.1	0.5	1,023	0.3	131	--	82	0	0	11.9	0	0
MP25.20 - MP29.52 NY/NJ	Base Case	Scenario 6	Post-lay trenching between Curve 4 and Ambrose Channel (2 passes)	Pass 1 (W to E)	Jet Trencher	29,135	34.8	5	1,879	1.35	410	262	79	0	0	52.1	0	0
				Pass 2 (E to W)	Jet Trencher	29,135	34.8	5	1,879									

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
MP29.52 NJ	Base Case	Scenario 10	Excavation of Ambrose Channel HDD exit pit (West)	--	Clamshell	11,250	33.7	10	1,405	12.45	9,039	2,756	502	397	289	6.4	3.8	1.6
	Addendum 2	Scenario B-7	Excavation of Ambrose Channel HDD pit (West) (2.5% loss)	--	Clamshell (Environmental Bucket w/ scow overflow)	11,250	33.7	2.5	351	1.1	443	0	371	253	0	3.6	1.2	0
	Addendum 2	Scenario B-8	Excavation of Ambrose Channel HDD pit (West) (0.5% loss)	--	Clamshell (Environmental Bucket w/ no scow overflow)	11,250	33.7	0.5	70	0	0	0	148	0	0	0.6	0	0
MP29.52[c] NJ	Addendum 2	Scenario B-18	Side-cast at the Ambrose HDD pit (West) (100% loss)	--	Clamshell	11,250	33.7	100	14,050	7.3	19,587	17,684	1,198	787	397	18.5	6.4	4.3
MP30.40 NJ	Base Case	Scenario 11	Excavation of Ambrose Channel HDD entry pit (East)	--	Clamshell	11,250	77.9	10	3,245	1.97	0	0	341	299	256	5.3	4	2.9
			Excavation of Ambrose Channel tie-in	--	Clamshell	11,250	5	10	209									
	Addendum 2	Scenario B-9	Excavation at the Ambrose HDD pit (East) and Ambrose Channel tie-in (2.5% loss)	--	Clamshell (Environmental Bucket w/ scow overflow)	11,250	83.5	2.5	869	0	0	0	295	243	187	3.8	2.7	1.4
MP30.40[c] NJ	Addendum 2	Scenario B-19	Side-cast at the Ambrose HDD pit (East) and Ambrose Channel tie-in (100% loss)	--	Clamshell	11,250	83.5	100	34,777	1.6	3,822	2,789	407	305	269	6.5	4.4	3.8

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
MP30.40 - MP35.19 NY/NJ	Base Case	Scenario 7	Post-lay trenching between Ambrose Channel and Neptune Crossing 35 (2 passes)	Pass 1 (W to E)	Jet Trencher	29,135	38.5	5	2,075	5.71	2,346	1,345	66	0	0	10.9	0	0
				Pass 2 (E to W)	Jet Trencher	29,135	38.5	5	2,075									
MP35.19 to MP35.49[d] NY	Base Case	Scenario 13	Pre-lay trenching between the Neptune crossing and end of pipeline	--	Clamshell	11,250	27	10	1,124	8.03	3,330	1,198	92	0	0	1.0	0	0
	Addendum 2	Scenario B-10	Pre-lay trenching between the Neptune Cable crossing and end of pipeline (2.5% loss)	--	Clamshell (Environmental Bucket w/ scow overflow)	11,250	31	2.5	329	0.6	656	0	138	0	0	2.0	0	0
MP35.19 to MP35.49[c] NY	Addendum 2	Scenario B-20	Side-cast between the Neptune Cable crossing and RDL (100% loss)	--	Clamshell	11,250	31.6	100	13,152	1.9	1,690	1,296	436	348	249	22.7	14.9	9.9
MP35.19 NY	Base Case	Scenario 12	Jetting at the Neptune Cable crossing offshore Rockaway	--	Hand Jet	180	279.2	100	1,861	0.66	591	197	548	394	171	5.4	2.9	1.2

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
MP35.49 NY	Base Case	Scenario 14	Excavation of tie-in skid and manifold at Rockaway	Tie-In Skid and Manifold Excavation (75% Mass Flow Excavator)	Mass Flow Excavator (Submersible Pump)	4,050	30.2	100	4,530	0.67	787	722	591	456	328	9.8	6.3	3.7
				Tie-In Skid and Manifold Excavation (25% Hand Jet)	Hand Jet	180	226.5	100	1,510									
Ambrose Channel NJ	Addendum 1	Scenario A-1	Dredging of backfill source material from Ambrose Channel	--	Clamshell	11,250	533	5	11,111	1	7,661	6,365	279	92	0	119.6	2.3	0
	Addendum 2	Scenario B-11	Dredging of backfill source material from Ambrose Channel (2.5% loss)	--	Clamshell (Environmental Bucket w/ scow overflow)	11,250	533	2.5	5,555	1	2,280	1,033	171	0	0	59.7	0	0
	Addendum 2	Scenario B-14	Dredging of backfill source material from Ambrose Channel (0.5% loss)	--	Clamshell (Environmental Bucket w/ NO scow overflow)	11,250	533	0.5	1,111	0	0	0	0	0	0	0	0	0
Rockaway Inlet NY	Addendum 1	Scenario A-2	Dredging of backfill source material from Rockaway Inlet	--	Clamshell	11,250	533	5	11,111	0.6	3,478	2,526	1,247	197	72	78.5	34.6	7.2
	Addendum 2	Scenario B-12	Dredging of backfill source material from Rockaway Inlet (2.5% loss)	--	Clamshell (Environmental Bucket w/ scow overflow)	11,250	533	2.5	5,555	0.2	3,757	2,116	299	131	0	46.5	15.6	0
	Addendum 2	Scenario B-15	Dredging of backfill source material from Rockaway Inlet (0.5% loss)	--	Clamshell (Environmental Bucket w/ NO scow overflow)	11,250	533	0.5	1,111	0.2	197	0	79	0	0	7.5	0	0

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
U.S. Navy Earle Channel NJ	Addendum 1	Scenario A-3	Dredging of backfill source material from U.S. Navy Earle Channel	--	Clamshell	11,250	533	5	11,111	0.8	6,365	3,888	187	59	0	114.9	3	0
	Addendum 2	Scenario B-13	Dredging of backfill source material from U.S. Earle Channel (2.5% loss)	--	Clamshell (Environmental Bucket w/ scow overflow)	11,250	533	2.5	5,555	0.8	5,331	1,099	128	0	0	25.5	0	0
	Addendum 2	Scenario B-16	Dredging of backfill source material from U.S. Earle Channel (0.5% loss)	--	Clamshell (Environmental Bucket w/ NO scow overflow)	11,250	533	0.5	1,111	0.5	0	0	0	0	0	0	0	0
Backfill Activities																		
(i) MP12.50 (ii)~1,200 ft north of MP12.30 NJ	Addendum 1	Scenario A-4	Backfilling of (i) Morgan Shore HDD pit and (ii) anode sled burial area	--	Clamshell	11,250	31.7	100	13,205	2	1,362	886	404	305	253	9.4	6.6	4.8
MP12.50 to MP16.60 NJ/NY	Addendum 1	Scenario A-5	Backfilling of trench between Morgan HDD exit and the Midline tie-in	--	Clamshell	11,250	527	100	219,591	1.5	4,331	2,444	545	440	381	281.9	220.9	158.7
	Addendum 2	Scenario B-21	Backfill of trench between Morgan HDD exit and the Midline tie-in	--	Clamshell	7,500	794.1	100	219,591	1.2	2,641	1,329	453	364	282	280.5	222.6	161.5
	Addendum 3	Scenario C-11	Backfill of trench between Morgan HDD exit and the Midline tie-in @ 4,800 ft^3/hr	--	Clamshell	4,800	1,235	100	219,591	1.1	1,460	591	525	420	266	314.6	250.3	183.2
MP13.88 NJ	Addendum 1	Scenario A-6	Backfilling of the Neptune Cable crossing point in Raritan Bay	--	Clamshell	11,250	5	100	2,095	3.5	1,903	1,247	427	371	197	4.4	2.9	1.6

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
MP17.23 to MP17.97[d] NY	Addendum 1	Scenario A-7	Backfilling of trench across the Raritan Channel	--	Clamshell	11,250	401	100	167,025	1.9	3,150	1,509	715	591	472	60.7	43.7	33.6
	Addendum 3	Scenario C-5	Backfill Raritan Channel base-case prism (up to 8-ft cover depth) @ 7,500 ft^3/hr	--	Clamshell	7,500	601.3	100	167,025	1.8	1,509	1,066	574	492	384	55.7	41.4	32.5
	Addendum 3	Scenario C-6	Backfill Raritan Channel deep prism (15-ft cover depth) @ 7,500 ft^3/hr	--	Clamshell	7,500	1,608.8	100	446,879	1.6	2,444	1,165	981	801	643	109.6	77.2	60.8
	Addendum 3	Scenario C-12	Backfill Raritan Channel deep prism (15-ft cover depth) @ 4,800 ft^3/hr	--	Clamshell	4,800	2,513.7	100	446,879	1.1	1,575	853	817	653	574	105.6	76.8	61.5
MP24.00 - MP24.78[d] NY	Addendum 1	Scenario A-8	Backfilling of trench between the anchorage area and the Chapel Hill Channel	--	Clamshell	11,250	338	100	140,590	2.8	4,265	1,690	522	292	249	92.8	68.5	52.3
	Addendum 3	Scenario C-7	Backfill anchorage area base-case prism (7-ft cover depth) @ 7,500 ft^3/hr	--	Clamshell	7,500	289.4	100	80,388	1	1,755	1,247	371	318	253	55.3	43.4	33.5
	Addendum 3	Scenario C-8	Backfill anchorage area deep prism (15-ft cover depth) @ 7,500 ft^3/hr	--	Clamshell	7,500	732.8	100	203,545	1.3	1,772	919	453	371	325	63.4	49.6	39.7

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
MP24.70 - MP25.61[d] NY	Addendum 3	Scenario C-9	Backfill extended Chapel Hill Channel prism (up to 8-ft cover depth) @ 7,500 ft^3/hr	--	Clamshell	7,500	300.4	100	83,439	1.8	1,985	1,247	614	545	443	68.8	52.3	39.0
	Addendum 3	Scenario C-10	Backfill extended Chapel Hill Channel deep prism (15-ft cover depth) @ 7,500 ft^3/hr	--	Clamshell	7,500	920.7	100	255,759	1.8	2,493	1,247	787	577	522	96.8	70.7	56.1
MP29.52 NJ	Addendum 1	Scenario A-9	Backfilling of Ambrose Channel HDD exit pit (West)	--	Clamshell	11,250	42.2	100	17,563	3.3	3,871	1,952	945	804	525	16.5	8.5	5.1
	Addendum 2	Scenario B-22	Backfilling of Ambrose Channel HDD Pit (West)	--	Clamshell	7,500	63.2	100	17,563	1.3	1,788	1,526	948	755	499	15.1	8.9	5.1
MP30.40 NJ	Addendum 1	Scenario A-10	Backfilling of Ambrose Channel HDD entry pit (East) and tie-in	--	Clamshell	11,250	97.4	100	40,563	3	4,495	2,231	915	702	453	14.9	9.7	7.0
	Addendum 3	Scenario C-13	Backfill of Ambrose HDD Pit (East) and tie-in @ 4,800 ft^3/hr	--	Clamshell	4,800	228.2	100	40,563	0.4	5,299	5,151	945	774	456	19.7	13.4	9.5
MP35.19 NY	Addendum 1	Scenario A-11	Backfilling at the Neptune Cable crossing offshore Rockaway	--	Clamshell	11,250	6.3	100	2,606	2.1	2,182	1,476	489	443	377	7.6	4.9	3.0
MP35.23 to MP35.49 NY	Addendum 1	Scenario A-12	Backfilling between the Neptune crossing and end of pipeline	--	Clamshell	11,250	34	100	14,197	2.3	2,493	1,493	633	531	335	26.8	19.6	12.0

Table 2-4
Comprehensive Summary of Simulation Results

Location (MP and State)	Modeling Report	Scenario	Construction Activity[b]	Phase	Equipment Type	Production Rate (ft^3/hr)	Duration of Modeled Activity (hrs)	Equipment Sediment Loss (%)[b]	Total Volume Released (yd^3)	Time For TSS to Return to Ambient (hrs)	Max Distance of TSS Plume Exceeding Ambient (ft)		Max Distance of Deposition Exceeding (ft)			Area of Deposition Exceeding (acres)[a]		
											50 mg/L	100 mg/L	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]	0.3 cm [0.12 in]	1.0 cm [0.4 in]	3.0 cm [1.2 in]
MP35.49 NY	Addendum 1	Scenario A-13	Backfilling tie-in skid and manifold at Rockaway @ 11,250 ft^3/hr	--	Clamshell	11,250	18.1	100	7,550	3	2,395	1,739	709	607	476	12.0	9.0	5.4

Note: Shaded entries reflect previously modeled sediment modeling scenarios that are no longer under consideration and are therefore not considered as part of total impact area calculations.

[a] Potential areas of impact for these scenarios do not include areas of deposition within the bounds of navigational channels, as these areas are considered to be regularly disturbed.

[b] A 100% sediment loss rate corresponds to the assumption that all the material is released into the water column at a height of approximately 5 feet above the ambient seafloor elevation. This assumption applies to the use of either an environmental bucket or conventional bucket.

[c] Transco no longer proposes to side-cast excavated materials at this location.

Key:
-- = Phase not identified in corresponding Modeling Report
cm = centimeters
E = east
ft = feet
ft^3/hr = cubic feet per hour
ft^3 = cubic feet
HDD = horizontal directional drill
hr = hour
in = inches
mg/L = milligrams per liter
MP = milepost
N = north
RDL = Rockaway Delivery Lateral
S = south
TSS = total suspended solids
W = west
yd^3 = cubic yards

Sediment Deposition Results

The sediment modeling results for base case scenarios indicated that the sedimentation exceeding 3 centimeters (cm) (1.2 inches) resulting from clamshell dredge activities would range from 0 to 289 feet from the source and would cover between 0 and 19.2 acres. No sedimentation would exceed 3 cm (1.2 inches) if using the jet trencher. The sediment modeling results of the hand jet and submersible pump/suction dredge indicated that the sedimentation exceeding 3 cm (1.2 inches) would extend 171 to 328 feet from the source and would cover between 1.1 and 3.7 acres. For ease of NJDEP review, Table 2-5 presents the modeled deposition results for all currently proposed activities that have the potential to affect New Jersey waters in terms of three representative levels of sedimentation, which may have varying degrees of adverse effects on benthic and demersal species and life stages. In particular, Table 2-5 provides estimates of the areal extent to which resource areas would be covered by Project-related sedimentation with thicknesses ranging from at least 0.3 centimeter (cm) (0.12 inch) to at least 3 cm (1.2 inches).

Summary of Addendum 1 Modeling Results

For modeling purposes, offshore backfill-related activities were divided into 13 distinct scenarios. For a full discussion of modeling results and model output figures, see the Addendum 1 modeling report (Appendix F). These modeling scenarios were divided into two groups:

- Dredging of backfill source material (Scenarios A-1 through A-3); and
- Placement of backfill material (Scenarios A-4 through A-13).

Note that as part of this permit application, Transco is proposing to acquire backfill material from one or more existing commercial vendors.

Backfill-related modeling results are based on conservative (i.e., overestimated) but realistic assumptions, including the following:

- Continuous operation will occur for each scenario.
- The clamshell dredge loss rate will be 5% of total dredge volume, with 4% of the dredge volume released at the sea surface (representing scow overflow) and the remaining 1% of the dredge volume distributed equally throughout the water column (representing loss from the bucket as it is raised and lowered during the dredging cycle).
- The total volume of sediment to be dredged is the sum of all areas requiring backfill, with additional volume to account for losses during dredging (5%) and an "overfill" factor for material that may be dispersed or off target during backfill placement (20%). This overfill factor is based on Transco's real-world experience with backfill material transfer efficiency.
- No infill due to natural sedimentation or use of potentially side-cast material is considered.
- All backfill material will be released from a depth that is 5 feet above the ambient seafloor elevation.

- The grain size distribution for the backfilling activities is an average of all potential backfill source channel areas.

Transco notes that the assumption of 5% clamshell dredge loss rate is less than the 10% loss rate assumption for the base case scenarios, but still represents a conservative value. In comparison, average loss (i.e., resuspension factor) for a conventional clamshell dredge bucket has been reported to be approximately 1%, not considering barge overflow (Palermo et al. 2008). Another study indicates that the total average loss of sediment during clamshell dredging in New York Harbor is approximately 2%, including scow overflow (Tavolaro 1984). Other studies also support the application of resuspension values of 5% or less for clamshell dredging, with and without scow overflow (e.g., Hayes and Wu 2001).

Areas to be installed using the jet trencher were not included in the backfill scenarios because at least 95% of the disturbed material is expected to remain within the trench during pipeline lowering. Therefore, Transco does not expect backfill to be necessary because the jet-trenched areas will effectively match surrounding seafloor elevations when pipeline installation is complete. However, the conditions will be confirmed during a post-installation survey, and backfill will be placed in jet-trenched areas, if warranted, in accordance with all applicable permit conditions.

For any supplemental offshore backfill activities, selected material will be predominantly sandy material and have only a limited amount of silt and clay, which will help ensure stability and minimize deposition outside of the target backfill area. As discussed previously, the backfill material will be compatible with existing sediment but may have a substantially lower amount of fine-grained material (i.e., silt and clay) than some of the sites along the Raritan Bay Loop route. During supplemental backfilling activities, the clamshell bucket will be lowered below the water surface before release to help reduce loss of backfill.

Transco also evaluated whether a “tremie” tube would be an effective backfill tool to help reduce turbidity. Based on contractor feedback the effects of using tremie technology for backfilling activities would be similar to or greater than using a clamshell dredge. For instance, the use of the tremie tube is expected to generate a larger suspended sediment plume than the use of a clamshell dredge for similar backfilling rates. This is mainly because a tremie tube would likely be fixed to a barge in a manner that releases material at a height of more than 5 feet above the seafloor in order to prevent the tube from impacting the seafloor given highly variable wave and tide conditions in the offshore environment. In comparison, a clamshell dredge can release sediment at a height of 5 feet or less above the seafloor as a best management practice. Backfilling “production” rates would likely be slower using a tremie tube, i.e., roughly half the rate of using a clamshell dredge due to anticipated inefficiencies in the tremie conveyer system. A slower rate would likely reduce the extent of a suspended sediment plume, but a clamshell dredge backfilling rate can also be reduced, as warranted, to limit the concentrations of suspended sediments. The hydrodynamic sediment modeling for the backfilling activities with a clamshell bucket used the assumption that backfill material would be released at a fixed height of approximately 5 feet above the seafloor. The modeling effort also considered slower backfilling rates to control the extent of the suspended sediment plume in order to meet anticipated mixing

Table 2-5
Comprehensive Sedimentation Impacts[a,b]

Modeling Report	Modeled Scenario	Construction Activity	Equipment Type	Location	Deposition [minimum average]	NY Shellfish Lands (ac)		NYSDEC Special Harvest Areas (ac)		NJ Shellfish Waters (2016) (ac)		NJDEP 2014 Surfclam Bed (ac)	NJDEP 2014 Hard Clam Beds - Relative Abundance (ac)			NJDEP Sport Ocean Fishing Ground (ac)	Shallow Water (less than 20 feet MLLW)[c] (ac)
						Uncertified	Certified	Transplant-ation (Hard Clam)	Bait (Surfclam)	Prohibited	Special Restricted		High	Moderate	Low		
Base Case	1	Excavation activities at Morgan Shore	Clamshell	MP 12.50 and ~1,200 ft north of MP 12.30	0.3 cm [0.12 in]	--	--	--	--	7.43	--	--	7.43	--	--	--	7.43
					1.0 cm [0.4 in]	--	--	--	--	2.68	--	--	2.68	--	--	--	2.68
					3.0 cm [1.2 in]	--	--	--	--	0.89	--	--	0.89	--	--	--	0.89
Base Case	2	Pre-lay trenching between Morgan HDD exit and the Midline tie-in	Clamshell	MP 12.50 - MP 16.60	0.3 cm [0.12 in]	22.59	--	22.49	--	17.44	--	--	17.54	--	--	--	40.03
					1.0 cm [0.4 in]	7.53	--	7.53	--	9.41	--	--	9.41	--	--	--	16.94
					3.0 cm [1.2 in]	0.99	--	0.99	--	4.26	--	--	4.26	--	--	--	5.25
Base Case	3	Jetting at the Neptune Cable crossing point in Raritan Bay	Hand Jet	MP 13.88	0.3 cm [0.12 in]	--	--	--	--	10.70	--	--	10.70	--	--	--	10.70
					1.0 cm [0.4 in]	--	--	--	--	3.96	--	--	3.96	--	--	--	3.96
					3.0 cm [1.2 in]	--	--	--	--	1.09	--	--	1.09	--	--	--	1.09
Base Case	4	Post-lay trenching between the Midline tie-in and Raritan Channel transition (2 passes)	Jet Trencher	MP 16.60 - MP 17.31	0.3 cm [0.12 in]	0.10	--	0.10	--	--	--	--	--	--	--	--	0.10
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Base Case	5	Post-lay trenching between Curve 1 and anchorage area (2 passes)	Jet Trencher	MP 17.89 - MP 24.00	0.3 cm [0.12 in]	69.59	--	12.58	--	--	--	--	--	--	--	--	69.59
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Base Case	6	Post-lay trenching between Curve 4 and Ambrose Channel (2 passes)	Jet Trencher	MP 25.20 - MP 29.52	0.3 cm [0.12 in]	17.64	--	--	--	34.70	--	--	--	--	--	--	25.63
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Base Case	7	Post-lay trenching between Ambrose Channel and Neptune Crossing 35 (2 passes)	Jet Trencher	MP 30.40 - MP 35.19	0.3 cm [0.12 in]	9.10	--	--	0.10	0.38	--	--	--	--	--	7.42	2.32
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Base Case	8	Pre-lay trenching across the Raritan Channel	Clamshell	MP 17.31 - MP 17.89	0.3 cm [0.12 in]	24.53	--	24.53	--	--	--	--	--	--	--	--	24.53
					1.0 cm [0.4 in]	5.76	--	5.76	--	--	--	--	--	--	--	--	5.76
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Base Case	9	Pre-lay trenching between the anchorage area and the Chapel Hill Channel	Clamshell	MP 24.00 - MP 25.20	0.3 cm [0.12 in]	41.38	--	--	--	--	--	--	--	--	--	--	12.89
					1.0 cm [0.4 in]	29.41	--	--	--	--	--	--	--	--	--	--	9.55
					3.0 cm [1.2 in]	16.24	--	--	--	--	--	--	--	--	--	--	5.70
Base Case	10	Excavation of Ambrose Channel HDD exit pit (West)	Clamshell	MP 29.52	0.3 cm [0.12 in]	--	--	--	--	6.44	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	3.87	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	1.59	--	--	--	--	--	--	--

Table 2-5
Comprehensive Sedimentation Impacts[a,b]

Modeling Report	Modeled Scenario	Construction Activity	Equipment Type	Location	Deposition [minimum average]	NY Shellfish Lands (ac)		NYSDEC Special Harvest Areas (ac)		NJ Shellfish Waters (2016) (ac)		NJDEP 2014 Surfclam Bed (ac)	NJDEP 2014 Hard Clam Beds - Relative Abundance (ac)			NJDEP Sport Ocean Fishing Ground (ac)	Shallow Water (less than 20 feet MLLW)[c] (ac)
						Uncertified	Certified	Transplant-ation (Hard Clam)	Bait (Surfclam)	Prohibited	Special Restricted		High	Moderate	Low		
Base Case	11	Excavation of Ambrose Channel HDD entry pit (East) and tie-in	Clamshell	MP 30.40	0.3 cm [0.12 in]	--	--	--	--	5.32	--	--	--	--	--	5.35	5.35
					1.0 cm [0.4 in]	--	--	--	--	3.96	--	--	--	--	--	3.96	3.96
					3.0 cm [1.2 in]	--	--	--	--	2.87	--	--	--	--	--	2.87	2.87
Base Case	12	Jetting at the Neptune Cable crossing offshore Rockaway	Hand Jet	MP 35.19	0.3 cm [0.12 in]	--	5.45	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	2.87	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	1.19	--	--	--	--	--	--	--	--	--	--
Base Case	13	Pre-lay trenching between the Neptune crossing and the end of the pipeline	Clamshell	MP 35.23 - MP 35.49	0.3 cm [0.12 in]	--	0.99	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Base Case	14	Excavation of tie-in skid and manifold at Rockaway	Mass Flow Excavator (Submersible Pump) and Hand Jet	MP 35.49	0.3 cm [0.12 in]	--	9.81	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	6.34	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	3.67	--	--	--	--	--	--	--	--	--	--
Addendum 1	A-1	Dredging of backfill source material from Ambrose Channel[c]	Clamshell	Ambrose Channel	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	0.28	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 1	A-2	Dredging of backfill source material from Rockaway Inlet[c]	Clamshell	Rockaway Inlet	0.3 cm [0.12 in]	11.44	--	--	--	--	--	--	--	--	--	--	6.81
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 1	A-3	Dredging of backfill source material from U.S. Navy Earle Channel[c]	Clamshell	U.S. Navy Earle Channel	0.3 cm [0.12 in]	--	--	--	--	<0.01	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	-	--	--	--	--
Addendum 1	A-4	Backfilling of (i) Morgan Shore HDD pit and (ii) anode sled burial area	Clamshell	(i) MP12.50 (ii) 1,200 ft north of MP12.32	0.3 cm [0.12 in]	--	--	--	--	9.41	--	--	9.41	--	--	--	9.41
					1.0 cm [0.4 in]	--	--	--	--	6.64	--	--	6.64	--	--	--	6.64
					3.0 cm [1.2 in]	--	--	--	--	4.86	--	--	4.86	--	--	--	4.86
Addendum 1	A-5	Backfilling of trench between Morgan HDD exit and the Midline tie-in	Clamshell	MP12.50 to MP16.60	0.3 cm [0.12 in]	166.86	--	163.10	--	116.20	--	--	118.78	--	--	--	283.06
					1.0 cm [0.4 in]	130.67	--	127.67	--	91.16	--	--	93.19	--	--	--	221.83
					3.0 cm [1.2 in]	94.36	--	92.73	--	65.05	--	--	66.28	--	--	--	159.42
Addendum 1	A-6	Backfilling of the Neptune Cable crossing point in Raritan Bay	Clamshell	MP13.88	0.3 cm [0.12 in]	--	--	--	--	4.46	--	--	4.46	--	--	--	4.46
					1.0 cm [0.4 in]	--	--	--	--	2.87	--	--	2.87	--	--	--	2.87
					3.0 cm [1.2 in]	--	--	--	--	1.59	--	--	1.59	--	--	--	1.59

Table 2-5
Comprehensive Sedimentation Impacts[a,b]

Modeling Report	Modeled Scenario	Construction Activity	Equipment Type	Location	Deposition [minimum average]	NY Shellfish Lands (ac)		NYSDEC Special Harvest Areas (ac)		NJ Shellfish Waters (2016) (ac)		NJDEP 2014 Surfclam Bed (ac)	NJDEP 2014 Hard Clam Beds - Relative Abundance (ac)			NJDEP Sport Ocean Fishing Ground (ac)	Shallow Water (less than 20 feet MLLW)[c] (ac)
						Uncertified	Certified	Transplant-ation (Hard Clam)	Bait (Surfclam)	Prohibited	Special Restricted		High	Moderate	Low		
Addendum 1	A-7	Backfilling of trench across the Raritan Channel	Clamshell	MP17.31 to MP17.89	0.3 cm [0.12 in]	42.40	--	42.20	--	--	--	--	--	--	--	--	42.20
					1.0 cm [0.4 in]	29.71	--	29.71	--	--	--	--	--	--	--	--	29.71
					3.0 cm [1.2 in]	22.53	--	22.53	--	--	--	--	--	--	--	--	22.53
Addendum 1	A-8	Backfilling of trench between the anchorage area and the Chapel Hill Channel	Clamshell	MP24.00 to MP25.20	0.3 cm [0.12 in]	57.78	--	--	--	--	--	--	--	--	--	--	17.55
					1.0 cm [0.4 in]	57.78	--	--	--	--	--	--	--	--	--	--	17.55
					3.0 cm [1.2 in]	44.45	--	--	--	--	--	--	--	--	--	--	14.27
Addendum 1	A-9	Backfilling of Ambrose Channel HDD exit pit (West)	Clamshell	MP29.52	0.3 cm [0.12 in]	--	--	--	--	16.55	--	--	--	--	--	<0.01	--
					1.0 cm [0.4 in]	--	--	--	--	8.52	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	5.15	--	--	--	--	--	--	--
Addendum 1	A-10	Backfilling of Ambrose Channel HDD entry pit (East) and tie-in	Clamshell	MP30.40	0.3 cm [0.12 in]	--	--	--	--	13.79	--	--	--	--	--	14.96	14.49
					1.0 cm [0.4 in]	--	--	--	--	9.30	--	--	--	--	--	9.71	9.67
					3.0 cm [1.2 in]	--	--	--	--	6.91	--	--	--	--	--	7.04	7.04
Addendum 1	A-11	Backfilling at the Neptune Cable crossing offshore Rockaway	Clamshell	MP35.19	0.3 cm [0.12 in]	--	7.63	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	4.95	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	2.97	--	--	--	--	--	--	--	--	--	--
Addendum 1	A-12	Backfilling between the Neptune Cable crossing and end of the pipeline	Clamshell	MP35.23 to MP35.49	0.3 cm [0.12 in]	--	26.83	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	19.60	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	12.08	--	--	--	--	--	--	--	--	--	--
Addendum 1	A-13	Backfilling tie-in skid and manifold at Rockaway	Clamshell	MP35.49	0.3 cm [0.12 in]	--	12.09	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	9.02	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	5.45	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-1	Pre-lay trenching between Morgan HDD pit and the Midline tie-in (2.5% loss)[c]	Clamshell (environmental bucket with scow overflow)	MP12.50 to MP16.60	0.3 cm [0.12 in]	3.96	--	3.96	--	7.23	--	--	7.23	--	--	--	11.20
					1.0 cm [0.4 in]	0.10	--	0.10	--	0.40	--	--	0.40	--	--	--	0.50
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-2	Pre-lay trenching between Morgan HDD pit and the Midline tie-in (0.5% loss; no scow overflow)	Clamshell (environmental bucket with no scow overflow)	MP12.50 to MP16.60	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-3	Post-lay trenching between the Morgan HDD pit and the Midline tie-in (2 passes; 5% loss)	Jet Trencher	MP12.50 to MP16.60	0.3 cm [0.12 in]	6.04	--	6.04	--	7.04	--	--	7.04	--	--	--	13.08
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--

Table 2-5
Comprehensive Sedimentation Impacts[a,b]

Modeling Report	Modeled Scenario	Construction Activity	Equipment Type	Location	Deposition [minimum average]	NY Shellfish Lands (ac)		NYSDEC Special Harvest Areas (ac)		NJ Shellfish Waters (2016) (ac)		NJDEP 2014 Surfclam Bed (ac)	NJDEP 2014 Hard Clam Beds - Relative Abundance (ac)			NJDEP Sport Ocean Fishing Ground (ac)	Shallow Water (less than 20 feet MLLW)[c] (ac)
						Uncertified	Certified	Transplant-ation (Hard Clam)	Bait (Surfclam)	Prohibited	Special Restricted		High	Moderate	Low		
Addendum 2	B-4	Excavation activities at Morgan Shore (0.5% loss)	Clamshell (environmental bucket with no scow overflow)	(i) MP12.50 (ii) ~1,200 ft north of MP12.30	0.3 cm [0.12 in]	--	--	--	--	0.50	--	--	0.50	--	--	--	0.50
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-5	Pre-lay trenching across the Raritan Channel (0.5% loss)	Clamshell (environmental bucket with no scow overflow)	MP17.31 to MP17.89	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-6	Pre-lay trenching between the anchorage area and the Chapel Hill Channel (0.5% loss)	Clamshell (environmental bucket with no scow overflow)	MP24.00 to MP25.20	0.3 cm [0.12 in]	0.59	--	--	--	--	--	--	--	--	--	--	0.25
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-7	Excavation of Ambrose Channel HDD pit (West) (2.5% loss)[c]	Clamshell (environmental bucket with scow overflow)	MP29.52	0.3 cm [0.12 in]	--	--	--	--	3.57	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	1.19	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-8	Excavation of Ambrose Channel HDD pit (West) (0.5% loss)	Clamshell (environmental bucket with no scow overflow)	MP29.52	0.3 cm [0.12 in]	--	--	--	--	0.59	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-9	Excavation at the Ambrose HDD pit (East) and Ambrose Channel tie-in (2.5% loss)	Clamshell (environmental bucket with scow overflow)	MP30.40	0.3 cm [0.12 in]	--	--	--	--	3.77	--	--	--	--	--	3.77	3.77
					1.0 cm [0.4 in]	--	--	--	--	2.68	--	--	--	--	--	2.68	2.68
					3.0 cm [1.2 in]	--	--	--	--	1.39	--	--	--	--	--	1.39	1.39
Addendum 2	B-10	Pre-lay trenching between the Neptune Cable crossing and end of pipeline (2.5% loss)	Clamshell (environmental bucket with scow overflow)	MP35.19 to MP35.49	0.3 cm [0.12 in]	--	1.98	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-11	Dredging of backfill source material from Ambrose Channel (2.5% loss)[c,d]	Clamshell (environmental bucket with scow overflow)	Ambrose Channel (W to E)	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-12	Dredging of backfill source material from Rockaway Inlet (2.5% loss)[c,d]	Clamshell (environmental bucket with scow overflow)	Rockaway Inlet (S to N)	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--

Table 2-5
Comprehensive Sedimentation Impacts[a,b]

Modeling Report	Modeled Scenario	Construction Activity	Equipment Type	Location	Deposition [minimum average]	NY Shellfish Lands (ac)		NYSDEC Special Harvest Areas (ac)		NJ Shellfish Waters (2016) (ac)		NJDEP 2014 Surfclam Bed (ac)	NJDEP 2014 Hard Clam Beds - Relative Abundance (ac)			NJDEP Sport Ocean Fishing Ground (ac)	Shallow Water (less than 20 feet MLLW)[c] (ac)
						Uncertified	Certified	Transplant-ation (Hard Clam)	Bait (Surfclam)	Prohibited	Special Restricted		High	Moderate	Low		
Addendum 2	B-13	Dredging of backfill source material from Earle Channel (2.5% loss)[c]	Clamshell (environmental bucket with scow overflow)	Earle Channel (W to E)	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-14	Dredging of backfill source material from Ambrose Channel (0.5% loss)[c]	Clamshell (environmental bucket with no scow overflow)	Ambrose Channel (W to E)	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-15	Dredging of backfill source material from Rockaway Inlet (0.5% loss)[c]	Clamshell (environmental bucket with no scow overflow)	Rockaway Inlet (S to N)	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-16	Dredging of backfill source material from Earle Channel (0.5% loss)[c]	Clamshell (environmental bucket with no scow overflow)	Earle Channel (W to E)	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-17	Side-cast across the anchorage area (100% loss)[e]	Clamshell	MP24.00 to MP24.78	0.3 cm [0.12 in]	53.96	--	--	--	--	--	--	--	--	--	--	18.56
					1.0 cm [0.4 in]	36.04	--	--	--	--	--	--	--	--	--	--	13.89
					3.0 cm [1.2 in]	22.87	--	--	--	--	--	--	--	--	--	--	9.63
Addendum 2	B-18	Side-cast at the Ambrose HDD pit (West) (100% loss)[e]	Clamshell	MP29.52	0.3 cm [0.12 in]	--	--	--	--	18.53	--	--	--	--	--	1.61	--
					1.0 cm [0.4 in]	--	--	--	--	6.44	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	4.36	--	--	--	--	--	--	--
Addendum 2	B-19	Side-cast at the Ambrose HDD pit (East) and Ambrose Channel tie-in (100% loss)[e]	Clamshell	MP30.40	0.3 cm [0.12 in]	--	--	--	--	6.36	--	--	--	--	--	6.54	6.86
					1.0 cm [0.4 in]	--	--	--	--	4.46	--	--	--	--	--	4.46	4.43
					3.0 cm [1.2 in]	--	--	--	--	3.87	--	--	--	--	--	3.87	3.84
Addendum 2	B-20	Side-cast between the Neptune Cable crossing and RDL (100% loss)[e]	Clamshell	MP35.19 to MP35.49	0.3 cm [0.12 in]	--	22.77	--	--	--	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	14.95	--	--	--	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	9.90	--	--	--	--	--	--	--	--	--	--
Addendum 2	B-21	Backfilling of trench between Morgan HDD exit and the Midline tie-in	Clamshell	MP12.50-MP16.60	0.3 cm [0.12 in]	166.85	--	163.77	--	114.82	--	--	117.16	--	--	--	281.68
					1.0 cm [0.4 in]	132.66	--	130.27	--	90.86	--	--	92.76	--	--	--	223.52
					3.0 cm [1.2 in]	96.59	--	94.75	--	65.60	--	--	67.08	--	--	--	162.19
Addendum 2	B-22	Backfilling of Ambrose Channel HDD pit (West)	Clamshell	MP29.52	0.3 cm [0.12 in]	--	--	--	--	15.16	--	--	--	--	--	--	--
					1.0 cm [0.4 in]	--	--	--	--	8.92	--	--	--	--	--	--	--
					3.0 cm [1.2 in]	--	--	--	--	5.15	--	--	--	--	--	--	--

Table 2-5
Comprehensive Sedimentation Impacts[a,b]

Modeling Report	Modeled Scenario	Construction Activity	Equipment Type	Location	Deposition [minimum average]	NY Shellfish Lands (ac)		NYSDEC Special Harvest Areas (ac)		NJ Shellfish Waters (2016) (ac)		NJDEP 2014 Surfclam Bed (ac)	NJDEP 2014 Hard Clam Beds - Relative Abundance (ac)			NJDEP Sport Ocean Fishing Ground (ac)	Shallow Water (less than 20 feet MLLW)[c] (ac)
						Uncertified	Certified	Transplant-ation (Hard Clam)	Bait (Surfclam)	Prohibited	Special Restricted		High	Moderate	Low		
Addendum 3	C-1	Clamshell dredge Raritan Channel deep prism (15-ft depth of cover) with no scow overflow	Clamshell	MP 17.23 - MP 17.97	0.3 cm [0.12 in]	--	--	--	--	--	--	--	--	--	--	--	
					1.0 cm [0.4 in]	--	--	--	--	--	--	--	--	--	--	--	
					3.0 cm [1.2 in]	--	--	--	--	--	--	--	--	--	--	--	
Addendum 3	C-2	Clamshell dredge anchorage deep prism (15-ft depth of cover) with no scow overflow	Clamshell	MP 24.00 - MP 24.70	0.3 cm [0.12 in]	9.91	--	--	--	--	--	--	--	--	--	--	4.90
					1.0 cm [0.4 in]	0.00	--	--	--	--	--	--	--	--	--	--	0.00
					3.0 cm [1.2 in]	0.00	--	--	--	--	--	--	--	--	--	--	0.00
Addendum 3	C-3	Clamshell dredge extended Chapel Hill Channel deep prism (15-ft depth of cover) with no scow overflow	Clamshell	MP 24.70 - MP 25.61	0.3 cm [0.12 in]	9.60	--	--	--	--	--	--	--	--	--	--	4.04
					1.0 cm [0.4 in]	0.00	--	--	--	--	--	--	--	--	--	--	0.00
					3.0 cm [1.2 in]	0.00	--	--	--	--	--	--	--	--	--	--	0.00
Addendum 3	C-4	Clamshell dredge anchorage deep prism (15-ft depth of cover) with scow overflow	Clamshell	MP 24.00 - MP 24.70	0.3 cm [0.12 in]	24.18	--	--	--	--	--	--	--	--	--	--	11.61
					1.0 cm [0.4 in]	14.77	--	--	--	--	--	--	--	--	--	--	7.20
					3.0 cm [1.2 in]	0.20	--	--	--	--	--	--	--	--	--	--	0.00
Addendum 3	C-5	Backfill Raritan Channel base-case prism (up to 8-ft depth of cover) @ 7,500 ft^3/hr	Clamshell	MP 17.31 - MP 17.89	0.3 cm [0.12 in]	38.93	--	38.93	--	--	--	--	--	--	--	--	38.93
					1.0 cm [0.4 in]	28.84	--	28.84	--	--	--	--	--	--	--	--	28.84
					3.0 cm [1.2 in]	22.75	--	22.75	--	--	--	--	--	--	--	--	22.75
Addendum 3	C-6	Backfill Raritan Channel deep prism (15-ft depth of cover) @ 7,500 ft^3/hr	Clamshell	MP 17.23 - MP 17.97	0.3 cm [0.12 in]	84.98	--	84.98	--	--	--	--	--	--	--	--	84.98
					1.0 cm [0.4 in]	59.65	--	59.65	--	--	--	--	--	--	--	--	59.65
					3.0 cm [1.2 in]	46.28	--	46.28	--	--	--	--	--	--	--	--	46.28
Addendum 3	C-7	Backfill anchorage area base-case prism (7-ft depth of cover) @ 7,500 ft^3/hr	Clamshell	MP 24.00 - MP 24.78	0.3 cm [0.12 in]	55.54	--	--	--	--	--	--	--	--	--	--	20.59
					1.0 cm [0.4 in]	43.56	--	--	--	--	--	--	--	--	--	--	16.66
					3.0 cm [1.2 in]	33.66	--	--	--	--	--	--	--	--	--	--	13.17
Addendum 3	C-8	Backfill anchorage area deep prism (15-ft depth of cover) @ 7,500 ft^3/hr	Clamshell	MP 24.00 - MP 24.70	0.3 cm [0.12 in]	63.56	--	--	--	--	--	--	--	--	--	--	24.16
					1.0 cm [0.4 in]	49.80	--	--	--	--	--	--	--	--	--	--	19.72
					3.0 cm [1.2 in]	39.80	--	--	--	--	--	--	--	--	--	--	16.45
Addendum 3	C-9	Backfill extended Chapel Hill Channel prism (up to 8-ft depth of cover) @ 7,500 ft^3/hr	Clamshell	MP 24.78 - MP 25.61	0.3 cm [0.12 in]	55.26	--	--	--	--	--	--	--	--	--	--	28.41
					1.0 cm [0.4 in]	41.97	--	--	--	--	--	--	--	--	--	--	22.33
					3.0 cm [1.2 in]	31.32	--	--	--	--	--	--	--	--	--	--	15.77
Addendum 3	C-10	Backfill extended Chapel Hill Channel deep prism (15-ft depth of cover) @ 7,500 ft^3/hr	Clamshell	MP 24.70 - MP 25.61	0.3 cm [0.12 in]	79.45	--	--	--	--	--	--	--	--	--	--	39.21
					1.0 cm [0.4 in]	57.86	--	--	--	--	--	--	--	--	--	--	29.65
					3.0 cm [1.2 in]	45.86	--	--	--	--	--	--	--	--	--	--	23.59

Table 2-5
Comprehensive Sedimentation Impacts[a,b]

Modeling Report	Modeled Scenario	Construction Activity	Equipment Type	Location	Deposition [minimum average]	NY Shellfish Lands (ac)		NYSDEC Special Harvest Areas (ac)		NJ Shellfish Waters (2016) (ac)		NJDEP 2014 Surfclam Bed (ac)	NJDEP 2014 Hard Clam Beds - Relative Abundance (ac)			NJDEP Sport Ocean Fishing Ground (ac)	Shallow Water (less than 20 feet MLLW)[c] (ac)
						Uncertified	Certified	Transplant-ation (Hard Clam)	Bait (Surfclam)	Prohibited	Special Restricted		High	Moderate	Low		
Addendum 3	C-11	Backfill of trench between Morgan HDD exit and the Midline tie-in @ 4,800 ft^3/hr	Clamshell	MP 12.50 - MP 16.60	0.3 cm [0.12 in]	192.20	--	187.73	--	123.55	--	--	126.47	--	--	--	315.76
					1.0 cm [0.4 in]	153.26	--	149.78	--	98.10	--	--	100.44	--	--	--	251.36
					3.0 cm [1.2 in]	112.94	--	110.68	--	70.95	--	--	72.54	--	--	--	183.89
Addendum 3	C-12	Backfill Raritan Channel deep prism (15-ft depth of cover) @ 4,800 ft^3/hr	Clamshell	MP 17.23 - MP 17.97	0.3 cm [0.12 in]	83.10	--	83.10	--	--	--	--	--	--	--	--	83.10
					1.0 cm [0.4 in]	59.43	--	59.43	--	--	--	--	--	--	--	--	59.43
					3.0 cm [1.2 in]	46.97	--	46.97	--	--	--	--	--	--	--	--	46.97
Addendum 3	C-13	Backfill of Ambrose HDD Pit (East) and tie-in @ 4,800 ft^3/hr	Clamshell	MP 30.40	0.3 cm [0.12 in]	--	--	--	--	16.65	--	--	--	--	--	19.82	17.39
					1.0 cm [0.4 in]	--	--	--	--	12.09	--	--	--	--	--	13.48	12.76
					3.0 cm [1.2 in]	--	--	--	--	8.99	--	--	--	--	--	9.51	9.13

Note: Shaded entries reflect previously modeled sediment modeling scenarios that are no longer under consideration and, therefore, are not considered as part of total impact area calculations.

[a] Any differences between acreages in this table and those presented in the sediment modeling results are a result of rounding and differences in mapping projection.
[b] Potential areas of impact for scenarios do not include areas of deposition within the bounds of navigational channels, as these areas are considered to be regularly disturbed.
[c] Shallow water estuarine areas crossed by the offshore Project route serve as winter flounder spawning habitat.
[d] Sediment modeling scenarios with 2.5% loss were considered as part of total impact area calculations as the results meet anticipated mixing zone requirements and provide conservative estimates of potential areas of impact.
[e] A 100% sediment loss value corresponds to the assumption that all the material is released into the water column at a height of approximately 5 feet above the ambient seafloor elevation. This assumption applies to the use of either an environmental bucket or conventional bucket.
[f]

Key:

--	=	No affected area
ac	=	acres
cm	=	centimeter
ft	=	feet
ft^3/hr	=	cubic feet per hour
HDD	=	horizontal directional drill
in	=	inch
MLLW	=	mean lower low water
MP	=	Milepost
NJDEP	=	New Jersey Department of Environmental Protection
NYSDEC	=	New York State Department of Environmental Conservation
RDL	=	Rockaway Delivery Lateral

zone criteria. Therefore, Transco does not plan to perform additional sediment modeling specifically for backfilling with the tremie technique because the existing model results present an approximate representation of suspended sediment plumes that would be generated using a tremie tube at similar "production" rates. Further, use of a tremie tube is not currently proposed due to the rate limitations, but Transco continues to explore the feasibility of using tremie technology for backfilling as a supplement to the clamshell dredge, considering factors like tremie equipment availability.

The sediment modeling results of the extent of suspended sediment plumes and sedimentation for each backfill-related scenario are provided in Table 2-4, above. As with the modeling effort for "base case" scenarios, reported sediment concentrations are above ambient concentrations in the Project area. Concentrations were calculated with a horizontal grid resolution of 20 by 20 meters and a vertical grid resolution of 0.5 meter.

Suspended Sediment Summary

The predicted sediment plumes and TSS concentrations for backfill-related activities also varied in magnitude and scale along the entire offshore route (see Table 2-4, above). Sediment modeling results of clamshell dredge activities in the channel areas to be used as a source of backfill indicated that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 2,526 and 6,365 feet from the source, and TSS concentrations would return to ambient conditions within 0.6 to 1.0 hour after the associated dredging has ceased. Sediment modeling results of backfilling activities indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 886 and 2,444 feet from the source, and TSS concentrations would return to ambient conditions within 1.5 to 3.5 hours.

Actual TSS concentrations during construction may be less than modeled concentrations based on the conservative modeling assumptions used, some of which are discussed above. In addition, the bathymetry used for the modeling does not account for the dimensions of the trench or pit that is being backfilled. The actual morphology of the dredged and excavated areas will potentially allow the clamshell bucket to be lowered deeper in the water column before releasing material, and the side slopes of the dredged and excavated areas will substantially reduce the lateral dispersion of the placed material.

Sediment Deposition Results

Predicted sediment deposition for backfill-related scenarios varied in magnitude along the entire offshore route. The sediment modeling results indicate that sedimentation greater than 3 cm (1.2 inches) resulting from clamshell dredging to obtain backfill material (Scenarios A-1 through A-3) would range from 0 to 72 feet from the source and would cover between 0.0 and 7.2 acres, depending on the scenario. The sediment modeling results indicate that sedimentation greater than 3 cm (1.2 inches) resulting from backfilling activities (Scenarios A-4 through A-13) would range between 197 and 525 feet from the source and would cover between 1.6 and 158.7 acres, depending on the scenario.

"Sedimentation" includes the full quantity of material that is placed as backfill, and therefore deposition levels are often predicted to be several feet thick in the central grid cells that encompass the width of the excavated areas. Because all placement is assumed to be on target along the center of the placement areas, maximum deposition levels for certain backfill scenarios exceed the depth of the area to be backfilled; this indicates that not as much "overfill" material may be required if all placement is on target.

Summary of Addendum 2 Modeling Results

In consideration of the modeling results described above, Transco has explored advancements in technology and associated BMPs that would enable Transco to further control and reduce Project-generated TSS (and turbidity). For example, Transco modeled replacing the conventional clamshell dredge bucket with an environmental clamshell dredge bucket and/or a jet trencher, where feasible, to limit sediment losses to the water column and determine which tool would best limit elevated levels of TSS within the water column along certain portions of the route. Therefore, Transco conducted additional sediment modeling to simulate the use of an environmental bucket for all clamshell dredging scenarios, as well as the use of a jet trencher along a distinct portion of the route (MP12.5 to MP16.6). The additional environmental bucket scenarios were evaluated with and without the assumption of scow barge (scow) overflow at the surface; scow overflow is associated with sediment dewatering, which allows for more efficient dredging (e.g., shorter duration) but increases TSS in the water column.

Transco has conducted additional modeling in Addendum 2 to re-evaluate certain clamshell dredging scenarios to include the temporary placement of clamshell-dredged sediments adjacent to the dredged area (i.e., side-casting) for subsequent use as backfill. Side-casting was only considered in areas deeper than -15 feet MLLW (but was subsequently eliminated from consideration). Certain backfill scenarios were also remodeled assuming a reduced constant production rate. The following is a summary of the new modeling results. Note that Transco is not proposing to side-cast clamshell-dredged material.

The additional modeling included 22 distinct modeling scenarios, which were generally divided into four types of construction activities associated with different stages of the offshore installation for discrete sections of the offshore environment between MP12.50 and MP35.49, as follows:

- Clamshell dredging with an environmental bucket where sediment is lost both as the bucket ascends through the water column and due to overflow of the scow at the sea surface (2.5% sediment loss rate[1]) (Scenarios B-1, B-7, and B-9 through B-13);
- Clamshell dredging with an environmental bucket where sediment is only lost as the bucket ascends through the water column (0.5% sediment loss rate). No overflow of the scow occurs (Scenarios B-2, B-4, B-5, B-6, B-8, B-14, B-15, and B-16);

[1] "Sediment loss rate" in this context means the percentage of total volume of sediment that is released into the water column during the specified activity, referred to as a "resuspension factor" in other literature (e.g., Palermo et al. 2008). The release rate (sediment volume per unit time) for a given scenario is the rate of dredging/trenching/backfilling multiplied by the sediment loss rate.

- Post-lay trenching (by jet trencher) to achieve pipeline burial (5% sediment loss rate) (Scenario B-3);
- Clamshell dredging and subsequent side-casting of dredged materials to the seabed at four locations along the pipeline route (100% sediment loss rate[2]) (Scenarios B-17 through B-20) (note that Transco is not proposing to side-cast clamshell-dredged material); and
- Placement of backfill materials (100% sediment loss rate[2]) for two segments of the route excavated using a clamshell dredge (Scenarios B-21 and B-22).

The locations of these scenarios are generally shown on Figure 35 (see Appendix A). Table 2-4, above, presents the sediment modeling results of suspended sediment plumes and sedimentation for each modeled scenario. Reported TSS concentrations are expressed as the incremental increase above ambient concentrations in the Project area. Concentrations were calculated with a horizontal grid resolution of 20 by 20 meters and a vertical grid resolution of 0.5 meter. Modeling results are based on conservative (i.e., overestimated) but realistic assumptions, including the following:

- Continuous operation will occur for each scenario.
- Excavated volumes for certain Addendum 2 scenarios have been reduced from the corresponding base-case scenarios to account for revisions to the design of some pre-lay, clamshell dredge trenches to account for refined slope estimates (refinement from 4H:1V to 3H:1V). This revision is based on analysis of the geotechnical data for sediment samples collected along the proposed route, which indicates that the steeper slope is more realistic.
- All side-cast material will be released from a depth that is 5 feet above the ambient seafloor elevation.
- No infill due to natural sedimentation or use of potentially side-cast material is considered. However, "sedimentation" results include the full quantity of material that is side-cast and, therefore, deposition levels are often predicted to be several feet thick in the central grid cells that encompass the width of the excavated areas.
- The total volume of sediment to be dredged from the three backfill source channel is the sum of all areas requiring backfill, with additional volume to account for losses during dredging (5%) and an "overfill" factor for material that may be dispersed or off target during backfill placement (20%). This overfill factor is based on Transco's real-world experience with backfill material transfer efficiency. The volume to be dredged from each proposed backfill source channel area was assumed to be a third of the total backfill volume.

[2] For Addendum 2 scenarios, a 100% sediment loss rate corresponds to the assumption that all the material is released into the water column at a height of approximately 5 feet above the ambient seafloor elevation. This assumption applies to the use of either an environmental bucket or conventional bucket.

Transco notes that the assumptions of 2.5% and 0.5% clamshell dredge loss rates used in Addendum 2 scenarios are based on the use of an environmental bucket with and without overflow, respectively. These values are less than the loss rate assumptions for clamshell dredging with a conventional bucket presented in the base-case and Addendum 1 scenarios. However, a 0.5% average loss rate (i.e., resuspension factor) is still considered a conservative (i.e., upper-level) estimate for mechanical dredges with environmental buckets, not considering scow overflow (Palermo et al. 2008; Schroeder n.d.). Another study indicates that the total average loss of sediment during clamshell dredging in New York Harbor was approximately 2%, including scow overflow (Tavolaro 1984). Other studies also support the application of resuspension values of less than 2.5% for clamshell dredging with scow overflow (e.g., Hayes and Wu 2001).

Note that as part of this permit application, Transco is proposing to acquire backfill material from one or more existing commercial vendors.

The full summary of the results is presented in the Addendum 2 modeling report (see Appendix F-3).

Suspended Sediment Summary (Addendum 2 Modeling)

The predicted sediment plumes and TSS concentrations for backfill-related activities vary in magnitude and scale along portions of the offshore route. The additional modeling scenarios were developed to estimate plume dispersion associated with previously modeled clamshell dredging scenarios using alternate construction methods, i.e., (i) clamshell dredging using an environmental bucket with overflow of scow, (ii) clamshell dredging using an environmental bucket without overflow of scow, (iii) jet trenching, (iv) clamshell dredging with side-casting, and/or (v) reduced rate of backfill (see Table 2-4, above). The results of the additional modeling are summarized in the Addendum 2 modeling report (Appendix F-3) and Table 2-4.

- Sediment modeling results of environmental clamshell dredging with scow overflow for pre-lay trenching and HDD pit excavation activities indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 0 and 591 feet from the source, and TSS concentrations would return to ambient conditions within 0.6 to 1.7 hours after the associated dredging has ceased.
- Sediment modeling results of environmental clamshell dredging with no scow overflow for trenching and HDD pit excavation activities indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 0 and 148 feet from the source, and TSS concentrations would return to ambient conditions within 0 to 0.5 hour after the associated dredging has ceased.
- Sediment modeling results of a single jet trenching activity indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend 1,476 feet from the source, and TSS concentrations would return to ambient conditions within 0.2 hour.
- Sediment modeling results of environmental clamshell dredging with scow overflow in the channel areas to be used as a source of backfill indicate that sediment plumes with

TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 1,033 and 2,116 feet from the source, and TSS concentrations would return to ambient conditions within 0.2 to 1.0 hour after the associated dredging has ceased.

- Sediment modeling results of environmental clamshell dredging with no scow overflow in the channel areas to be used as a source of backfill indicate that there will be no sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L, and TSS concentrations would return to ambient conditions within 0 to 0.5 hour after the associated dredging has ceased.
- Sediment modeling results of clamshell dredging with side-casting activities indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L could extend between 1,296 and 17,684 feet from the source, and TSS concentrations would return to ambient conditions within 0.9 to 7.3 hours.
- Sediment modeling results of backfill activities with a reduced rate of backfill indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L could extend between 1,329 and 1,526 feet from the source, and TSS concentrations would return to ambient conditions within 1.2 to 1.3 hours.

Actual TSS concentrations during construction may be less than modeled concentrations based on the use of somewhat conservative modeling assumptions, some of which are discussed above. In general, these results indicate that Transco will be able to meet TSS and turbidity standards and requirements at the edge of permitted mixing zones, which are expected to range up to 1,500 feet, depending on factors such as the characteristics of sediment to be dredged and the resources in a given area. However, based on the extensive plume results for Scenario B-18 and B-19, and logistical challenges that would increase the duration of in water work, Transco does not propose side-casting when dredging the Ambrose Channel HDD pits; that material will be disposed either upland or, pending USACE and EPA approval, in the HARS in federal waters.

Side-casting across the anchorage area (Scenario B-17) (entirely in New York waters) is no longer being considered and Transco will dispose of the dredged material upland or in the HARS.

In other areas with limited contaminant levels, modeling indicates that clamshell dredging with scow overflow will not generate extensive plumes. Therefore, Transco will consider allowing overflow in these areas to increase dredging efficiency, which will shorten the duration of dredging.

In conclusion, Transco confirms that it can and will implement BMPs during construction activities to control Project-generated TSS (and turbidity) in a manner that complies with New Jersey and New York State SWQSs, accounting for any anticipated mixing zone limits. Based on a January 6, 2020 meeting with NJDEP, Transco will adhere to an NJDEP-approved water quality monitoring plan that incorporates adaptive management strategies to help ensure that New Jersey SWQSs are being met. (see Transco's Draft Water Quality Monitoring Plan for New Jersey Waters included as Appendix N)

Sediment Deposition Results (Addendum 2 Modeling)

Sediment deposition results for the Addendum 2 scenarios include both Project-related sedimentation and, in the case of side-casting, direct in-water placement of dredged material. The level of deposition predicted for the Addendum 2 scenarios varies in magnitude along the offshore route and depends on factors such as equipment type, total volume dredged, and sediment characteristics. Table 2-4 presents the range of deposition that may occur for each scenario in terms of three representative levels of sedimentation, which may cause varying degrees of adverse effects on benthic and demersal species and life-stages. Figures 36 through 57 (see Appendix A) depict the extent of the modeled deposition for each Addendum 2 scenario with respect to several offshore resources. Table 2-5, above, provides numerical estimates of the resource areas that may be covered by Project-related sedimentation for Addendum 2 scenarios ranging from at least 0.3 cm (0.12 inch) to at least 3 cm (1.2 inches). Sediment modeling results of environmental clamshell dredging with scow overflow for pre-lay trenching and HDD pit excavation activities indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 371 feet from the source, while deposition exceeding 3.0 cm (1.2 inches) may extend up to 187 feet from the source.

- Sediment modeling results of environmental clamshell dredging with no scow overflow for trenching and HDD pit excavation activities indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 148 feet from the source. No deposition is predicted to exceed 3.0 cm (1.2 inch) for these scenarios.
- Sediment modeling results of a single jet trenching activity indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 97 feet from the source. No deposition is predicted to exceed 3.0 cm (1.2 inches) for this scenario (excluding the sediment that remains within the trench).
- Sediment modeling results of environmental clamshell dredging with scow overflow in the channel areas to be used as a source of backfill indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 299 feet from the source. No deposition is predicted to exceed 3.0 cm (1.2 inches) for these scenarios.
- Sediment modeling results of environmental clamshell dredging with no scow overflow in the channel areas to be used as a source of backfill indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 79 feet from the source. No deposition is predicted to exceed 3.0 cm (1.2 inches) for these scenarios.
- Sediment modeling results of clamshell dredging with side-casting activities indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 1,198 feet from the source, while deposition exceeding 3.0 cm (1.2 inches) may extend up to 397 feet from the source.
- Sediment modeling results of backfill activities with a reduced rate of backfill indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 453 feet from the source, while deposition exceeding 3.0 cm (1.2 inches) may extend up to 282 feet from the source.

For a full discussion of modeling results and model output figures, see the Addendum 2 modeling report in Appendix F-3.

Summary of Addendum 3 Modeling Results

Based on USACE New York District (NYD) feedback in May 2018 regarding cover depth requirements, Transco conducted additional modeling to simulate sediment losses from deeper dredging and burial (15 feet of sediment cover) of the pipeline at the Raritan Bay Channel and Chapel Hill Channel crossings and adjacent anchorage area, all in New York waters. Transco also simulated sediment losses from backfilling sections of the pipeline trench at slower rates (7,500 cubic feet per hour [ft^3/hr] and/or 4,800 ft^3/hr) compared to corresponding previously modeled scenarios, some in New Jersey waters; this was done to evaluate whether implementing reasonably slower backfilling rates in the respective areas could effectively reduce resultant suspended sediment plumes to meet anticipated mixing zone criteria.

The following is a summary of the modeling results reported in Addendum 3 (Appendix F-4). The additional modeling included 13 distinct modeling scenarios, which were divided into three categories based on three types of construction activities associated with different stages of the offshore installation for discrete sections of the offshore environment between MP12.50 and MP35.49, as follows:

- Clamshell dredging with an environmental bucket where sediment is lost as the bucket ascends through the water column (0.5% sediment loss). No overflow of the scow barge is permitted. (Scenarios C-1, C-2, and C-3)
- Clamshell dredging with an environmental bucket where sediment is lost as the bucket ascends through the water column and from overflow of the scow barge at the sea surface (2.5% sediment loss). (Scenario C-4)
- Simulations of placement of backfill materials in segments of the pipeline route previously excavated using clamshell dredges (100% sediment loss). (Scenarios C-5 through C-13)

The general locations of these scenarios are shown on Figure 58 (Appendix A). Table 2 in Addendum 3 (Appendix F-4) presents the sediment modeling results of suspended sediment plumes and sedimentation for each modeled scenario. Reported total suspended solids (TSS) concentrations are expressed as the incremental increase above ambient concentrations in the Project area. Concentrations were calculated with a horizontal grid resolution of 20 meters by 20 meters and a vertical grid resolution of 0.5 meter. Modeling results are based on conservative (i.e., overestimated) but realistic assumptions, including the following:

- Continuous operation would occur for each scenario.
- Dredging scenarios were modeled with a constant dredge production rate of 11,250 ft^3/hr.
- No infill due to natural sedimentation or use of potentially side-cast material is considered. However, "sedimentation" results include the full quantity of material that is backfilled; therefore, deposition levels are often predicted to be several feet thick in the central grid cells that encompass the width of the excavated areas.

- The total volume of sediment to be backfilled includes an "overfill" factor for material that may be dispersed or off target during backfill placement (20%). This overfill factor is based on Transco's real-world experience with backfill material transfer efficiency.
- 2.5% and 0.5% clamshell dredge loss rates were applied for the use of an environmental bucket with and without overflow, respectively.

The full summary of the results is presented in the Addendum 3 modeling report (Appendix F-4).

Suspended Sediment Summary (Addendum 3 Modeling)

The predicted sediment plumes and TSS concentrations for backfill-related activities vary in magnitude and scale along portions of the offshore route. The additional modeling scenarios were developed to estimate plume dispersion associated with (i) previously modeled clamshell dredging scenarios assuming deeper cover depth requirements (i.e., minimum 15 feet of sediment cover) at the channel crossings and adjacent anchorage area and (ii) backfilling sections of the pipeline trench at slower rates compared to corresponding previously modeled scenarios. The results of the additional modeling are summarized in Table 2 of the Addendum 3 modeling report (Appendix F-4).

- Sediment modeling results of environmental clamshell dredging with no scow overflow for pre-lay trenching in the channels and anchorage area indicate there would be no sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L, and TSS concentrations would return to ambient conditions within 0 to 0.3 hour after the associated dredging has ceased.
- Sediment modeling results of environmental clamshell dredging with scow overflow for trenching activities across the anchorage area indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend 197 feet from the source, and TSS concentrations would return to ambient conditions within 0.5 hour after the associated dredging has ceased.
- Sediment modeling results of backfill activities with a reduced backfilling rate of 7,500 ft^3/hr indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 919 and 1,247 feet from the source, and TSS concentrations would return to ambient conditions within 1.0 to 1.8 hours.
- Sediment modeling results of backfill activities with a further reduced backfilling rate of 4,800 ft^3/hr indicate that sediment plumes with TSS concentrations exceeding the ambient conditions by 100 mg/L would extend between 591 and 5,151 feet from the source, and TSS concentrations would return to ambient conditions within 0.4 to 1.1 hours.

Actual TSS concentrations during construction may be less than modeled concentrations based on the use of conservative modeling assumptions, some of which are discussed above. In general, these results indicate that Transco will be able to meet TSS and turbidity standards and requirements at the edge of permitted mixing zones, which are expected to range up to 1,500 feet, depending on factors such as the characteristics of sediment to be dredged and the resources in a given area. The main exception is the modeled scenario for backfilling of the Ambrose HDD pit (east). At this location, a slower backfilling rate of 4,800 ft^3/hr resulted in a larger

maximum plume extent compared to the original rate of 11,250 ft^3/hr. This is likely because the longer model duration (i.e., longer period of backfilling resulting from reduced backfilling rates) expose the modeled activity to a greater range of metocean conditions in an area subject to high current velocities. However, statistical analysis indicates that 99% of the time concentrations of 50 mg/L are not expected to extend more than 1,300 feet from the Ambrose HDD pit (east) during backfilling at 4,800 ft^3/hr.

In conclusion, Transco confirms that it can and will implement BMPs during construction activities to control Project-generated TSS and turbidity in a manner that complies with New Jersey and New York state SWQSs, accounting for any anticipated mixing zone limits. Based on a January 6, 2020 meeting with NJDEP, Transco will adhere to an NJDEP-approved water quality monitoring plan that incorporates adaptive management strategies to help ensure that New Jersey SWQSs are being met. (see Transco's Draft Water Quality Monitoring Plan for New Jersey Waters included as Appendix N)

Sediment Deposition Results (Addendum 3 Modeling)

The level of deposition predicted for the Addendum 3 scenarios varies in magnitude along the offshore route and depends on factors such as backfilling rate, total volume dredged, and sediment characteristics. Representative deposition results for all the Addendum 3 scenarios are presented in Table 2 of the Addendum 3 modeling report (Appendix F-4), and are summarized as follows:

- Sediment modeling results of environmental clamshell dredging with no scow overflow for trenching activities in the channels and anchorage area indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 85 feet from the source. No deposition is predicted to exceed 3.0 cm (1.2 inches) for these scenarios.
- Sediment modeling results of environmental clamshell dredging with scow overflow for trenching activities in the anchorage area indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 174 feet from the source, while deposition exceeding 3.0 cm (1.2 inches) may extend up to 13 feet from the source.
- Sediment modeling results for backfilling activities with a reduced backfilling rate of 7,500 ft^3/hr indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 981 feet from the source, while deposition exceeding 3.0 cm (1.2 inches) may extend up to 643 feet from the source.
- Sediment modeling results for backfilling activities with a further reduced backfilling rate of 4,800 ft^3/hr indicate that deposition exceeding 0.3 cm (0.12 inch) may extend up to 945 feet from the source, while deposition exceeding 3.0 cm (1.2 inches) may extend up to 574 feet from the source.

For a full discussion of modeling results and model output figures, see the Addendum 3 modeling report in Appendix F-4. See also Figures 59 through 71 in Appendix A, which depict the extent of the modeled deposition for each Addendum 3 scenario with respect to several offshore resources.

2.5 Contaminant Transport Modeling

As part of a 2018 project-specific geotechnical and geochemical site investigation, vibracore samples were collected from 69 sites along the Raritan Bay Loop route. At six of these sites in NJ waters, seven contaminants (bis(2-ethylhexyl)phthalate, phenanthrene, arsenic, manganese, mercury, polychlorinated biphenyls (PCBs), and 4,4'-DDE) were detected in the sediments at concentrations exceeding Ecological Saline Water Sediment Effects Range Medium (ER-M) screening criteria. Transco has conducted modeling of the contaminant parameters identified in NJDEP's Notice of Denial (dated June 5, 2019) to provide additional assurance that proposed Project BMPs outlined in the below discussion for N.J.A.C. 7:7-16.3 will be sufficient to prevent exceedances of available surface SWQSs for the identified contaminants. A full summary of the results is presented in the Contaminant Transport Modeling Report (Appendix F-5). The water quality criteria for the modeled contaminants can be found in the N.J.A.C. 7:9B Surface Water Quality Standards. The N.J.A.C. 7:9B acute and chronic criteria for saline waters are presented in Table 2-6 along with the EPA National recommended Water Quality Criteria for Aquatic Life (EPA n.d.) for comparison. As shown in Table 2-6, there are chronic criteria for PCBs, and both chronic and acute criteria for arsenic and mercury. There do not appear to be any promulgated criteria for bis(2-ethylhexyl)phthalate, phenanthrene, manganese, or 4,4'-DDE.

Table 2-6
Select Water Quality Standards/Criteria for Saline Waters

Analyte	N.J.A.C. 7:9B Acute (µg/L)	N.J.A.C. 7:9B Chronic (µg/L)	EPA Acute (µg/L)	EPA Chronic (µg/L)
Bis(2-Ethylhexyl)phthalate	None	None	None	None
Phenanthrene	None	None	None	None
Arsenic	69 (Dissolved)	36 (Dissolved)	69 (Dissolved)	36 (Dissolved)
Mercury	1.8 (Dissolved)	0.94 (Dissolved)	1.8 (Dissolved)	0.94 (Dissolved)
PCBs	None	0.03	None	0.03
4,4' DDE	None	None	None	None
Manganese	None	None	None	None

The fate and transport of each contaminant was evaluated at each reach individually, generating a matrix of 14 scenarios, outlined in Table 2-7, below. Based on a June 6, 2019 conference call with NJDEP staff, Transco evaluated the concentrations of these contaminants at a distance of 500 feet from the dredging activity in comparison to SWQSs in N.J.A.C. 7:9B.

The resuspension of contaminants during all modeling scenarios was evaluated assuming the use of a clamshell dredge with an environmental bucket and no barge scow overflow. For all contaminant scenarios, the initial dredge advance rate was calculated based on an estimated production rate of 7,500 ft^3/hr. Sediment losses from the clamshell dredge were assumed to be 0.5% of the total dredge volume for excavation activities, distributed evenly throughout the water column in five vertical layers.

The final results from this analysis are presented in Table 2-7 above as maximum contaminant concentration (throughout the water column) predicted over the duration of the model run, at a 500-foot radius from the dredging activity at any given time. These model-predicted concentrations at 500 feet were then compared to the corresponding NJDEP acute and chronic

water quality criteria, if available (in Table 2-6 above). If an exceedance of the criteria was predicted at the initial dredging rate, the scenario was re-run at a slower average rate until 100% compliance was achieved, as noted in Table 2-7 and further discussed below.

Mercury and Arsenic

Based on the modeling results for the four scenarios involving mercury or arsenic, none of the predicted concentrations at the 500-foot mixing zone edge exceeded the acute or chronic criteria at N.J.A.C. 7:9B. Based on these contaminant modeling results, Transco expects that there will be no exceedances of the mercury or arsenic criteria during dredging activities using an environmental bucket with no scow overflow. In addition, any contaminant concentrations that are introduced into the water column will be localized, temporary and of short duration. Further, Transco will implement a water quality monitoring program during construction to help ensure compliance with New Jersey's SWQSs. Transco's Draft Water Quality Monitoring Plan for New Jersey Waters (Appendix N) is based on input received from NJDEP during a January 6, 2020 conference call with NJDEP staff during which NJDEP informed Transco that chemical contaminant monitoring is not typically required and that turbidity monitoring would be sufficient to evaluate whether there would be any potential exceedances in SWQSs described in N.J.A.C. 7:9B.

PCB Aroclors

When initially modeled using the 7,500 cf/hr production rate, PCB Aroclor concentrations were found in exceedance of the chronic criteria for brief durations for both the VC208 and VC214 segments. To address these potential exceedance predictions, the model was rerun using reduced clamshell dredging rates and/or a "slack-tide pause". For VC208 reducing the dredging rate to 4,800 cubic feet per hour (cf/hr) eliminated all potential exceedances of the PCB Aroclor criteria. Although, reducing the dredging rate for VC214 alone did not eliminate all potential exceedances of the mercury criterion, 100% compliance is predicted for this segment when the trenching rate is reduced to 4,800 cf/hr and a 1-hour pause in dredging during each slack-tide period (i.e., either side of high tide and low tide intervals) is incorporated in the construction plan. The slack-tide pause was considered because earlier model results performed for construction in New York waters indicated that the greatest potential for exceedances most often occurred shortly after suspended sediment "pooled" in the dredging area during slack-tide periods, and the accumulated sediment was subsequently carried down-current once the ebb and flood tidal currents increased.

Based on the contaminant modeling results provided in the attached contaminant modeling report, Transco expects that there will be no exceedances of the PCB Aroclor chronic criteria at N.J.A.C. 7:9B during dredging activities using an environmental bucket with no scow overflow using reductions in dredging rates (e.g., 4,800 cf/hr) and/or applying a 1-hour slack-tide pause. In addition, any contaminant concentrations that are introduced into the water column will be localized, temporary and of short duration. Further, Transco will implement a water quality monitoring program during construction to help ensure compliance with New Jersey's SWQSs. Transco's Draft Water Quality Monitoring Plan for New Jersey Waters (Appendix N) is based on input received from NJDEP during a January 6, 2020 conference call with NJDEP staff during which NJDEP informed Transco that chemical contaminant monitoring is not typically required

and that turbidity monitoring would be sufficient to evaluate whether there would be any potential exceedances in SWQSs described in N.J.A.C. 7:9B.

Bis(2-ethylhexyl)phthalate, Phenanthrene, Manganese, and 4,4'-DDE

There do not appear to be acute or chronic SWQS promulgated in N.J.A.C. 7:9B or presented as part of the EPA National Recommended Water Quality Criteria for Aquatic Life for bis(2-ethylhexyl)phthalate, phenanthrene, manganese, or 4,4'-DDE. Based on consultations with NJDEP staff following a June 20, 2019 meeting, for these four contaminants of concern, Transco should first determine if other results are indicative of compliance with New Jersey SWQSs for acute and chronic toxicity. If the modeling results for mercury, arsenic, and PCB Aroclors demonstrate that the implementation of construction BMPs and reduced dredging rates during construction activities will control and reduce contaminant dispersion and meet SWQSs, then it is expected that there will be similar control of the dispersion of bis(2-ethylhexyl)phthalate, phenanthrene, manganese, and 4,4'-DDE. Further, model predictions indicate that maximum concentrations for all seven contaminants of concern are reduced when the average dredging rate is slowed.

In conclusion, this demonstrated compliance with acute and chronic SWQSs (for the above mentioned contaminants) promulgated in N.J.A.C. 7:9B as indicated by modeling, coupled with the BMPs Transco has committed to implement, support a conclusion that there will be no adverse ecological impacts or impacts to water quality due to resuspension of contaminants. In addition, any contaminant concentrations that are introduced into the water column will be localized, temporary and of short duration. Further, Transco will implement a water quality monitoring program during construction to help ensure compliance with New Jersey's SWQSs. Transco's Draft Water Quality Monitoring Plan for New Jersey Waters (Appendix N) is based on input received from NJDEP during a January 6, 2020 conference call with NJDEP staff during which NJDEP informed Transco that chemical contaminant monitoring is not typically required and that turbidity monitoring would be sufficient to evaluate whether there would be any potential exceedances in SWQSs described in N.J.A.C. 7:9B.

Table 2-7
Summary of ER-M Sediment Contaminant Modeling Results

Scenario Name	Vibracore Site	Contaminant	Equipment Type	Trenching Activity Duration (hrs)	Model predicted maximum concentration at 500 ft (ug/L)[1]	N.J.A.C. 7:9B Acute Criteria Exceedance Results at 500 ft (hrs)[1]	N.J.A.C. 7:9B Chronic Criteria Exceedance Results at 500 ft (hrs)[1]
VC208_Hg_NJ	VC208	Mercury	Clamshell	13.89	0.06	0	0
VC208_As_NJ	VC208	Arsenic	Clamshell	13.89	2	0	0
VC208_PCB_NJ	VC208	PCB Aroclors	Clamshell	13.89	0.018[2]	-	0[2]
VC208_44DDE_NJ	VC208	4,4'-DDE	Clamshell	13.89	0.001	-	-
VC214_Hg_NJ	VC214	Mercury	Clamshell	15.43	0.17	0	0
VC214_As_NJ	VC214	Arsenic	Clamshell	15.43	5	0	0
VC214_PCB_NJ	VC214	PCB Aroclors	Clamshell	15.43	0.026[2,3]	-	0[2,3]
VC214_PHEN_NJ	VC214	Phenanthrene	Clamshell	15.43	0.16	-	-
VC214_BIS_NJ	VC214	Bis(2-ethylhexyl)phthalate	Clamshell	15.43	0.331	-	-
VC214_44DDE_NJ	VC214	4,4'-DDE	Clamshell	15.43	0.003	-	-
VC304_Mn_NJ	VC304	Manganese	Clamshell	29.32	20	-	-
DEP3_Mn_NJ	DEP3	Manganese	Clamshell	27.77	13	-	-
DEP4R_Mn_NJ	DEP4R	Manganese	Clamshell	43.20	11	-	-
DEP5R_Mn_NJ	DEP5R	Manganese	Clamshell	40.12	14	-	-

Key:
- = Contaminant does not have promulgated acute or chronic criteria in N.J.A.C. 7:9B.

Notes:
[1] Unless otherwise noted, contaminant transport scenarios reported used a constant production rate of 7,500 cf/hr.
[2] The PCB contaminant transport scenarios reported used a constant production rate of 4,800 cf/hr.
[3] The PCB transport scenario for the VC21 segment also used a 1-hour pause in dredging during each slack-tide period (i.e., either side of high tide and low tide) intervals).

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SECTION #1 (CONT.)

ATTACHMENT D OF CHECKLIST:

Attachment for Item #12 of Checklist – Proof of Tidelands Instrument

A Tidelands Instrument (Application # 1200-17-0006.1 TDI 170001) was submitted to the Bureau of Tidelands Management on July 18, 2017.

SECTION #2

PROJECT COMPLIANCE WITH THE RULES ON COASTAL ZONE MANAGEMENT

Decisions on uses of coastal resources by the NJDEP Division of Land Use Regulation require the consideration of a project with regard to its compliance with the Coastal Zone Management Rules (N.J.A.C. 7:7). The Rules on Coastal Zone Management classify all areas into Special Areas, General Water Areas, General Land Areas, and General Location Policies. These rules also address Uses and Resources. Acceptable development in the coastal zone must comply with these rules. The table below presents all of the Coastal Zone Management Rules and identifies the applicability of each of these with regard to the proposed project.

COASTAL ZONE MANAGEMENT RULES APPLICABILITY

A. SPECIAL AREAS

	Not Applicable	Potentially Applicable
7:7-9.2 Shellfish habitat		X
7:7-9.3 Surf clam areas		X
7:7-9.4 Prime fishing areas		X
7:7-9.5 Finfish migratory pathways		X
7:7-9.6 Submerged vegetation habitat		X
7:7-9.7 Navigation channels		X
7:7-9.8 Canals	X	
7:7-9.9 Inlets	X	
7:7-9.10 Marina moorings		X
7:7-9.11 Ports		X
7:7-9.12 Submerged infrastructure routes		X
7:7-9.13 Shipwreck and artificial reef habitats		X
7:7-9.14 Wet borrow pits	X	
7:7-9.15 Intertidal and subtidal shallows		X
7:7-9.16 Dunes	X	
7:7-9.17 Overwash areas	X	
7:7-9.18 Coastal high hazard areas		X
7:7-9.19 Erosion hazard areas		X

	Not Applicable	Potentially Applicable
7:7-9.20 Barrier island corridor	X	
7:7-9.21 Bay islands	X	
7:7-9.22 Beaches		X
7:7-9.23 Filled water's edge	X	
7:7-9.24 Existing lagoon edges	X	
7:7-9.25 Flood hazard areas		X
7:7-9.26 Riparian zones		X
7:7-9.27 Wetlands		X
7:7-9.28 Wetlands buffers		X
7:7-9.29 Coastal bluffs	X	
7:7-9.30 Intermittent stream corridors	X	
7:7-9.31 Farmland conservation areas	X	
7:7-9.32 Steep slopes		X
7:7-9.33 Dry borrow pits	X	
7:7-9.34 Historic and archaeological resources		X
7:7-9.35 Specimen trees		X
7:7-9.36 Endangered or threatened wildlife or plant species habitats		X
7:7-9.37 Critical wildlife habitats		X
7:7-9.38 Public open space		X
7:7-9.39 Special hazard areas		X
7:7-9.40 Excluded Federal lands	X	
7:7-9.41 Special urban areas	X	
7:7-9.42 Pinelands National Reserve and Pinelands Protection Area	X	
7:7-9.43 Hackensack Meadowlands District	X	
7:7-9.44 Wild and scenic river corridors	X	
7:7-9.45 Geodetic control reference marks		
7:7-9.46 Hudson River Waterfront Area	X	
7:7-9.47 Atlantic City	X	
7:7-9.48 Lands and waters subject to public trust rights		X
7:7-9.49 Dredged material management areas		X

B. GENERAL WATER AREAS

7:7-12.2 Shellfish aquaculture	X	
7:7-12.3 Boat ramps	X	
7:7-12.4 Docks and piers for cargo and commercial fisheries	X	
7:7-12.5 Recreational docks and piers	X	
7:7-12.6 Maintenance dredging	X	
7:7-12.7 New dredging		X
7:7-12.8 Environmental dredging	X	

	Not Applicable	Potentially Applicable
7:7-12.9 Dredged material disposal		X
7:7-12.10 Solid waste or sludge dumping	X	
7:7-12.11 Filling	X	
7:7-12.12 Mooring		X
7:7-12.13 Sand and gravel mining	X	
7:7-12.14 Bridges	X	
7:7-12.15 Submerged pipelines		X
7:7-12.16 Overhead transmission lines	X	
7:7-12.17 Dams and impoundments	X	
7:7-12.18 Outfalls and intakes	X	
7:7-12.19 Realignment of water areas	X	
7:7-12.20 Vertical wake or wave attenuation structures	X	
7:7-12.21 Submerged cables	X	
7:7-12.22 Artificial reefs	X	
7:7-12.23 Living shorelines	X	
7:7-12.24 Miscellaneous uses	X	
C. GENERAL LOCATION RULES		
7:7-14.1 Rule on location of linear development		X
7:7-14.2 Basic location rule		X
7:7-14.3 Secondary impacts		X
D. USE RULES		
7:7-15.2 Housing	X	
7:7-15.3 Resort/recreational	X	
7:7-15.4 Energy facility		X
7:7-15.5 Transportation	X	
7:7-15.6 Public facility	X	
7:7-15.7 Industry	X	
7:7-15.8 Mining	X	
7:7-15.9 Port	X	
7:7-15.10 Commercial facility	X	
7:7-15.11 Coastal engineering	X	
7:7-15.12 Dredged material placement on land	X	
7:7-15.13 National defense facilities use rule	X	
7:7-15.14 High rise structures	X	
E. RESOURCE RULES		
7:7-16.2 Marine fish and fisheries		X
7:7-16.3 Water quality		X

7:7-16.4 Surface water use		X
7:7-16.5 Groundwater use	X	
7:7-16.6 Stormwater management		X
7:7-16.7 Vegetation		X
7:7-16.8 Air quality		X
7:7-16.9 Public access		X
7:7-16.10 Scenic resources and design		X
7:7-16.11 Buffers and compatibility of uses		X
7:7-16.12 Traffic		X
7:7-16.13 Subsurface sewage disposal systems	X	
7:7-16.14 Solid and hazardous waste		X

F. MITIGATION

7:7-17.2	General Mitigation Requirements		X
7:7-17.3	Timing of Mitigation	X	
7:7-17.9	Requirements for shellfish habitat mitigation	X	
7:7-17.12	Requirements for riparian zone mitigation		X
7:7-17.13	Requirements for wetlands mitigation		X

A. SPECIAL AREAS

7:7-9.2 Shellfish Habitat

Per N.J.A.C. 7:7-9.2(b), areas determined by the NJDEP to be contaminated by toxins are excluded from the definition of "shellfish habitat" (N.J.A.C. 7:7-9.2 (b)). The List of Water Quality Limited Segments (known as the 303(d) list) identifies these known contaminated areas. The offshore portion of the Project will cross three state-designated impaired assessment units (AUs) in New Jersey listed on the 2012 303(d) List of Quality Limited Waters in New Jersey (NJDEP 2014a, 2014b). In particular, the Raritan Bay Loop route crosses the area identified as the "deep water" portion of Raritan Bay (MP26.55 to MP28.40), which the 2012 303(d) list identifies as impaired for shellfish harvesting (AU NJ02030104910030-01). The 2014 303(d) list identifies the area of Raritan Bay crossed by the offshore Project route west of Thorns Creek (MP12.16 to MP14.02) as impaired for shellfish harvesting (AU NJ 02030104910010-01) (NJDEP 2017a). Therefore, the special area definition for "shellfish habitat" does not apply to portions of the offshore Project area within New Jersey waters. This conclusion was confirmed by the NJDEP on March 19, 2018; a copy of this correspondence is included in Appendix B.

Consistency Finding: Considering the statements above, Transco concludes that the Project does not cross shellfish habitat; therefore, the Shellfish Habitat Rule does not apply.

7:7-9.3 Surf clam areas

The offshore Project route crosses documented Atlantic surf clam areas. In 2014, the NJDEP conducted shellfish surveys in Raritan Bay and Lower New York Bay. The shallower seabed near the tip of the Sandy Hook Peninsula (Flynn's Knoll) supports a surf clam bed (Dacanay 2016). In "prohibited" shellfish growing waters crossed by the Project north of Sandy Hook, the NJDEP issues permits that allow surf clam harvesting for bait only (N.J.A.C. 7:12-9). This New Jersey harvest area is defined in Title 50, New Jersey Statutes §2-6.1 as the area of the Atlantic Ocean seaward of "a line from the west point of Sandy Hook to Roamer Shoal Lighthouse." This line extends beyond the limits of the surf clam beds identified in the NJDEP 2014 shellfish survey maps (Dacanay 2016). However, benthic sampling conducted by Transco in late 2016 confirmed that surf clams are present along the entire segment of the Raritan Bay Loop route in New Jersey waters between Chapel Hill Channel and the state boundary northeast of Ambrose Channel (MP26.55 to MP30.64), excluding Ambrose Channel itself.

The Raritan Bay Loop route and temporary construction workspace avoids the surf clam bed identified by the NJDEP on Flynn's Knoll. However, the Project will directly disturb benthic habitat containing surf clam in New Jersey waters mentioned above. Surf clams in the seabed adjacent to the disturbed area may also be impacted by construction of the Raritan Bay Loop because of elevated levels of suspended sediments and additional sedimentation.

The results of Transco's hydrodynamic sediment modeling indicate that sedimentation resulting from the Project will not extend into mapped "special restricted" shellfish harvest areas, which include a portion of the surf clam areas that will be crossed by the Project. Additionally, Transco conducted a literature review and compared the predicted sedimentation resulting from offshore

Project activities (Table 2-5 in the Project Description, above) with known biological limitations for Atlantic surf clams. Robinson et al. (1984) observed that short-term exposure (three days) to 100 to 1,000 mg/L had no effect on growth. These thresholds are within the predicted limits of the TSS plumes that would be generated as a result of offshore Project activities (see Table 2-4 in the Project Description, above). Furthermore, Atlantic surf clams are a fast-burrowing bivalve and if they were to be covered by sediment, they would be able to reposition themselves within the sediment. A study by Ellis and Heim (1985) suggests that the benchmark for smothering of Atlantic surf clam resulting from natural events is 5 cm (2.0 inches) and is likely comparable to the effects of maritime construction activities as well. In comparison, modeling indicates that average Project-related sedimentation would not exceed 3 cm (1.2 inches) in thickness at distances greater than 525 feet from the source for the selected construction scenarios (see Table 2-4 in the Project Description, above). Therefore, the related habitat disturbance would be short term and limited primarily to active in-water pipeline and equipment installation locations.

Table 3-1
Known Responses of Atlantic Surf Clam and Hard Clam to Suspended Sediments

Species	Age	Units	Sediment Type	Comment	Reference
Atlantic Surf Clam ***(Spisula solidissima)***	Adult	100 to 1,000 mg/L for 3 days	Attapulgite clay	No effect on growth	Robinson et al. 1984
		100 mg/L for 21 days		No effect on growth	
		500 mg/L for 21 days		Reduced growth	

Table adapted from Tables A.3 and A.4 in Wilber and Clarke 2001.
Key:
mg/L = milligrams per liter

Transco will provide notice to licensed bait clam harvesters prior to Project commencement to allow for surf clam harvest in the temporary construction workspaces north of Sandy Hook.

Transco is consulting with the NJDEP Bureau of Shellfisheries to determine the appropriate amount of mitigation to be provided. Transco will likely mitigate any unavoidable impact on surf clam between MP26.55 and MP30.64 through a monetary contribution to the NJDEP's dedicated fund for shellfish habitat mitigation, in accordance with N.J.A.C. 7:7–17.9.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Surf Clam Areas rule.

7:7-9.4 Prime fishing areas

The offshore Project area hosts a moderate amount of commercial fishing for finfish species (NYDOS 2013; NJDEP 2016a). Additionally, according to traffic-recording data, a substantial number of recreational fishing charter boats are active in the vicinity of the Raritan Bay Loop route. Further, the Raritan Bay Loop will cross two popular offshore recreational fishing areas (Tin Can and Ambrose Channel Grounds), known as "sport ocean fishing grounds," between Sandy Hook and the Rockaway Peninsula (NJDEP 2003). These are designated as "prime

fishing areas" by New Jersey (N.J.A.C. 7:7–9.4). The NJDEP surveyed charter boat, party boat, and private boat captains to identify sport ocean-fishing grounds (NJDEP 2003). These areas may be subject to greater seasonal vessel congestion in the vicinity of the Raritan Bay Loop route intersection with the Ambrose Channel.

Construction of the offshore pipeline could impact fishing in the Project area by reducing the abundance of harvested fish communities. Transco recognizes that there will be some impact on commercially important fish and bivalve species in the Project area; however, impacts on fish and shellfish are expected to be largely temporary (e.g., hours to days for a suspended sediment plume) or short term (e.g., one to three years for complete benthic community recovery). Operational activities will have negligible effects on the abundance of fish and benthic communities, including commercially important species, in the Project area.

Vessel traffic in the Raritan Bay and Lower New York Bay will increase temporarily during construction of the Project, potentially affecting commercial fishers' access to commercial and recreational fishing grounds by interrupting their typical vessel transit routes or schedules or causing them to reduce their vessel speeds. However, this Project-related vessel increase will be negligible compared with the number of vessels currently operating in the busy New York–New Jersey Harbor and adjacent waterways on a daily basis. Thus, construction vessel traffic associated with the Project will have a negligible effect on commercial fishing vessels' ability to maneuver and transit through the Project area.

As a potential obstruction to vessel traffic, the fixed platform will be roughly analogous to the lift boat, which was previously proposed to support Morgan Shore HDD construction. The temporary fixed platform will be lighted appropriately to maintain safe navigation around it. Picket boats will be present during construction to direct traffic away from active construction zones and associated structures, including the platform. Given the impermanence of the fixed platform, and mitigation measures requiring other vessels to be alerted of the presence of the fixed platform, the offshore platform impact on commercial fishing vessels' ability to maneuver and transit through the Project area will be negligible.

Construction within the offshore pipeline ROW could limit commercial fishers' access to fishing grounds associated with both mobile and stationary bottom gear fisheries. Transco proposes a safety zone around active construction areas that will be marked by lighted buoys appropriately spaced to alert non-Project vessels. Only relatively short portions of the entire Raritan Bay Loop will be under construction at any given time during the nine-month construction period. Picket boats will discourage commercial fishing vessels from entering active workspaces, but fishers will have undeterred access to the inactive portions of the temporary workspaces. Moreover, prior to construction in any major bottom-gear fishery areas (e.g., clam harvest areas), Transco will coordinate the timing of construction with the NJDEP, such that commercial fishers have the opportunity to harvest those areas before construction begins. Transco will notify commercial fishing operators via a Local Notice to Mariners and/or direct notice (e.g., mailed letter) within required timeframes before beginning construction to allow commercial fishermen to harvest and/ or remove any fixed fishing gear from the construction area before construction begins.

The Project does not involve prohibited uses described at N.J.A.C. 7:7-9.4, which include sand or gravel submarine mining that would alter existing bathymetry to a significant degree so as to reduce the high fishery productivity of these areas. Bathymetric changes associated with construction in New Jersey waters will be temporary in nature. Disposal of domestic or industrial wastes must meet applicable state and federal effluent limitations and SWQSs.

Overall, construction activities could temporarily discourage commercial and recreational fishing over portions of fishing grounds crossed by the Raritan Bay Loop during the nine-month construction period. However, compared with the fishing grounds available throughout Raritan Bay, Lower New York Bay, and the proximal areas of the Atlantic Ocean, the areas where fishing will temporarily be discouraged at any given time will be negligible. In addition, the notification and coordination measures described above will help ensure that temporary discouragement of commercial fishing within portions of the offshore safety zone has a negligible effect. Following construction, no fishing restrictions will be associated with the Project, and mobile and stationary bottom-gear fishing will be able to resume at the fishers' discretion following completion of offshore Project construction.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Prime Fishing Areas Rule.

7:7-9.5 Finfish migratory pathways

All of the diadromous species of concern listed in 7:7–9.5 are expected to occur in the Project area for at least a portion of their life history. These species include river herring (alewife and blueback herring, *Alosa pseudoharengus* and *Alosa aestivalis*, respectively), American shad (*Alosa sapidissima*), striped bass (*Morone saxatilis*), Atlantic sturgeon (*Acipenser oxyrhynchus*), shortnose sturgeon (*Acipenser brevirostrum*), and American eel (*Anguilla rostrata*).

River herring migrate up Cheesequake Creek to spawn, but that migration is partially impeded southeast (upstream) of the Madison Loop by an artificial dam used to create Hooks Creek Lake, a freshwater lake in Cheesequake Creek State Park (NJDEP 2005; Durkas and Goldfarb 1991).

Adult herring are present in low numbers in the New York–New Jersey Harbor year-round except for a period of high abundance during the spawning period from March through May (Tanski et al. 2014). Eggs are pelagic and are known to settle into all substrate types of the New York–New Jersey Harbor from April through June. In spring and the early summer, juveniles are typically found in estuarine and tidal freshwater habitats (USFWS 2001). Juveniles move downstream into freshwater tributaries and river ends in the late summer as water temperatures drop (ASMFC 2017a) and are unlikely to be found within the Project construction area. Adults typically are present in low numbers year-round in the Project area except for a period of high abundance during March through May (Tanski et al. 2014). In accordance with the New Jersey Flood Hazard Area Control Act Rules at N.J.A.C. 7:13 and the Freshwater Wetlands Protection Act Rules at N.J.A.C. 7:7A, the anadromous fish timing restriction implemented for all unimpeded tidal regulated waters open to the Atlantic Ocean or any coastal bay is from April 1 to June 30. The following time of year (TOY) restriction and area of concern were identified by the NJDEP and the NOAA National Marine Fisheries Service (NOAA Fisheries), during an

April 9, 2018, meeting: March 1 through June 30 (period of migration), between MP12.2 and MP 15.3 (within 3 miles of Raritan River and Cheesequake Creek).

American shad are an anadromous fish species typically found offshore from Maine down through Virginia (Kahnle and Hattala 2010). The species migrates through the New York–New Jersey Harbor in the spring to spawn in fresh waters in the Hudson River (New Jersey Sea Grant Consortium n.d.[a]; Kahnle and Hattala 2010). Starting around April, American shad will remain in the Hudson River, and after completing spawning activities (typically in the first week of June), the species returns to the ocean through the New York–New Jersey Harbor as eggs drift through Hudson River currents (New Jersey Sea Grant Consortium n.d.[a]). As eggs develop and reach juvenile age, they often prefer waters with colder temperatures and higher salinities, and they often remain in the Hudson Estuary until the fall, then migrate to the ocean (New Jersey Sea Grant Consortium n.d.[a]). Once they reach adulthood, American shad spend a majority of their lives offshore (ASMFC 2017a). American shad are therefore most likely to be present within the Project area in the spring and early summer when adults migrate to and from spawning locals and in the fall when juveniles migrate to the ocean.

Striped bass, although historically small in number, are now one of the most abundant species occurring within the New York–New Jersey Harbor (New Jersey Sea Grant Consortium n.d.[b]). In response to past declining numbers in population, striped bass were given strict recreational limits and have since become an important recreational species in the area (New Jersey Sea Grant Consortium n.d.[b]). Striped bass typically reside in offshore Atlantic waters but move inland to the Hudson River, Delaware River, and Chesapeake Bay to spawn. Adult striped bass are found within the Hudson River and Estuary from late March to early June, moving through the New York – New Jersey Harbor before and after spawning activities (New Jersey Sea Grant Consortium n.d.[b]).

The shortnose sturgeon is federally and New Jersey-listed as endangered (NJDEP 2016b). The shortnose sturgeon is anadromous, spawning in freshwater systems and spending the majority of its adult life in rivers and estuaries. The presence of the shortnose sturgeon in the Project area is rare because its range is typically limited to the Hudson River north of Manhattan; however, small numbers have consistently been collected since 2004 during annual winter trawl sampling from November to March in the Upper New York Bay (Shortnose Sturgeon Status Review Team 2010).

The Atlantic sturgeon is an anadromous species. The federally listed endangered New York Bight distinct population segment is also listed as endangered in New Jersey (NJDEP 2016b). Adults spend the majority of their lives in estuaries and oceans but migrate along the coastline and return to the rivers they were born in to spawn (NOAA Fisheries 2016a). The Atlantic sturgeon is thought to be found in the Project area year-round, with higher concentrations during the spring and fall migration periods, particularly in apparent aggregation areas seaward of the Rockaway Peninsula and the Sandy Hook Peninsula (Laney et al. 2007; Dunton 2014; Dunton et al. 2010, 2015). The aggregations here were found to occur at water depths of less than 50 feet (15 meters) (Dunton et al. 2010, 2015). Many of the sturgeon in these aggregation areas are likely move to and from the Hudson River, where a large population of Atlantic sturgeon spawn (NOAA Fisheries n.d.[a]; Bain et al. 1998). A separate set of juveniles, sub-adults, and non-

breeding adults continue their migration northeast along the Long Island coast and spend the summer in Long Island Sound (Dunton 2014; Dunton et al. 2012; O'leary et al. 2014). The peak Atlantic sturgeon concentrations typically occur in the aggregation areas from April through June (spring) and October through November (fall), although this varies annually and may begin as early as March (spring) and September (fall) (Laney et al. 2007; Dunton 2014; Dunton et al. 2010, 2015). Federal Critical Habitat for Atlantic sturgeon was designated on August 17, 2017 (82 Federal Register 39160). The critical habitat closest to the Project area is the Hudson River, "where the main stem river discharges at its mouth into New York City Harbor" (82 Federal Register 39160). The following TOY restriction and areas of concern were identified by the NJDEP and NOAA Fisheries, during an April 9, 2018, meeting: March 1 through June 30 and October 1 through November 30, between MP12.0 and MP14.25 (Morgan Shore to New Jersey/New York Border—spring only), and between MP30.0 and MP35.5 (Ambrose Channel to Rockaway Transfer Point).

Juvenile and adult American eels may occur within the Project areas during migration or when foraging. American eels are a catadromous fish species, spending the majority of their life in freshwater and estuarine environments before traveling to the ocean as adults to reproduce (ASMFC 2017b). Juvenile life-stage American eels are present in large numbers in the New York–New Jersey Harbor from February through April. Juveniles occur at all depths, but typically burrow in mud in the daytime or winter and are commonly associated with eelgrass and sandy bottom sediment. Adult American eels are present in low to medium numbers in the New York–New Jersey Harbor throughout the year. Adults are found in a wider range of depths and habitats (Tanski et al. 2014).

Project Effects on Finfish Migratory Pathways

Activities associated with offshore pipeline construction will potentially affect fish inhabiting or migrating through areas near the offshore construction activities. Proposed construction activities include trenching, pipelay, anchor placement, backfilling, concrete mattress installation, and associated vessel/barge transits. Temporary effects on finfish migratory pathways will result from sediment disturbance, increased turbidity, increased noise and visual disturbances, and water withdrawal and discharge. Potential impacts include direct mortality or injury, sensory disturbance, habitat loss and/or modification, and changes in predator/prey relationships. Potential mitigation (i.e., avoidance and minimization) measures, such as species-specific construction timing restrictions, are described below.

Although physical impacts on fish during offshore Project construction are possible, most individuals (particularly juveniles and adults) have the ability to avoid construction activities. Because spawning of the migratory species identified above takes place outside of Raritan Bay and Lower New York Bay, early life stages (i.e., eggs and larvae) are not expected to be affected by the Project. Demersal migratory species (e.g., Atlantic sturgeon) transiting and/or feeding on or near the seafloor are more vulnerable, but while temporary behavioral disturbance may occur, Transco does not anticipate Project-related mortality or injury of these species.

Excessive noise, in particular, may disturb fish migrating through the Project area, and pile installation near the HDD entry and exit pits (including the installation of the temporary fixed platform near MP12.50) is expected to be the loudest source of Project-related in-water noise. Both vibratory and impact pile driving noise are considered low frequency noise sources

(Blackwell 2005; Reinhall and Dahl 2011; Dahl et al. 2015). Recognizing that noise impacts to sensitive species are an ongoing concern with regulatory agencies, Transco has performed sound propagation modeling to determine the potential for sound associated with in-water construction activities (pile installation and removal) to injure or behaviorally disturb fish. Transco used criteria that the NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) (2018) has developed to determine potential injury and behavioral impacts specifically for fish species listed under the Endangered Species Act of 1973 (ESA). Copies of noise modeling memos are provided in Appendix M.

Offshore excavation for the Raritan Bay Loop will disturb the seabed, causing sediment resuspension and corresponding increases in turbidities. Taking into account sediment type, duration of sediment-disturbing activities, and the strong river and tidal currents in the offshore Project area, ambient turbidity levels are expected to return quickly following completion of each proposed offshore excavation activity. This assumption is based, in part, on monitoring results from several dredging events associated with the recent deepening of the New York/New Jersey Harbor (USACE 2015b). Turbidity plumes generated during the harbor dredging activities dissipated to ambient levels within 200 meters and 800 meters in the upper and lower portions of the water column, respectively, even when sediments were predominantly silt and clay (50% to 95%) (USACE 2015b).

Suspended sediments from offshore Project dredging activities can interfere with gas absorption in fish gills (Clarke and Wilbur 2000; Germano and Cary 2005) and cause a decrease in dissolved oxygen (Johnston 1981). Transco does not expect these conditions to cause adverse physiological effects on fish migrating through the Project area due to the temporary nature of the offshore excavation and the short duration of fish exposure to these conditions. However, migrating fish may generally avoid areas with elevated levels of suspended sediment (ASMFC Shad and River Herring Plan Development Team 2009), so the Project-related suspended sediment plumes may have a temporary behavioral effect, but the plumes are not expected to interfere with overall movement of fish along their migratory pathways.

Transco's hydrodynamic sediment model indicated that the extent of predicted sediment plumes and TSS concentrations varied in magnitude and scale along the entire offshore route. Modeling results indicate that plumes with TSS concentrations 100 mg/L above ambient conditions may extend up to 2,444 feet from the source in the most extreme case near the mouth of the Raritan River (i.e., backfilling the trench between the Morgan HDD exit pit [MP12.50] and MP16.60), with TSS returning to ambient conditions within 1.5 hours. However, a majority of the modeled activities depicted in Table 2-4 in the Project Description, above, will not result in significant water quality impacts because the predicted plumes would be temporary, with TSS concentrations returning to ambient conditions within 12.5 hours after the associated dredging or trenching has ceased. Therefore, only localized and short-term impacts on water quality are expected from construction of the Raritan Bay Loop. Additionally, through adherence to TOY restrictions associated with anadromous fish, Transco expects that suspended sediment plumes resulting from the Project will not adversely affect the migration of anadromous and catadromous species, particularly near the mouth of the Raritan River. See the discussion under Rule 7:7-16.3, below, for additional information about the Project's potential effects on offshore water quality.

In a July 26, 2018 meeting with NJDEP and NOAA Fisheries, staff from both agencies agreed that regarding the river herring TOY restriction between MP12.5 and MP14.0, dredging and pile installation would likely be allowed in June. In a letter dated November 7, 2018, the NJDEP Bureau of Marine Fisheries (BMF) stated that "Anadromous timing restrictions can be modified to allow for clamshell dredging start dates of June 1 at MP12.5 to 14.5, 25 and 30.4" and that "In June, herring will likely have made it up the rivers and out of the area of effect of [platform pile and goal post installation] activities." Transco has also committed to installing the platform pile and goal posts (located between MP 12.5 and MP 12.6) starting at the furthest MP from the shore and will work inland towards MP 12.5 so that nearshore work will occur later in the construction period to further limit impacts to river herring. Transco formally requested approval from the NOAA Fisheries Habitat Conservation Division (HCD) on February 11, 2019, to conduct the following construction activities during limited portions of the river herring TOY restriction periods (see Appendix B for Transco's formal request). These TOY restriction flexibility requests, along with justifications for the requests, are summarized below in Table 3-2. Transco's understanding is that the flexibility requests presented below are acceptable based on consultations to date with NJDEP and NOAA Fisheries. On July 28, 2019, Transco received formal approval from NOAA HCD for requested EFH TOY restriction flexibility for river herring and blue crabs (see Appendix B for copy of formal concurrence).

Table 3-2
Species-related Time of Year (TOY) Restriction Flexibility Requests

Activity	Location	Request	Requested Activity Start Date[a]	Requested Activity End Date[a]	Applicable Species TOY Restriction	Justification	Potential Impact on Species
Clamshell Dredging	**New York and New Jersey** - MP12.5 to MP15.3	Allow dredging to overlap with river herring and Atlantic sturgeon TOY restriction in June, or based on temperature threshold	6/1	6/30	River herring (and Atlantic sturgeon in NJ) (3/1 – 6/30)	Adherence to the current TOYR would push construction campaign into the fall sturgeon TOYR.	Sediment disturbance, suspended sediment, and deposition

Table 3-2
Species-related Time of Year (TOY) Restriction Flexibility Requests

Activity	Location	Request	Requested Activity Start Date[a]	Requested Activity End Date[a]	Applicable Species TOY Restriction	Justification	Potential Impact on Species
Platform Pile and Goal Post Installation	**New Jersey** - Morgan HDD Pit (MP12.5)	Allow pile/platform installation during river herring and Atlantic sturgeon TOY restriction in May, or based on temperature threshold	6/9	6/30	River herring (and Atlantic sturgeon in NJ) (3/1 – 6/30)	Adherence to the current TOYR would push construction campaign into the fall sturgeon TOYR.	Noise from pile driving/vibratory hammer
Spool Installation	**New Jersey** - Ambrose East HDD Pit (MP30.4)	Allow low-impact installation activities during Atlantic sturgeon fall TOY restriction	10/1 Duration of activity: ~7 days	10/31	Atlantic sturgeon (10/1 – 11/31)	Allowance of low-impact activities would minimize the overall duration of construction activities.	Limited impacts; no sediment disturbance

[a] The start/end dates identify the portion of the activity work period that would overlap with a species' TOY restriction.

Key:
HDD = Horizontal Directional Drill
MP = Milepost
TOY = Time of year

As described above, Federal Critical Habitat for Atlantic sturgeon was designated in the Hudson River, "where the main stem river discharges at its mouth into New York City Harbor" (82 Federal Register 39160), more than 2 miles from the nearest anticipated vessel transit route for Project-related vessels and more than 10 miles from the nearest Project workspace. Therefore, the designated critical habitat does not overlap with the Project area. In a November 7, 2018 letter to FERC, the NJDEP BMF deferred to NOAA regarding sturgeon timing restrictions for pile installation, clamshell dredging, hand jet, submersible pump, HDD, spool and pipeline installation, jet trenching, hydrotest, and reinstatement activities. Transco formally requested approval from the NOAA Fisheries Protected Resources Division (PRD) on February 11, 2019, to conduct certain construction activities during limited portions of the TOY restriction periods (see Appendix B for Transco's formal request). These TOY restriction flexibility requests, along with justifications for the requests, are summarized above in Table 3-2. Transco's understanding

is that the flexibility requests presented in Table 3-2 are acceptable based on consultations to date with NJDEP and NOAA Fisheries. On April 10, 2019, Transco received informal concurrence from NOAA Fisheries PRD regarding the TOY restriction flexibility requests for Atlantic sturgeon (see Appendix B for copies of informal concurrence received).

The TOY restrictions may serve as protection measures and may help protect other aquatic species in the area. Transco continues to be engaged in a Federal Section 7 Consultation under the ESA regarding Atlantic sturgeon (see Rule 7:7-9.36 below).

Transco will work with the NJDEP (and NYSDEC) to evaluate additional BMPs that can be implemented to further reduce impacts, to the maximum extent practicable. Following construction, Transco will restore the offshore workspaces by backfilling excavated areas with suitable material in accordance with applicable permit requirements. Thus, the Project will not create any permanent physical barrier to the movement of fish along finfish migratory pathways, and routine operation of the Project is not expected to affect aquatic resources within the Project area.

Within the coastal zone along the Madison Loop, Transco will cross two waterways (WB-T01-001) and (WW-RS-005) that are connected to Cheesequake Creek using HDD. Further, Transco will implement sediment- and erosion-control measures at onshore temporary workspaces, including the edge of waterway WW-T07-001. These measures will prevent any Project-related increase in suspended sediments within these waterways and avoid associated effects on migratory finfish that may use these waters.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Finfish Migratory Pathways Rule.

7:7-9.6 Submerged vegetation habitat

The New Jersey Submersed Aquatic Vegetation Distribution Map for the Sandy Hook, NJ Quadrangle indicates that the proposed offshore Project workspace does not cross any areas of mapped submerged aquatic vegetation (SAV) (Macomber and Allen 1979). The NJDEP does not have SAV maps available for the South Amboy, NJ Quadrangle. The only potential New Jersey area suitable to support SAV is the shallow nearshore area at the Morgan shoreline. Recent shoreline surveys by the American Littoral Society suggest that sea lettuce is still prevalent near the Morgan, New Jersey, shoreline, but the offshore extent is not delineated (NorthJersey.com 2015) and this species is not classified as SAV because it is an alga that lacks roots and a vascular system. Furthermore, this area will be crossed by HDD; therefore, the Project will not disturb substrate that could potentially support SAV.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Submerged Vegetation Habitat Rule.

7.7-9.7 Navigation channels

The offshore portion of the Raritan Bay Loop will pass through Raritan Bay, Lower New York Bay, and the Atlantic Ocean. Lower New York Bay is heavily trafficked by vessels transiting in

and out of the Port of New York and New Jersey's terminals and marinas, which are located along Upper New York Bay and Newark Bay. Commercial vessels access the Port primarily via Ambrose Channel and, to a lesser degree, Chapel Hill Channel. Additional marine traffic such as oil tankers and fishing vessels access other docks and marinas in New York and New Jersey through the Raritan Bay Channel. All three of these channels are crossed by the Raritan Bay Loop route. However, the pipeline will be installed at depths that will avoid interference with potential maintenance dredging of the channels, in accordance with USACE requirements for burial. In particular, HDD techniques will be used to install the pipeline beneath the highly trafficked Ambrose Channel in New Jersey waters, which will avoid all impacts on vessels transiting Ambrose Channel during both construction and operation.

The Project route also generally avoids the designated anchorage areas in Raritan Bay and Lower New York Harbor, but the route does cross the northern extension of an anchorage area near the junction of Chapel Hill Channel and Ambrose Channel in New York waters. This is an area that The Harbor Safety, Navigation and Operations Committee of the Port of New York and New Jersey identified during a meeting on June 13, 2016, as rarely used, and the location would be shown on nautical charts so mariners could avoid anchoring over or near the pipeline. Nonetheless, Transco will install the pipeline at depths that sufficiently minimize the potential for impact due to anchoring, in accordance with USACE requirements.

Vessel traffic in the Raritan Bay and Lower New York Bay will increase temporarily during construction of the Project. In addition, Transco has identified a contractor yard, an existing equipment storage facility (Construction and Marine Equipment Co., Inc. [C&ME] facility) located in Elizabeth, New Jersey, and an existing contractor yard (Weeks Marine Contractor Yard [Weeks Yard]) in Jersey City, New Jersey, for use during construction of the Raritan Bay Loop (see the Waterfront Development Permit Plan – Raritan Bay Loop, Offshore Staging Area; Appendix E of this application). Traffic will increase temporarily in Arthur Kill and Kill Van Kull and the Upper New York Bay when Project construction and support vessels navigate between the C&ME facility and the temporary offshore workspace. However, the automatic identification system shows that the Lower New York Bay and Raritan Bay are heavily trafficked by vessels transiting in and out of the Port of New York and New Jersey's terminals and marinas (BOEM and NOAA 2016). An average of approximately 20 Project-related vessels will be employed at any given time during construction of the Raritan Bay Loop. Several of the larger vessels will remain offshore for the majority of the construction period, transiting to dock only occasionally to resupply or possibly to avoid severe sea conditions. In comparison, the number of vessel arrivals in the Port of New York and New Jersey between June 7 and June 20, 2017, ranged from 133 to 204 per day (Marinetraffic.com 2017). This is in addition to numerous recreational and commercial vessels that arrive and depart from more than 30 other local marinas in the vicinity of the Project. Thus, the number of vessel transits associated with construction of the Project will be negligible compared with the number of vessels currently operating in the busy New York–New Jersey Harbor and connected waterways on a daily basis.

Commercial and recreational vessels with itineraries crossing the offshore Raritan Bay Loop outside of the Ambrose Channel during construction may need to adopt minor re-routes to avoid active construction workspaces, including the Raritan Bay Channel and Chapel Hill Channel crossings. Transco will closely coordinate with the USCG to minimize impacts on vessels

attempting to transit through the temporary workspace and nearby waters. These coordination efforts will include maintaining regular communication with the USCG Waterways Management Coordinator throughout the construction period and circulating information about work schedules and locations through the Local Notice to Mariners, local newspapers, and notices posted in local marinas in and near the Project area. These measures will limit the number of vessel re-routes, resulting in negligible impacts on shipping-related economic productivity in the region. See additional discussion below regarding Project effects on vessel traffic under Rule 7:7-16.12.

Waterbodies along the Madison Loop that are connected to Cheesequake Creek will be crossed using HDD; therefore, Madison Loop construction will not affect navigation channels.

Following completion of construction, routine operations of the Raritan Bay Loop will not have an effect on navigation and navigation channels. No transit restrictions will be enacted over the operational ROW (tidelands license) associated with the pipeline.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Navigation Channels Rule.

7:7-9.10 Marina moorings

A portion of the Madison Loop in the onshore coastal zone crosses Lockwood Marina in Cheesequake Creek. However, impacts on the marina and associated moorings will be avoided by crossing this section via HDD from approximately MP11.48 to MP11.83.

Consistency Finding: Considering the statement above, Transco concludes that the Project complies with the Marina moorings Rule.

7:7-9.11 Ports

The offshore portion of the Raritan Bay Loop passes through Raritan Bay, Lower New York Bay, and the Atlantic Ocean. Lower New York Bay is heavily trafficked by vessels transiting in and out of the Port of New York and New Jersey's terminals and marinas along Upper New York Bay and Newark Bay. The most active port on the East Coast, the Port of New York and New Jersey, has multiple active terminals in several counties in both states. The Port of Belford in nearby Sandy Hook Bay, Monmouth County, New Jersey, is also considered a "major U.S. port" in terms of dollar value of commercial fishery landings. It was ranked number 122 of all major U.S. ports in 2014 by NOAA Fisheries (2014). Automatic identification system data show that the main volume of vessel traffic to and from the Port of New York and New Jersey passes through Ambrose Channel (BOEM and NOAA 2016). Transco will use HDD to cross under the channel, thereby avoiding impact on the majority of port traffic. Additional port traffic transiting through Chapel Hill Channel or Raritan Bay Channel may be subject to temporary, minor re-routes to avoid active construction workspaces. However, to reduce effects on port-related traffic, Transco will maintain regular communication with the USCG Waterways Management Coordinator throughout the construction period and circulate information about Project work schedules and locations through the Local Notice to Mariners, local newspapers, and notices posted in local marinas in and near the Project area. Therefore, construction of the Project is

expected to have negligible impacts on the Port of New York and New Jersey and the Port of Belford. Further discussion of Project-related effects on navigation channels and port-related traffic can be found above under Rule 7:7-9.7.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Ports Rule.

7:7-9.12 Submerged infrastructure routes

Installing the proposed pipeline will require crossing the Neptune Cable located at approximately MP13.88 within New Jersey waters. A desktop review indicates that this cable is buried approximately 9 feet below the seafloor near MP13.88. In accordance with 49 CFR Part 192, the crossing will be installed in such a way as to provide a minimum of 18 inches of separation between each active cable and the pipeline. Transco has developed a detailed installation plan for the cable crossing and will submit the plans to the cable owners for review and approval before beginning pipeline construction.

Once the Neptune Cable has been exposed at the offshore crossing location, pre-formed concrete mattresses will be placed in excavated areas on both sides of the cable. The mattresses will be lowered into place by a barge-mounted crane, assisted by divers to ensure proper positioning. The mattresses will form a bridge over which the pipeline is laid to maintain vertical separation between the new pipeline and existing cable.

If feasible, pipe will be installed at the cable crossings with sufficient room to allow the minimum depth of cover over the pipeline required by the USACE. If sufficient depth cannot be achieved because of existing cable depth and the separation required between the Neptune Cable and the Raritan Bay Loop, the pipeline will be covered with concrete mattresses in order to provide equivalent protection. (Each foot of mattress thickness is comparable to 2 feet of unconsolidated backfill [e.g., sand]).

Any additional active cables that are identified during the course of construction will be handled in the manner described above for the Neptune Cable. The Raritan Bay Loop route is also sited at least 2,000 feet away from Transco's existing Lower New York Bay Lateral natural gas pipeline, except near the Rockaway Transfer Point tie-in. Therefore, the Project will not impact currently operational submerged infrastructure.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Submerged Infrastructure Routes Rule.

7:7-9.13 Shipwreck and artificial reef habitats

Transco reviewed available archives and conducted a remote-sensing field survey to determine the known and potential presence of cultural and historical resources within the proposed Project workspaces, including shipwrecks. A summary of the investigation is provided under Rule 7:7-9.34, below. The proposed Raritan Bay Loop route does not cross any identified shipwrecks. Based on analysis of the results of the surveys, Transco has developed recommendations for suitable buffers around potentially significant cultural resources such as shipwrecks, in

consultation with the New Jersey Historic Preservation Office (HPO), which will be incorporated as part of an anchor-handling plan to avoid physical damage of the wrecks due to the Project. The New Jersey recreational use survey conducted in 2012 did not identify scuba diving areas, including artificial reefs, in proximity to the offshore loop (MARCO n.d.). However, Rockaway Reef, an artificial reef managed by the NYSDEC Marine Artificial Reef Program, is approximately 1 mile northeast of the Raritan Bay Loop tie-in with the RDL (MP35.49) and, although located in New York waters, is identified in the map of New Jersey's Specific Sport Ocean Fishing Grounds (referenced under Rule 7:7-9.4, above). During Project construction, increased turbidity and sedimentation could affect the hard-bottom substrate at this site. Based on the results of Transco's Project-specific sediment modeling for TSS and deposition, and previous sediment modeling of RDL project excavation activities at the Rockaway tie-in location (HDR-Hydroqual 2013), Project-related TSS levels at Rockaway Reef are not expected to be more than 50 mg/L above background conditions. Therefore, Transco does not expect the Project to have adverse impacts on this artificial reef or fish species using the reef structures.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Shipwreck and Artificial Reef Habitats Rule.

7:7-9.15 Intertidal and subtidal shallows

Construction of the Raritan Bay Loop includes the Morgan Shore Approach—an HDD crossing from an entry point west (landward) of the shoreline in Sayreville, New Jersey (MP12.00), to an offshore exit point located approximately 1,795 feet east-northeast of the shoreline (MP12.50). This HDD construction method will mostly avoid disturbance of intertidal and subtidal shallows between the shoreline at MP12.16 and the HDD exit point 0.34 mile away. Temporary disturbance of intertidal and subtidal shallows may occur due to barge anchoring, the specific locations of which will be determined during construction.

A separate, smaller HDD hole will be used to install the CP cable for the pipeline to an anode sled approximately 1,200 feet north of the pipeline. This use of HDD will also minimize disturbance of intertidal and subtidal shallows. However, installation of the anode sled may result in short-term disturbance of the intertidal and subtidal shallows.

Waterways along the Madison Loop route that are connected to Cheesequake Creek within the Coastal Zone will also be crossed using HDD technology, which will further avoid disturbance of intertidal and subtidal shallows.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Intertidal and Subtidal Shallows Rule.

7:7-9.18 Coastal high hazard areas

The Project will not affect any coastal high-hazard areas because it crosses the Morgan shoreline via HDD (see the discussion under Rule 7:7-9.15, above, for details). The onshore HDD entry point at approximately MP12.00 is landward of the coastal high-hazard zone identified by the Federal Emergency Management Agency.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Coastal High Hazard Areas Rule.

7:7-9.19 Erosion Hazard areas

The Project will not affect any erosion hazard areas because it crosses the Morgan shoreline via HDD (see discussion under Rule 7:7-9.15, above, for details).

Consistency Finding: Considering the statement above, Transco concludes that the Project complies with the Erosion Hazard Areas Rule.

7:7-9.22 Beaches

This Project will not affect any beaches because it crosses the Morgan shoreline via HDD (see discussion under Rule 7:7-9.15, above, for details).

Consistency Finding: Considering the statement above, Transco concludes that the Project complies with the Beaches Rule.

7:7-9.25 Flood hazard areas

The Project will be constructed in Tidal Flood Hazard Areas as identified in the New Jersey Flood Hazard Area Control Act Rules at N.J.A.C. 7:13. Construction of the proposed Project in tidal flood hazard areas below MHW is permitted in accordance with this Coastal Zone Management rule because it does not include the development of habitable buildings or construction of railroads, roadways, bridges, or culverts. Construction of the Project is also proposed within flood hazard areas located both within and more than 100 feet landward of navigable waters. The majority of these areas are disturbed, primarily due to the existing Transco pipeline ROW, with which the proposed Madison Loop will be 100% co-located. Although the Project activities are not specifically defined as a "water dependent use" at N.J.A.C. 7:7-1.5, the route must cross flood hazard areas to reach its terminus (the Rockaway Transfer Point) in New York. The use of HDD technology along the Madison Loop and Raritan Bay Loop avoids and minimizes disturbances to flood hazard areas.

Transco has submitted an application for a New Jersey Flood Hazard Area Control Act Individual Permit to the NJDEP concurrently with the application for a Waterfront Development Act Individual Permit. That application addresses Project compliance with all standards of N.J.A.C. 7:13, including those that relate to tidal flood hazard area referenced in the Flood Hazards Areas Rule.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Flood Hazard Areas Rule and demonstrates compliance with the New Jersey Flood Hazard Area Control Act Rules at N.J.A.C. 7:13.

7:7-9.26 Riparian zones

The proposed Project will result in temporary and permanent impacts on regulated riparian zones. Transco submitted an application for a New Jersey Flood Hazard Area Control Act Individual Permit to the NJDEP concurrently with the application for a Waterfront Development Act Individual Permit.

The Project will result in both temporary and permanent impacts on a riparian zone (quantified in the Flood Hazard Area Individual Permit Application). A large majority of these impacts are temporary and/or will occur in previously disturbed areas. Temporarily impacted areas will be revegetated to match their preconstruction condition or better in the same location as the disturbance. Temporary impacts will be a result of construction access, including roads and workspace areas located outside the operational easement, and HDD activities. Permanent impacts will be associated with the widening and ongoing maintenance of the operational easement along the Madison Loop route.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Riparian Zone Rule and demonstrates compliance with the New Jersey Flood Hazard Area Control Act Rules at N.J.A.C. 7:13.

7:7-9.27 Wetlands

The proposed Project will disturb wetlands regulated under both the New Jersey Freshwater Wetlands Protection Act at N.J.A.C. 7:7A and the New Jersey Coastal Wetlands Act of 1970. Authorization for disturbance of wetlands regulated under N.J.A.C. 7:7A is being requested through an Application for a Freshwater Wetlands Individual Permit, submitted concurrently to the NJDEP with the application for a Waterfront Development Act Individual Permit. The proposed Project requires water access as a central purpose of the basic function of the activity; although the Project activities are not specifically defined as a "water dependent use" at N.J.A.C. 7:7-1.5, the alignment must cross tidal waterways and their associated wetlands in order to reach the Project terminus in New York.

Within the New Jersey coastal zone, Project workspace for the Madison Loop will overlap three delineated wetlands, identified as W-T07-003, W-T07-004, and W-T01-017. These wetlands are regulated as both mapped coastal wetlands under the New Jersey Coastal Wetlands Act of 1970 and unmapped coastal wetlands under the New Jersey Freshwater Wetlands Protection Act because a portion of each lies landward of the New Jersey upper wetland boundary. All are tidally influenced. No wetlands have been identified within the onshore portion of the Raritan Bay Loop.

Within the New Jersey coastal zone, the proposed Project will result in the disturbance of 1.968 acres of mapped coastal wetlands, and 0.550 acre of unmapped/freshwater wetlands. These disturbances are illustrated on the permit plans included as Appendix E of this application.

The proposed Project has no prudent or feasible alternative on a non-wetland site, will result in minimum feasible alteration or impairment of natural tidal circulation, and will result in minimum feasible alteration or impairment of natural contour or the natural vegetation of the

wetlands. Disturbances of wetlands W-T07-004 and W-T01-017 will be minimized through the implementation of HDD technology. Specifically, Transco will cross wetland W-T07-004 using HDD, although a portion of the wetland will be impacted to accommodate HDD workspace at the entry point near MP11.45. Transco will also cross wetland W-T01-017 using HDD, although a portion of the wetland will be impacted to accommodate HDD workspace at the exit point near MP11.85. It is not practicable to avoid the wetland impacts at the HDD entry and exit points due to equipment space requirements and other constraints, such as the proximity of the route to a residential neighborhood near MP11.40, southwest of Gondek Drive, and a residential neighborhood near MP11.80, northeast of Lockwood Marina. The portions of wetlands crossed by HDD may be subject to temporary impacts from foot traffic only in order to lay HDD tracking wires and/or a hydrostatic test water withdrawal hose. Transco will use a conventional open-cut method in the remaining wetland areas in the New Jersey coastal zone.

To minimize impacts on the remaining wetland areas within the construction workspace, Transco will adhere to the Transco Procedures, included with Transco's application for a USACE Permit. Procedures for construction in wetlands that are unsaturated at the time of construction will be similar to those used in upland areas. Transco will temporarily store onshore trench spoil in a ridge along the pipeline trench, leaving gaps at appropriate intervals to provide natural circulation or drainage of water. Topsoil will be segregated in unsaturated wetlands adjacent to the trench to preserve the seed bank and allow for successful revegetation. Construction will proceed in saturated wetlands, potentially when standing water is present, but topsoil will not be segregated because saturated topsoil will be difficult to isolate. Before crossing wetlands that are saturated or that contain soils unable to support construction equipment without considerable soil disturbance, Transco will stabilize the ROW using equipment mats to help ensure a stable, safe working condition and to prevent significant rutting/soil disturbance.

To minimize erosion and promote revegetation within the wetland, removing the root mats of woody vegetation will be allowed only directly over the trench area or where required to ensure safe working conditions. This serves to enhance regeneration of vegetation on the construction and permanent ROW. Transco will not install permanent erosion-control structures that could alter hydrology (e.g., slope breakers) within wetlands, but such structures may be used in the adjacent upland areas to control erosion and sedimentation.

All disturbances to mapped coastal wetlands will be temporary, and the wetlands will be restored following construction in accordance with the Transco Procedures and an NJDEP-approved restoration plan. In accordance with the Transco Procedures, wetlands will be revegetated with an approved seed mix or annual ryegrass, where standing water is not present, to stabilize disturbed soils. Affected wetland areas will be allowed to revegetate naturally from existing adjacent seed banks. Wetland areas will not be amended with fertilizer, lime, or mulch unless required by appropriate federal and state agencies. Wetlands will be monitored for a period of three to five years after construction is completed to ensure successful revegetation of the Project area. Revegetation will be considered successful when the vegetative cover returns to at least 80% of the type, density, and distribution of the native vegetation in adjacent, undisturbed portions of the wetland. Transco will mitigate unavoidable degradation of the wetlands as necessary in accordance with N.J.A.C. 7:7-17.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Wetlands Rule and demonstrates compliance with the New Jersey Freshwater Wetland Rules at N.J.A.C. 7:7A.

7:7-9.28 Wetlands buffers

To protect wetland buffers along the Madison Loop and prevent erosion and runoff into the adjacent wetlands, Transco will implement the Transco Plan, which is included with Transco's application for a USACE Permit. For example, sedimentation in wetlands will be minimized by installing temporary sediment-control measures between the upland construction areas and the wetlands. Transco will install temporary erosion controls immediately after initial disturbance of the soil. Temporary slope breakers will be used to reduce runoff velocity and divert water off the construction ROW. The slope breakers will be installed on slopes greater than 5% where the base of the slope is less than 50 feet from wetlands and waterbodies. Energy-dissipation devices may be installed at the down-slope end of slope breakers to minimize erosion of soil off the ROW into wetlands. Trench plugs will be installed in upland slopes adjacent to wetlands to prevent trench erosion. Trench plugs also will be spaced in accordance with the applicable state and federal regulations and installed at the edges of the wetland. Temporary sediment barriers will be used to stop the flow of sediments and prevent deposition of sediments beyond the workspace.

Temporary erosion controls will be properly maintained throughout construction and reinstalled as necessary until they are replaced with permanent erosion controls or until restoration is complete. To ensure that appropriate erosion and sediment control measures are maintained, an environmental inspector will inspect all disturbed areas of the construction spreads that have not been permanently stabilized. Inspections will occur in accordance with the following schedule: (a) on a daily basis in areas of active construction, (b) on a weekly basis in areas with no construction or equipment operation, or (c) within 24 hours of a storm with 0.5 inch or more of rain.

After pipeline installation, Transco will use permanent erosion controls such as trench breakers in wetland buffers to minimize long-term sedimentation into the wetlands. Wetland buffers disturbed by the Project will be revegetated using approved seed mixes and/or erosion control blankets or matting. The temporary vegetation will stabilize the area until indigenous riparian species are re-established. If inclement weather limits the effectiveness of reseeding efforts, temporary erosion-control measures will be implemented to minimize erosion until conditions are suitable for reseeding. The temporary erosion-control measures will be monitored and maintained until conditions are suitable for completion of restoration. Transco will also apply mulch on all slopes concurrently with or immediately after seeding where necessary to stabilize the soil surface and to reduce wind and water erosion. Transco will complete final grading, topsoil replacement, and installation of permanent erosion-control structures within 20 days of backfilling the trench. If seasonal or other weather conditions prevent compliance with these timeframes, Transco will maintain temporary erosion-control devices until the cleanup is completed.

Operation of the Project is not anticipated to result in any soil erosion. Transco's operations personnel will monitor the effectiveness of revegetation and permanent erosion control measures during routine inspections and maintenance of the facilities and pipeline ROWs.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Wetlands Buffers Rule and demonstrates compliance with the New Jersey Freshwater Wetland Rules at N.J.A.C. 7:7A.

7:7-9.32 Steep slopes

Within the New Jersey coastal zone, steep slopes—defined by the pipeline running perpendicular to a 15% to 30% slope—are present in the construction ROW at MP11.77 and MP11.88. Steep side slopes—defined as the pipeline running parallel to a 15% to 30% slope—are present in the construction ROW between MP11.84 and MP11.86. No areas of slopes greater than 30% occur in the Project area in the coastal zone. These steep slopes and steep side slopes are either crossed via HDD or lie at the edge of the Madison Loop workspace near the Lockwood Marina HDD exit point. The steep slope crossed by HDD would only be subject to foot traffic. The steep slope within the HDD workspace may be temporarily re-graded to accommodate equipment storage. Transco identified steep slopes (greater than 15%) based on the spacing of 2-foot contours that were created using Project-specific aerial survey data. Transco also reviewed the digitally compiled map of landslide incidence and susceptibility in the conterminous United States, which delineates areas where large numbers of landslides have occurred and areas that are susceptible to landslides (USGS 2001). The landslide incidence and susceptibility map indicates that all of the pipeline facilities are in the low landslide incidence category. Transco has determined that geological hazards, including steep slopes, are not anticipated to adversely affect the constructability, operation, or integrity of the pipeline. Transco will prevent erosion and run-off from steep slopes into adjacent wetlands and waterbodies by implementing the Transco Plan. See the discussion under Rule 7:7-9.28, above, for a summary of stabilization, erosion-control, and restoration measures to be used on sloped areas during construction and operation of the Project.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Steep Slopes Rule.

7:7-9.34 Historic and archaeological resources

Transco conducted Phase I cultural resource surveys, which included background research and field investigations, to determine the known and potential presence of cultural and historical resources within the Project's areas of potential effect (APE). The direct APE includes land that will be disturbed by the construction and installation of the various Project facilities, while the indirect APE (viewshed) consists of areas adjacent to the Project facilities that may cause an historic property to incur irreversible visual impacts to its interpretive value or integrity. The following summary presents Transco's investigation and proposed impact-avoidance measures for potential resources in the New Jersey coastal zone.

Agency Consultations

In compliance with Section 106 of the National Historic Preservation Act (NHPA), Transco is consulting with the State Historic Preservation Offices (SHPO or HPO) in New Jersey and New York regarding the protection of cultural resources located within or adjacent to the Project's onshore and offshore APE. Additionally, Transco initiated informal consultation with federal agencies such as the USCG, National Park Service, and Advisory Council on Historic Preservation, as well as state- and federally recognized Native American tribes with a potential ancestral or cultural interest in the Project area. Transco further initiated informal consultation with 11 other stakeholder organizations in conjunction with the offshore cultural resources surveys. To ensure consistency and quality, Transco adhered to existing FERC, BOEM, New Jersey HPO, and U.S. Department of the Interior guidelines to conduct the onshore and offshore surveys. Transco also obtained concurrence of the offshore survey plan from the New York and New Jersey SHPOs in September 2016.

Onshore Evaluation

Onshore Survey Methods

The Project's direct APE for onshore cultural resources includes a 300-foot-wide corridor that encompasses the construction footprint of the proposed pipeline and proposed aboveground facilities along the pipeline route. Proposed access roads, contractor yards, and additional temporary workspaces outside the 300-foot survey corridor were also surveyed per the Project's design. The indirect APE includes a 0.5-mile viewshed beyond the corridor width. Field survey protocols in New Jersey comprised pedestrian reconnaissance (surface collection), shovel testing, and geomorphological assessments to locate archaeological sites in the Project's direct APE. Visual surveys along the study corridor or windshield surveys from road ROWs were used to identify aboveground resources in both the direct and indirect APE. Data sources examined to locate alluvial landforms included topographic maps, NRCS soil series data, and the National Hydrography Dataset. The National Register of Historic Places (NRHP), state registries, historic maps, and aerial photographs were also analyzed to determine whether built resources, fifty years old or older, were present within the Project's APE.

Onshore Survey Results

Three previously identified archaeological sites and six historic properties within 0.5 mile of the Madison Loop and onshore portion of the Raritan Bay Loop are eligible for listing in the NRHP. One of the three archaeological sites (28-MI-169 [Morgan 2]) lies within the direct APE adjacent to the Morgan, New Jersey shore. Measures have been taken within the Project's design to avoid impacting 28-MI-169. Transco confirmed the presence of this site during its field survey. The Madison Loop will also cross one historic district within the New Jersey coastal zone (the New York and Long Branch Railroad). As such, no historic properties, as defined in 36 CFR 800.16 were found to be affected by the Project in New Jersey. No further architectural investigations appear warranted or are recommended for the Madison Loop or the Onshore Raritan Bay Loop. The New Jersey HPO concurred with this assessment on March 3, 2017.

In response to the New Jersey HPO request for additional information regarding the avoidance of Archaeological Site No. 28-MI-169 and the protection of the site in the case of an inadvertent return of drilling fluids during HDD operations beneath the site, an avoidance plan May 1, 2017. Due to strategically placed entry and exit points, and because the depth of the proposed cable

below Site 28-MI-169 will range from 15 to 42 feet below the current ground surface, impacts upon the site's integrity will be avoided. On June 8, 2017, the HPO concurred with the avoidance plan.

Offshore Evaluation

Offshore Survey Methods

The Project's APE for offshore cultural resources includes the temporary construction ROW, which generally consists of a 5,000-foot-wide corridor centered along the Raritan Bay Loop route. Due to the distance from shore and size of the offshore workspace, this APE was used to consider both direct and indirect (viewshed) effects. Following comprehensive background research, a Phase I offshore geophysical survey was conducted using a multibeam echosounder, depth sounder, side-scan sonar, magnetometer with altimeter, and a "CHIRP" sub-bottom profiler to identify the presence of known and previously undocumented archaeological resources within the Project's direct APE. The geophysical survey was followed by geotechnical sampling (vibratory coring) along the pipeline route centerline to supplement and verify the geophysical data. Background research involved a review of 10 previous cultural resource investigations; historical maps; aerial photographs; and site file records at the New Jersey HPO, New York SHPO, and NRHP files. Transco also reviewed the Northern Maritime Research database; the Office of Coast Survey's Wrecks and Obstructions database, which is sourced from the NOAA Office of Coast Survey's Electronic Navigational Charts and the Automated Wreck and Obstruction Information System; the BOEM shipwreck database, the Office of Coast Survey's Historical Map and Chart Collection; and the National Center for Environmental Information database.

Offshore Survey Results

The offshore Raritan Bay Loop route is in the vicinity of four NRHP-listed sites, all of which are in New Jersey. These include the Fort Hancock and Sandy Hook Proving Grounds Historic District, Old Orchard Shoal Light Station, Great Beds Light Station, and Romer Shoal Light Station.

During the initial geophysical surveys, Transco identified 13 potential submerged cultural targets within a 400-foot-wide corridor centered along the Raritan Bay Loop route, six of which are in New Jersey waters and include confirmed and possible shipwrecks, some of which are buried beneath the present seabed. An additional 19 potential cultural targets were identified within the larger offshore direct APE, five of which are in New Jersey waters. In addition to confirmed or potential shipwrecks, these targets included the foundations of two lighthouses (Romer Shoal and Old Orchard). No prehistoric remains were identified during the geotechnical survey. Transco has conducted a supplemental close-order geophysical survey to further assess the context and integrity of the 13 targets of archaeological interest within the 400-foot-wide corridor because these are subject to greater risk of disturbance from Project-related dredging/activity. Based on analysis of the geophysical survey data and comparative review of the existing historical records, Transco has determined that only three of the targets within the offshore APE in New Jersey waters likely represent submerged archaeological sites. These three targets are located within the temporary offshore workspace over 200 feet from the Raritan Bay Loop route centerline.

Based on geomorphological analyses, there is an apparent absence of intact prehistoric landforms (paleosols), so the Project is not expected to significantly affect prehistoric habitation sites in the offshore workspace; this absence is primarily due to the geomorphological transgressions and regressions that have occurred following the last Glacial Maximum. The offshore cultural resources assessment report for the Raritan Bay Loop in New Jersey waters was submitted to the HPO on May 4, 2017. This report contained the results of the geophysical survey, geotechnical sampling, and geo-archaeological assessments within the Project area. The HPO concurred with these findings and recommendation on June 1, 2017.

Following the review of documents received from the USACE through the Freedom of Information Act, on May 31, 2017 Transco provided the New Jersey HPO with information regarding the possible presence of offshore historic telecommunication cables within the Project area. Transco's research indicated that the transatlantic cables identified within the Project area were unlikely to have extended into New Jersey waters due to more preferred landfalls on Long Island, New York. Of the cables identified, those that may be present would have been laid during World Wars I and II in response to the U.S. military's need to bolster communication between defensive positions located along the New York and New Jersey shorelines. In a letter issued on July 6, 2017, the New Jersey HPO indicated that they did not have any information on offshore historic cables in their database. Additionally, following a review of the offshore remote sensing survey results, Transco determined that no historic cables were identified within the APE for the Project. In a conference call on July 11, 2017, to discuss Transco's findings and the potential for offshore cables in the Project area, the New Jersey HPO concurred that it was unlikely for historic offshore cables to be located within the APE for the Project. Additionally, on May 9, 2018, Transco received concurrence from the New Jersey HPO that four submarine cables which FERC indicated consultation was not yet finalized in the Draft EIS were unlikely to still be intact within the offshore Project area and therefore no further consultation regarding these cables was warranted. Transco is providing the above-referenced New Jersey HPO letter of concurrence, included as Appendix B.

Transco notified the New Jersey HPO about the anticipated use of the facilities at Weeks Yard on November 20, 2017. Because Weeks Yard has previously allowed the use of their harbor facility as a staging area for operations associated with shoreline restoration efforts in the wake of Superstorm Sandy in 2014, and for construction associated with the RDL in 2015, no further consultation regarding the potential impact upon cultural resources was deemed necessary.

Avoidance and Minimization Measures

Based on analysis of the results of the offshore cultural surveys described above, Transco has developed recommendations, in consultation with the New Jersey HPO, for suitable buffers around potentially significant cultural resources in New Jersey waters between MP26.60 and MP29.20, the recognition of these buffers are a significant part of the Project's Anchor-Handling Plan. Since the application of anchoring management protocols will greatly reduce the chance of damaging these targets, Transco recommends a determination of "No historic properties affected" (36 CFR 800.4). In cases where avoidance is not feasible, a site remediation plan will be designed in consultation with the New Jersey HPO. The Project Anchor-Handling Plan was submitted for agency for review and comment on June 16, 2017; The New Jersey HPO concurred with the contents and methods outlined in this document on July 27, 2017.

Transco developed Unanticipated Discovery Plans (UDPs) for Cultural Resources and Human Remains for the onshore and offshore portions of the Project. The UDPs establish a set of procedures that Project personnel and other Transco representatives will follow to address unanticipated discoveries of human remains and/or archaeological resources if such discoveries are made during Project construction.

On August 11, 2016, Transco forwarded copies of the onshore and offshore UDPs to the New Jersey HPO for review and comment. Each UDP for the Project was finalized in accordance with the comments received from each HPO and resubmitted for review on October 26, 2016. The New Jersey HPO concurred with the onshore and offshore UDPs on December 1, 2016. With New Jersey HPO concurrence, Transco will implement the UDPs to avoid or minimize impacts on any human remains and/or archaeological resources identified during construction of the Madison Loop and the Raritan Bay Loop.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with Section 106 of the NHPA, the Secretary of the Interior's Standards for Archaeology and Historic Preservation, the Abandoned Shipwrecks Act, and the Sunken Military Craft Act. Further, the Project also complies with the Historic and Archaeological Resources Rule.

7:7-9.35 Specimen trees

Transco reviewed the NJDEP registry for specimen trees and considered the approximate circumference of trees observed along the Madison Loop during field surveys to determine that the Project will not impact any specimen trees (NJDEP 2017b).

Consistency Finding: Considering the statement above, Transco concludes that the Project complies with the Specimen Trees Rule.

7:7-9.36 Endangered and threatened wildlife or plant species habitats

Transco consulted with the NJDEP Natural Heritage Program, the U.S. Fish and Wildlife Service (USFWS), and NOAA Fisheries to identify and document the presence of federally and state-listed species in the Project area through desktop studies and, where recommended, field studies using approved survey protocols (Cartica 2016; Crocker 2017; Carduner 2016; Markuson 2016; NJDEP 2016b; NOAA Fisheries n.d.[b]; USFWS 2016a). New Jersey Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife were considered as part of this review. Transco conducted informal consultations with the USFWS and NOAA Fisheries as the non-federal Project representative under the FERC process, per Section 7(a)(2) of the federal ESA. FERC issued a Draft Biological Assessment and a Draft Essential Fish Habitat Assessment to resource agencies on January 25, 2019, as part of the Final EIS (FERC Docket Number CP17-101), and issued a supplemental Biological Assessment on August 27, 2019 in response to comments received from NOAA Fisheries. On October 28, 2019, NOAA Fisheries indicated that the supplemental Biological Assessment contained sufficient information to initiate formal consultation (See Appendix B). Based on the initiation of formal consultation on August 27, 2019, ESA Section 7 regulations require issuance of a Biological Opinion by January

9, 2020. Table 3-3 and the subsequent text below describe the state-listed species and associated habitat potentially affected by the Project in the New Jersey coastal zone.

Madison Loop and Onshore Raritan Bay Loop

Northern Long-eared Bat

The northern long-eared bat (NLEB) (*Myotis septentrionalis*) is listed as threatened under the ESA. The USFWS New Jersey Field Office indicated that the Madison Loop is within the range of the NLEB; however, no known hibernacula are within 0.25 mile and no known summer colonies or maternity roost trees are within 150 feet of the Project (Markuson 2016). The USFWS did not recommend NLEB surveys under the 4(d) rule.

Plants

Two species of plants listed as endangered in New Jersey under N.J.A.C. 7:5C-5.1 were identified as potentially occurring in the onshore Project area: swamp pink (*Helonias bullata)* and Torrey's rush (*Juncus torreyi*). Swamp pink is listed as threatened under the ESA, and the USFWS New Jersey Field Office indicated that the Madison Loop is within their known range (USFWS 2016a; Markuson 2016). The USFWS New Jersey Field Office recommended that Transco conduct surveys within suitable habitat for swamp pink. Habitat assessment surveys were conducted within the 300-foot survey corridor of the Madison Loop in suitable habitat. Transco assessed all wetlands within the Madison Loop survey corridor and determined that no suitable habitat for swamp pink was present, and the USFWS concurred with this finding.

Torrey's rush is generally found on wet, sandy shores; edges of sloughs; along slightly alkaline waterbodies; and occasionally on clay soils, calcareous wet meadows, and alkaline soils (Brooks and Clements 2000, as cited in Thompson and Paris 2004). They flower and fruit from early summer to fall (Thompson and Paris 2004). Transco documented the presence of Torrey's rush, a species state-listed as endangered, in wetland W-T07-001 during the habitat assessment for swamp pink. The occupied wetland is adjacent to the Madison Loop's workspace. However, Transco has modified the Project workspace to avoid impact to this wetland (see discussion under Rule 7:7-9.27 for more information about this wetland). See discussion under Rule 7:7-9.28 for information about the sediment- and erosion-control measures that will be implemented at the edge of the Project's construction ROW. Based on these measures, Transco does not expect the Project to directly impact individual Torrey's rush plants.

Pine Barrens Tree frog

The NJDEP Natural Heritage Program identified the Pine Barrens tree frog, a species state-listed as endangered, as potentially breeding within 1 mile of the Madison Loop (Cartica 2016). New Jersey's Landscape Project identifies Pine Barrens treefrog habitat approximately 0.75 mile south of the Madison Loop. Therefore, Transco does not expect the Project to affect the Pine Barrens tree frog.

Table 3-3
Federally and State-Listed Species Potentially Occurring in or near the Project Area in the New Jersey Coastal Zone

Species Group	Species Common Name	Scientific Name	Federal Status	New Jersey State Status	Project Components in New Jersey where Potentially Present	County/State of Potential Occurrence within Project Area
Plants	Swamp pink	*Helonias bullata*	Threatened	Endangered	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Torrey's rush	*Juncus torreyi*	N/A	Endangered	Madison Loop	Middlesex, NJ
Fish	Atlantic sturgeon	*Acipenser oxyrinchus*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
	Shortnose sturgeon	*Acipenser brevirostrum*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
Mammals	Northern long-eared bat	*Myotis septentrionalis*	Threatened	N/A	Madison Loop, Raritan Bay Loop, Compressor Station 206	Somerset and Middlesex, NJ
	North Atlantic right whale	*Eubalaena glacialis*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
	Blue whale	*Balaenoptera musculus*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
	Fin whale	*Balaenoptera physalus*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
	Humpback whale	*Megaptera novaenliae*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
	Sei whale	*Balaenoptera borealis*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
	Sperm whale	*Physeter macrocephalus* (syn. *catodon)*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
Reptiles and Amphibians	Pine Barrens tree frog	*Hyla andersonii*	N/A	Threatened	Madison Loop	Middlesex, NJ
	Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
	Leatherback sea turtle	*Dermochelys coriacea*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
	Loggerhead sea turtle	*Caretta caretta*	Threatened	Endangered	Raritan Bay Loop	NY and NJ

Table 3-3
Federally and State-Listed Species Potentially Occurring in or near the Project Area in the New Jersey Coastal Zone

Species Group	Species Common Name	Scientific Name	Federal Status	New Jersey State Status	Project Components in New Jersey where Potentially Present	County/State of Potential Occurrence within Project Area
	Green sea turtle	*Chelonia mydas*	Threatened	Threatened	Raritan Bay Loop	NY and NJ
	Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	Endangered	Raritan Bay Loop	NY and NJ
Birds	Bald eagle	*Haliaeetus leucocephalus*	BGEPA	Endangered (breeding population)	Madison Loop,	Middlesex, NJ
	Osprey	*Pandion haliaetus*	N/A	Threatened (breeding population)	Madison Loop	Middlesex, NJ
	Black-crowned Night-heron	*Nycticorax nycticorax*	N/A	Threatened (breeding population only)	Madison Loop	Middlesex, NJ
	Yellow-crowned night-heron	*Nyctanassa violacea*	N/A	Threatened	Madison Loop	Middlesex, NJ
	Red knot	*Calidris canutus rufa*	Threatened	Endangered (non-breeding population)	Raritan Bay Loop	Middlesex, NJ
	Piping plover	*Charadrius melodus*	Threatened	Endangered	Raritan Bay Loop	Middlesex, NJ
	Black skimmer	*Rynchops niger*	N/A	Endangered	Raritan Bay Loop	Middlesex, NJ
	Least tern	*Sternula antillarum*	N/A	Endangered	Raritan Bay Loop	Middlesex, NJ; Queens, NY
	Roseate tern	*Sterna dougallii dougallii*	Endangered	Endangered	Raritan Bay Loop	Middlesex, NJ; Queens, NY
	Pied-billed grebe	*Podilymbus podiceps*	N/A	Endangered (breeding population)	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	American bittern	*Botaurus lentiginosus*	N/A	Endangered (breeding population)	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Peregrine falcon	*Falco peregrinus*	N/A	Endangered (breeding population only)	Madison Loop, Raritan Bay Loop	Middlesex, NJ

Table 3-3
Federally and State-Listed Species Potentially Occurring in or near the Project Area in the New Jersey Coastal Zone

Species Group	Species Common Name	Scientific Name	Federal Status	New Jersey State Status	Project Components in New Jersey where Potentially Present	County/State of Potential Occurrence within Project Area
	Black rail	*Laterallus jamaicensis*	N/A	Endangered (breeding population only)	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Upland sandpiper	*Bartramia longicauda*	N/A	Endangered	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Short-eared owl	*Asio flammeus*	N/A	Endangered (breeding population only)	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Red-headed woodpecker	*Melanerpes erythrocephalus*	N/A	Threatened	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Loggerhead shrike	*Lanius ludovicianus*	N/A	Endangered (non-breeding population)	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Sedge wren	*Cistothorus platensis*	N/A	Endangered	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Golden-winged warbler	*Vermivora chrysoptera*	N/A	Endangered (breeding population only)	Madison Loop, Raritan Bay Loop	Middlesex, NJ
	Henslow's sparrow	*Ammodramus henslowii*	N/A	Endangered	Madison Loop, Raritan Bay Loop	Middlesex, NJ

Sources: Carduner 2016; Cartica 2016; Crocker 2017; NJDEP 2016b; NOAA Fisheries n.d.[a]; USFWS 2016a

Key:
BGEPA = Bald and Golden Eagle Protection Act
N/A = Not applicable
NJ = New Jersey
NY = New York

Birds

Four species of birds listed as threatened or endangered in New Jersey have been identified by the NJDEP Natural Heritage Program as potentially occurring in the Project area: bald eagle (*Haliaeetus leucocephalus*), osprey *(Pandion haliaetus),* black-crowned night heron *(Nycticorax nycticorax),* and yellow-crowned night heron *(Nyctanassa violacea)* (Cartica 2016). Additionally, the NJDEP Division of Fish and Wildlife (NJ DF&W) identified an additional 11 species that could potentially occur in the Project area: the pied-billed grebe *(Podilymbus podiceps),* American bittern *(Botaurus lentiginosus),* peregrine falcon *(Falco peregrinus),* black rail *(Laterallus jamaicensis),* upland sandpiper *(Bartramia longicauda),* short-eared owl *(Asio flammeus),* red-headed woodpecker *(Melanerpes erythrocephalus),* loggerhead shrike *(Lanius ludovicianus),* sedge wren *(Cistothorus platensis),* golden-winged warbler *(Vermivora chrysoptera),* and Henslow's sparrow *(Ammodramus henslowii).*

There is a documented bald eagle nest located along Cheesequake Creek; however, in an e-mail dated May 18, 2017, Mr. Kelly Davis, New Jersey Division of Fish and Wildlife, Office of Environmental Review, indicated that the project area does not extend into the 660 ft regulated nest buffer of the documented nest. The NJ Landscape Project (V3.3) identifies suitable bald eagle foraging habitat within the following portions of the Madison Loop Project area: MP10.01, MP10.45, MP10.64 to MP10.70, MP10.88, MP11.44 to MP11.63, MP11.65, MP11.77, MP11.84, and MP12.15. However, per guidance from Christina Albizati, NJDEP, dated April 8, 2019 (File # 0000-01-1001.3), the wetlands depicted on sheets 10, 11, 12, and 13 of Transco's Freshwater Wetland Permit Plans that are West of Gondeck Drive (~ MP11.42) are not considered exceptional resource value wetlands and do not contain suitable threatened and endangered species habitat. Impacts to wetlands and threatened and endangered species habitat will be avoided through the use of an HDD from MP11.49 to MP11.84. Construction activities along the remaining portions of the Madison Loop not crossed by HDD will impact areas of wetland that are identified as suitable foraging habitat for bald eagle, but it is anticipated that these impacts will be minor and/or temporary in nature and will not result in any significant, long-term, adverse impact to bald eagle or its foraging habitat.

New Jersey Landscape Project Mapping (v3.3) identifies suitable osprey nesting habitat at MP10.67, MP10.88, MP11.44 to MP11.63, MP11.66, MP11.78, and MP11.84. Mapped suitable osprey foraging habitat occurs where the Project area crosses a tributary of Cheesequake Creek at MP11.55. According to the 2018 Osprey Project in New Jersey report published by NJ Division of Fish and Wildlife, Endangered and Nongame Species Program, there are 45 documented osprey nests within the area known as "Raritan Bay (w/Cheesequake)". A crosscheck of the non-profit website, "Osprey Watch", indicates that the project area workspace comes within 300 meters of two known osprey nests. One nest near the Madison Loop centerline from MP11.57 to MP11.85 was active in 2017, but has no data available for 2018. The second nest near the offshore portion of the Raritan Bay Loop centerline from MP12.37 to MP12.41 was active in 2018. However, per guidance from Christina Albizati, NJDEP, dated April 8, 2019 (File # 0000-01-1001.3), wetlands depicted on sheets 10, 11, 12, and 13 of Transco's Freshwater Wetland Permit Plans are not considered exceptional resource value wetlands and do not contain suitable threatened and endangered species habitat. Impacts to wetlands and threatened and endangered species habitat will be avoided through the use of HDD from MP11.49 to MP11.84. Additionally, Transco will not conduct work inside the 300 meters buffer of an active osprey nest

from April 1 through August 31. Impacts to osprey habitat will be minor and/or temporary in nature and will not result in any significant, long-term, adverse impact to osprey or its foraging habitat.

The New Jersey Landscape Project Mapping (v3.3) identifies black-crowned night-heron foraging habitat within the Madison Loop Project area from MP11.55 to MP11.58, MP11.65 to MP11.73, MP11.76, MP11.84, and at MP12.15. The Project will impact areas of wetland that are identified as foraging habitat for black-crowned night-heron, however, the Project will not result in impacts to any mapped suitable habitat for the listed breeding population. It is anticipated that impacts to suitable foraging habitat will be minor and temporary in nature and will not represent any significant, long-term, adverse impact to black-crowned night-heron or its habitat.

In the Madison Loop Project area, yellow-crowned night-herons have been reported near Cheesequake Creek and along the Raritan Bay shoreline, which are both in the vicinity of the Project area. New Jersey Landscape Project Mapping (v3.3) identifies yellow-crowned night-heron foraging habitat approximately 0.2 mile west of the Madison Loop's southern terminus. No known nesting or foraging habitat occurs within the Madison Loop Project area; therefore, the Project is not anticipated to cause any adverse impact to yellow-crowned night-heron or its habitat.

Pied-billed grebes nests in freshwater marshes associated with ponds, bogs, lakes, reservoirs, or slow-moving rivers. Breeding sites typically contain open water with depths of 0.8 feet to 6.6 feet interspersed with submerged or floating aquatic vegetation and dense emergent vegetation (NJ DF&W n.d.[a]). Portions of the Madison Loop may contain potentially suitable breeding habitat; however, the species is unlikely to occur during breeding season. The eBird database does not contain any records of pied-billed grebe in Middlesex County during the breeding season. Additionally, New Jersey Natural Heritage reports obtained for the Project did not include any records of pied-billed grebe (Cartica 2017a, 2017b).

Breeding habitat for American bitterns include freshwater wetlands with tall, emergent vegetation (Lowther et al. 2009). The American bittern will also occasionally utilize sparsely vegetated wetlands and, rarely, tidal marshes. Cattail ponds, sedge marshes, and marshes created by beaver dams are especially favored. Uncommonly, the species nests in upland cover surrounding a wetland basin, provided that the cover has not been modified by agriculture. Nesting habitats typically contain shallow water, often at depths less than 10 cm (4 inches) and dense vegetation (NJ DF&W n.d.[b]). New Jersey Natural Heritage reports obtained for the Project did not include any records of American bittern (Cartica 2017a, 2017b). A review of eBird data suggests the species may rarely occur in Middlesex County. Therefore, the American bittern could occur occasionally in appropriate habitat in the vicinity of the Madison Loop.

Peregrine falcons inhabit most terrestrial biomes in the Americas, with greater densities in tundras and coastal areas. In addition to natural habitats, many artificial habitats are now used (urban, human-built environments such as towers, buildings, etc.) (White et al. 2002). New Jersey Natural Heritage reports obtained for the Project did not include any records of peregrine falcon (Cartica 2017a, 2017b). The species could potentially occur within both the Compressor Station 206 and Madison Loop Project areas; however, nesting within the Project area is unlikely

because no suitable nesting substrate is present (e.g., cliffs, nest platforms, tall buildings, bridges).

The black rail inhabits tidal marshes and freshwater wetlands throughout the Americas. The species nests in high portions of salt marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation, and uses sites with shallower water than other North American rails. Most breeding areas are vegetated by fine-stemmed emergent plants, rushes, grasses, or sedges (Eddleman et al. 1994). New Jersey Natural Heritage reports obtained for the Project did not include any records of black rails (Cartica 2017a, 2017b). Based on available data (NHP reports, eBird), the species appears unlikely to nest in the Project area.

Upland sandpipers inhabit grasslands, fallow fields, and meadows that are often associated with pastures, farms, or airports. Upland meadows and short-grass grasslands containing vegetation 8 to 40 cm (3 to 16 inches) tall, provide habitat for nesting upland sandpipers. Habitats that contain a mix of tall and short grasses and forbs provide both foraging and nesting habitat. Upland sandpipers are sensitive to vegetation height and may not use sites with vegetation exceeding 70 cm (28 inches) (NJ DF&W n.d.[c]). New Jersey Natural Heritage reports obtained for the Project did not include any records of upland sandpiper (Cartica 2017a, 2017b). eBird data suggest that the species may be a rare fall migrant in Project counties. This species is not likely to nest in the Project area due to lack of suitable nesting habitat.

Short-eared owls inhabit coastal tidal and brackish marshes, inland fields, pastures, and grasslands. Within coastal marshes, short-eared owls typically roost, forage, or nest in the drier portions of the marsh that do not experience regular tidal inundation (NJ DF&W n.d.[d]). Nests are usually located on dry sites with enough vegetation to conceal incubating female (Wiggins et al. 2006). The short-eared owl could occur during migration or over winter in vicinity of Compressor Station 206; however, there is no suitable habitat for the species as the site is mostly forested. The species is unlikely to occur in the vicinity of the Madison Loop during migration or winter. There is no evidence of short-eared owls nesting near any of the Project components based on eBird sightings and New Jersey Natural Heritage reports (Cartica 2017a, 2017b).

Red-headed woodpeckers occur in a variety of wooded habitats, typically with a certain degree of openness and with dead limbs or snags used for nesting purposes. Commonly, this may include deciduous woodlands, especially with beech or oak; lowland and upland habitats, river bottoms, open woods, groves of dead and dying trees, orchards, parks, golf courses, open agricultural country, savanna-like grasslands with scattered trees, forest edges and along roadsides (Frei et al. 2017). New Jersey Natural Heritage reports obtained for the Project did not include any records of red-headed woodpecker (Cartica 2017a, 2017b). Species may potentially occur in the Project area; however, based on field surveys, the forested areas in the Project area appear to lack the openness found in preferred habitat for the species.

Loggerhead shrikes inhabit open countryside such as short-grass pastures, weedy fields, grasslands, agricultural areas, swampy thickets, orchards, and ROW corridors. Shrikes occupy sites containing hedgerows, scattered trees or shrubs, and utility wires or fence posts, which serve as perches. Nests are often situated in trees or shrubs bearing thorns. (NJ DF&W n.d.[e]). New Jersey Natural Heritage reports obtained for the Project did not include any records of

loggerhead shrike (Cartica 2017a, 2017b), but they could occur rarely in the Project area during migration.

Sedge wrens inhabit wet meadows, freshwater marshes, bogs, and the drier portions of salt or brackish coastal marshes. Along the Delaware Bay shore, sedge wrens may be found in high marsh containing salt-meadow grass (*Spartina patens*), spike grass (*Distichlis spicata*), and marsh elder (*Iva frutescens*). Sedge wrens favor marshes containing sedges, grasses, rushes, scattered shrubs, and other emergent vegetation (NJ DF&W n.d.[f]). New Jersey Natural Heritage reports obtained for the Project did not include any records of sedge wren (Cartica 2017a, 2017b). The species appears to be very rare in New Jersey; however, suitable habitat is present at the eastern end of the Madison Loop.

Golden-winged warblers breed in scrub-shrub habitat in northwestern New Jersey. Unlike other shrub-dependent birds, however, golden-winged warblers do not breed in shrubby habitat adjacent to active farms or residential communities. They are forest birds and rely on patches of regenerating forest with a moderate amount of shrubs and herbaceous vegetation. They often use areas relatively close to forest edge (NJ DF&W n.d.[g]). New Jersey Natural Heritage reports obtained for the Project did not include any records of golden-winged warbler (Cartica 2017a, 2017b). The species is not known to breed in Middlesex or Somerset Counties and is a very rare migrant.

Henslow's sparrows inhabit open fallow and grassy fields, sedge meadows, and pastures. They prefer lush habitats containing high, dense herbaceous vegetation and a thick layer of ground litter. Their preferred habitats are dominated by grasses, sedges, forbs, or clover and contain little or no woody vegetation and few scattered shrubs. Unmowed agricultural fields or ungrazed pastures are preferred for their thick cover. They are tolerant of a variety of moisture regimes and thus will occupy both wet and dry habitats. Large open areas are preferred; fields of 10 to 100 hectares (25 to 250 acres) may be needed to support breeding populations. (NJ DF&W n.d.[h]). New Jersey Natural Heritage reports obtained for the Project did not include any records of Henslow's sparrow (Cartica 2017a, 2017b). This species is unlikely to occur in the Project area due to lack of suitable habitat.

Offshore Raritan Bay Loop

Fish

Sturgeon (Atlantic and shortnose)
The federally listed Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*) are state-listed as endangered in New Jersey and have the potential to be located offshore along the Raritan Bay Loop route (NJDEP 2016b). Federally, shortnose sturgeon are listed as endangered, whereas four of five distinct population segments of Atlantic sturgeon are listed as endangered and one as threatened (NOAA Fisheries 2016c).

The presence of the shortnose sturgeon in the Project area is rare because its range is typically limited to the Hudson River north of Manhattan; however, small numbers have consistently been collected since 2004 during annual winter trawl-sampling from November to March in the Upper New York Harbor (Shortnose Sturgeon Status Review Team 2010). The Atlantic sturgeon is

thought to be found in the Project area year-round, with higher concentrations during the spring and fall migration periods, particularly in apparent aggregation areas seaward of the Rockaway Peninsula and the Sandy Hook Peninsula (Laney et al. 2007; Dunton 2014; Dunton et al. 2010, 2015). The aggregations here were found to occur at water depths of less than 50 feet (15 meters) (Dunton et al. 2010, 2015). Many of the sturgeon in these aggregation areas likely move to and from the Hudson River, where a large population of Atlantic sturgeon spawn (NOAA Fisheries n.d.[a]; Bain et al. 1998). A separate set of juveniles, sub-adults, and non-breeding adults continue their migration northeast along the Long Island coast and spend the summer in Long Island Sound (Dunton 2014; Dunton et al. 2012; O'leary et al. 2014). The peak Atlantic sturgeon concentrations typically occur in the aggregation areas from April through June (spring) and October through November (fall), though this varies annually and may begin as early as March (spring) and September (fall) (Laney et al. 2007; Dunton 2014; Dunton et al. 2010, 2015).

Transco has performed sound propagation modeling to determine the potential for sound associated with in-water construction activities (pile installation and removal) to injure or behaviorally disturb ESA-listed fish. Transco used criteria that the NOAA GARFO (2018) has developed to determine potential injury and behavioral impacts for ESA-listed fish. Copies of noise modeling memos are provided in Appendix M.

Based on Transco's acoustic modeling results, the jet trencher would produce sound levels potentially leading to behavioral disturbance of fish at 6 to 10 feet from the source at start-up. After the jet trencher "swords" penetrate the seafloor, the noise would be dampened and is expected to drop below this disturbance threshold. Additionally, the jet trencher would advance quickly along the centerline such that vessel noise from this activity potentially exceeding the behavioral disturbance threshold would affect a single location for less than a few hours.

Modeling was also conducted for clamshell dredging. The source level associated with clamshell dredging is below the injury thresholds for fish but above the behavioral disturbance threshold. Modeling for this activity did not result in a cumulative ensonifed area for fish and area of potential behavioral disturbance of fish was 2.8 meters from the source.

Transco's acoustic modeling results indicate that the noise generated by pile driving would exceed both the injury and behavioral disturbance thresholds for fish. The area of potential behavioral disturbance for fish would be exceeded up to 215 feet from the source for vibratory pile driving, and up to 10,000 feet (1.9 miles) from the source for impact pile driving. Pile driving would exceed the peak sound pressure injury threshold for fish within a limited area, approximately 19 feet from the source. Areas exceeding the injury threshold for fish for cumulative exposure to pile driving ranged from 997 to 1,658 feet (0.2 to 0.3 miles). An individual fish would need to remain within the cumulative exposure area during the entire duration of the pile driving event to potentially experience an injury. Additionally, these zones would be constricted by land, and some of the pile driving noise is likely to be masked by ambient noise from other non-Project-related anthropogenic sources (such as shipping noise) at distances shorter than those predicted by the noise modeling.

As discussed above under Rule 7:7-9.5, in an interagency conference call on April 9, 2018, with the NJDEP, NYSDEC, NOAA Fisheries, USFWS, and Transco, the agencies confirmed the

following TOY restrictions and areas of concern for in-water work associated with the Atlantic sturgeon: March 1 through June 30 and October 1 through November 30 between MP12.0 and MP14.25 (Morgan Shore to New Jersey / New York Border—spring only), and between MP30.0 and MP35.5 (Ambrose Channel to Rockaway Transfer Point).

Transco has undergone an extensive schedule optimization exercise in an effort to reduce the overall duration of offshore construction while taking into consideration the anticipated TOY restrictions for sensitive marine species. As part of the informal sensitive marine species consultations with NOAA Fisheries, USFWS, NJDEP, and NYSDEC, Transco requested approval to conduct certain construction activities during the TOY restriction windows to further reduce impacts on sensitive marine species.

In a November 7, 2018 letter to FERC, the NJDEP BMF deferred to NOAA regarding sturgeon timing restrictions for pile installation, clamshell dredging, hand jet, submersible pump, HDD, spool and pipeline installation, jet trenching, hydrotest, and reinstatement activities. Transco formally requested approval from the NOAA Fisheries Protected Resources Division (PRD) on February 11, 2019, to conduct certain construction activities during limited portions of the TOY restriction periods (see Appendix B for Transco's formal request). These TOY restriction flexibility requests, along with justifications for the requests, are summarized above in Table 3-2. Transco's understanding is that the flexibility requests presented in Table 3-2 are acceptable based on consultations to date with NJDEP and NOAA Fisheries. On April 10, 2019, Transco received informal concurrence from NOAA Fisheries PRD regarding the TOY restriction flexibility requests for Atlantic sturgeon (see Appendix B for copies of informal concurrence received).

Though the duration of construction activities would be limited and most fish species would be able to leave the area of disturbance, harassment or injury of individual fish due to pile driving noise is possible. Population-level impacts of construction noise are not expected. In conclusion, pile driving and other construction-related noise impacts on fish are expected to be temporary and moderate.

Marine Mammals

Three federally listed and/or New Jersey state-listed cetacean species potentially occur within the offshore Project area: the North Atlantic right whale (*Eubalaena glacialis)*, fin whale (*Balaenoptera physalus*), and humpback whale (*Megaptera novaeangliae)*. All are listed as endangered in New Jersey, and the right whale and fin whale are also federally listed as endangered. The distinct population segment of the humpback whale that occurs in this region is not federally listed (NJDEP 2016b).

The Project area is located within the migratory corridor of the North Atlantic right whale. This species is most commonly observed in the Project area from November through April; however, individuals potentially occur within the vicinity of the Project area during late spring and summer months. The migration patterns of the fin whale show that this species is most likely to be present in the region in the winter; however, this species is unlikely to be present in the shallower waters along the Raritan Bay Loop route because it is typically found in deep, offshore waters. Humpback whales may be present in the Project area in the fall season while migrating.

Per consultation with NOAA Fisheries, three whale species are included on both state and federal endangered species lists—the blue whale (*Balaenoptera musculus*), sei whale (*Balaeonoptera borealis*), and sperm whale (*Physeter macrocephalus*)—but are not likely to occur within the nearshore Project area due to their preference for deeper offshore habitats (Carduner 2016; Crocker 2017).

In a letter dated July 18, 2018, the NJDEP Endangered and Non-game Species Program (ENSP) expressed concern with regards to Project impacts on the harbor seal. Transco notes that although the harbor seal is not a listed species in New Jersey, the proposed TOY restriction for the seal (identified by ENSP as November to April) coincides with the North Atlantic right whale TOY restriction that Transco anticipates would apply to pile driving, such that Transco would likely observe both restrictions.

Additionally, the noise impacts of Project activities on marine mammals are being evaluated by the NOAA Fisheries, which will issue an Incidental Harassment Authorization (IHA) that ensures marine mammals are adequately protected and any impacts are suitably mitigated. In support of the IHA application for the Project, Transco performed acoustical modeling and prepared a potential noise impact assessment in accordance with NOAA Fisheries guidelines. NOAA Fisheries issued a Draft IHA on September 3, 2019 (84 FR 45955). Transco is in consultation with NOAA Fisheries Office of Protected Resources (OPR) regarding the mitigation required under the IHA Authorization. These requirements include collision avoidance measures that NOAA Fisheries OPR deems sufficient and effective. Transco anticipates issuance of the IHA by February 2020. The NJDEP has indicated they will rely upon NOAA Fisheries's evaluation and findings.

Marine Reptiles (Sea Turtles)

Five sea turtle species known to occur in the region are listed as threatened or endangered federally and by the state of New Jersey: Kemp's ridley (*Lepidochelyys kempii*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricate*), green (*Chelonia mydas*), and loggerhead (*Caretta caretta*) (NJDEP 2016b; NOAA Fisheries n.d.[b]).

Kemp's ridley, leatherback, and hawksbill sea turtles are federally listed and state-listed as endangered, while green and loggerhead sea turtles are federally listed as threatened. The green sea turtle is also state-listed as threatened, but the loggerhead is state-listed as endangered. The presence of any of these species in the Project area would be limited to the summer months, during which only occasional transient occurrences are expected (CeTAP 1982; Sadove and Cardinale 1993). However, the Project area is outside of the normal range for the hawksbill sea turtle (Crocker 2017). According to the Ocean Biogeographic Information Spatial Ecological Analysis of Megavertebrate Populations, no leatherback, hawksbill, or green sea turtles have been reported in the waters within 10 miles of the Project area, while one Kemp's ridley sea turtle was reported in 1995, and five loggerhead sea turtles were reported between 1965 and 2014 (Garrison 2013; Kenney 2013a, 2013b; Lockhart 2016).

Transco has performed sound propagation modeling to determine the potential for sound associated with in-water construction activities (pile installation and removal) to injure or

behaviorally disturb ESA-listed sea turtles. Transco used criteria that the NOAA Fisheries GARFO has developed to determine potential injury and behavioral impacts for ESA-listed sea turtles. Copies of noise modeling memos are provided in Appendix M.

Modeling for clamshell dredging and jet trenching was not conducted for sea turtles as the source levels associated with these two construction techniques are below the injury thresholds for sea turtles.

Transco's acoustic modeling results indicate that the noise generated by pile driving would exceed both the injury and behavioral disturbance thresholds for sea turtles. The area of potential behavioral disturbance for sea turtles would be exceeded up to 19 feet from the source for vibratory pile driving, and up to 858 feet from the source for impact pile driving. Pile driving would be lower than the peak sound pressure injury threshold for sea turtles. Areas exceeding the injury threshold for sea turtles for cumulative exposure to pile driving ranged from 73 to 185 feet. An individual sea turtle would need to remain within the cumulative exposure area during the entire duration of the pile driving event to potentially experience an injury. Additionally, these zones would be constricted by land, and some of the pile driving noise is likely to be masked by ambient noise from other non-Project-related anthropogenic sources (such as shipping noise) at distances shorter than those predicted by the noise modeling.

Though the duration of construction activities would be limited and, if present, sea turtles would be able to leave the area of disturbance, harassment or injury of individual turtles due to pile driving noise is possible. Population-level impacts of construction noise are not expected. In conclusion, pile driving and other construction-related noise impacts on sea turtles are expected to be temporary and moderate.

Birds

Five species of birds listed as endangered in New Jersey may be found in the offshore Project area: roseate tern (*Sterna dougallii dougallii*), red knot (*Calidris canutus*), piping plover (*Charadrius melodus*), least tern (*Sterna antillarum),* and black skimmer *(Rynchops niger).* The red knot and piping plover are federally listed as threatened, and the roseate tern is federally listed as endangered. These species have the potential to be located offshore along the Raritan Bay Loop in New Jersey, but the occurrence of the roseate and least terns are generally limited to migratory periods (eBird 2016a; USFWS 2010). The least tern may also breed on nearby beach, island, and wetland habitats and forage over open waters such as Raritan Bay (Erwin et al. 1981; Thompson et al. 1997). Black skimmers would primarily occur while they are foraging in the offshore area during the migrating and breeding seasons (eBird 2016a).

During informal consultation, the USFWS New Jersey Field Office identified the seabeach amaranth, red knot, and piping plover as potentially occurring on the northern point of the Gateway National Recreation Area (Sandy Hook Unit) (Schrading 2016). However, because construction activities are proposed approximately 1 mile from the northern point of the Sandy Hook Unit, the USFWS concurred with Transco's assessment that the seabeach amaranth, red knot, and piping plover are unlikely to experience disturbances from these activities (Schrading 2017).

Onshore Pipeline Construction Effects

Construction-related impacts on onshore species are generally categorized as mortality/injury, sensory disturbance, habitat loss/modification, or increased predation. In general, the losses of important, native habitats (e.g., forests) are minimized because the pipeline loops will be constructed largely within existing ROWs and will traverse a number of previously disturbed areas covered by actively managed developed lands. Transco will further minimize Project effects on endangered and threatened species by implementing BMPs during construction and by restoring the workspaces according to the Transco Plan and the Transco Procedures. Examples of BMPs applicable to protecting onshore species and their habitats include restricting Project vehicle and equipment use to designated work areas and enforcing speed limits to minimize impacts from vehicle and equipment traffic; restricting activities to daylight hours to reduce the potential for disorientation caused by artificial lighting; and adhering to Transco's Noxious Weed and Invasive Plant Management Plan for controlling non-native plant species in areas disturbed by the Project. Clearing restrictions do not apply to Project facilities in New Jersey according to the USFWS final 4(d) rule because no known hibernacula occur within 0.25 mile and no known summer colonies or roost trees occur within 150 feet of the Madison Loop or Compressor Station 206 (Markuson 2016; USFWS 2016b). Transco will continue to consult with the USFWS and NJDEP for additional guidance.

Offshore Pipeline Construction Effects

Trenching and associated activities will potentially affect offshore wildlife in the vicinity of the construction. General construction includes trenching, anchor placement, pipelay, trench backfill, concrete mattress installation, pile installation and removal, and associated vessel/barge transits. Temporary effects on marine species and communities will result from disturbance of sediments, increased turbidity, increased noise and visual disturbances, and water withdrawal and discharge. Potential impacts include direct mortality or injury, sensory disturbance, habitat loss and/or modification, and changes in predator/prey relationships. Transco will minimize the Project's effects on coastal and marine wildlife by implementing BMPs during construction in consultation with the NJDEP and NOAA Fisheries. For example, Transco will implement the following BMPs to avoid or reduce impacts on listed species that may be present within the offshore Project area:

- Transco will train vessel operators and crews to recognize and avoid protected species when transiting to the offshore construction area. Avoidance measures include slowing down or maneuvering away from any observed animals.
- All vessel operators will conform to the federal regulation prohibiting the approach of sea turtles closer than 150 feet (50 yards).
- All vessels will conform to regulations prohibiting the approach of right whales closer than 1,500 feet (500 yards) (50 CFR 224.103(c)). This measure will also be applied for other whale species.
- Vessels 65 feet and longer will be operated at a speed of 10 knots or less from November 1 to April 30 if transiting in the right whale seasonal management area near the Rockaway Transfer Point to reduce the potential for collisions with right whales.
- Vibratory devices will be used for pile installation to the extent practicable, and vibratory devices will be used for pile removal.

- Project vessels will comply with all USCG requirements for the handling of marine debris and liquid wastes (e.g., MARPOL, Annex V, Pub. L. 100−220 [101 Stat. 1458]).
- Project vessels will comply with USCG requirements for the prevention and control of oil and fuel spills (MARPOL, Annex I, Pub. L. 96-478 [94 Stat. 2297]).
- Following pipeline installation, Transco will restore the offshore workspaces by backfilling excavated areas with suitable material in accordance with any applicable permit requirements.
- Adherence to TOY restrictions as agreed upon through consultation with NOAA Fisheries, USFWS, NJDEP, and NYSDEC.

Routine operation of the Project is not expected to affect endangered or threatened species within the onshore or offshore Project area.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Endangered and Threatened Wildlife or Plant Species Habitat Rule.

7:7-9.37 Critical wildlife habitat

No "Critical Habitat" designated by the USFWS is present in the state of New Jersey. Some areas within the proposed Project area in the New Jersey coastal zone are consistent with the definition of "critical wildlife habitat" in N.J.A.C. 7:7-9.37, particularly migratory bird stopovers, including wintering areas, and breeding areas for birds and other wildlife, especially those areas situated along the water's edge (NJDEP 2014c).

Transco identified one important bird area (IBA) crossed by the Project in the New Jersey coastal zone – the Raritan Bay and Southern Shore (National Audubon Society 2015). This IBA encompasses 34,869 acres of water habitat, including tidal mudflats, sandflats, and Raritan Bay's largest remaining salt marsh (New Jersey Audubon 2017). The IBA database (National Audubon Society 2015), shows that the Raritan Bay Loop crosses this IBA from MP12.16 to MP14.02 and MP26.55 to MP27.56. The IBA program is a global bird conservation initiative of BirdLife International and is implemented in the United States by the National Audubon Society and its local partners. Its purpose is to identify and conserve sites that provide essential habitats for breeding, wintering, and/or migrating birds. While all IBAs are recognized for their importance to birds, some are of greater significance than others. IBAs may be prioritized hierarchically as global, continental, or state, based on their significance (National Audubon Society 2010). The Raritan Bay and Southern Shore IBA is ranked as a state-level priority and was designated as breeding-season foraging habitat for the black skimmer (*Rynchops niger*), least tern, yellow-crowned night-heron (*Nyctanassa violacea*), black-crowned night-heron (*Nycticorax nycticorax*), and osprey. In addition, the salt marsh habitat provides for breeding American black duck (*Anas rubripes*), clapper rail (*Rallus crepitans*), mallard (*Anas platyrhynchos*), marsh wren (*Cistothorus palustris*), willet (*Tringa semipalmata*), green heron (*Butorides virescens*), and American oystercatcher (*Haematopus palliates*) (New Jersey Audubon 2017). This IBA hosts horseshoe crabs[3], an important food source for migrating

[3] With regards to horseshoe crab, in a November 7, 2018 letter to FERC, the NJDEP BMF deferred to NOAA Fisheries and New York State regarding horseshoe crab timing restrictions. NJDEP BMF does not have any timing restrictions regarding horseshoe crabs. The NYSDEC and NOAA Fisheries confirmed in a November 9,

shorebirds. During the winter, the IBA hosts significant congregations of wintering waterfowl such as greater scaup (*Aythya marila*), brant (*Branta bernicla*), bufflehead (*Bucephala albeola*), northern pintail (*Anas acuta*), white-winged scoter (*Melanitta deglandi*), black scoter (*Melanitta Americana*), common goldeneye (*Bucephala clangula*), and red-breasted merganser (*Mergus serrator*) (New Jersey Audubon 2017).

The Raritan Bay Loop will cross the USFWS-designated Raritan Bay – Sandy Hook Bay significant habitat complex, which encompasses the nearshore areas and adjacent tidal wetlands from the southeastern section of the New York–New Jersey Harbor along the southern shore of Staten Island, New York and along the northern shoreline of Monmouth County, New Jersey. The area is considered regionally significant for shellfish and marine, estuarine, and anadromous fishes and for migratory and wintering waterfowl (USFWS 1997). The complex has also been identified as significant due to its geographic location. Many marine and estuarine species use Raritan Bay to migrate between the New York Bight and Hudson-Raritan Estuary, and many avian species and migratory insects also migrate in both directions across the habitat complex (USFWS 1997).

Project Effects on Critical Wildlife Habitat
Transco will use HDD to cross the shoreline and majority of tidally influenced wetlands along the Madison Loop and Raritan Bay Loop, thereby minimizing or avoiding impacts on critical wildlife habitat associated with the Raritan Bay and Southern Shore IBA as well the Raritan Bay – Sandy Hook Bay significant habitat complex. While some coastal tidal marshes crossed by the Project meet the definition of wintering wildlife areas, impacts on those marshes would be temporary and they would still be available to wintering wildlife following construction of the Project. Any impacts on wetlands, including coastal tidal marshes, will be restored or mitigated as discussed under Rule 7:7-9.27, above. During pipeline operation, Transco will not conduct any maintenance clearing activities from April 1 to August 31, which is the migratory bird nesting season (Schrading 2016).

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Critical Wildlife Habitat Rule.

7:7-9.38 Public open space
The Project facilities will neither cross nor be located within 0.25 mile of federal lands, including national parks, national forests, national natural landmarks, nationally designated wild and scenic rivers, wildlife management areas, and registered national landmarks. No private recreational lands or uses are located within 0.25 mile of the Madison Loop or the onshore portion of the

2018 meeting that neither agency has a timing restriction for horseshoe crabs. Therefore, there is no identified TOY restrictions for horseshoe crabs for Project construction activities. However, Transco will avoid disturbance of the intertidal zone and nearshore area in New Jersey waters between MP 12.1 and MP 12.5 by using the horizontal direction drilling method (FEIS 4.5.2.8). Additionally, as described in this application, Transco's sediment modeling results for offshore construction activities indicate construction-related TSS concentrations will not exceed 50 mg/L above ambient more than 328 feet from the HDD pit at MP 12.5, and associated deposition will not exceed 0.3 cm (0.12 inch) more than 102 feet from the HDD pit at MP 12.5 (See Appendix F-3). Juvenile and adult horseshoe crab are relatively mobile and would likely temporarily vacate turbid areas that cause them discomfort or stress (FEIS 4.5.2.8).

Raritan Bay Loop. Project facilities near New Jersey state parks or state forests, municipal and county lands, and land conservation programs are described below.

New Jersey State Parks or State Forests

At MP11.83, the Madison Loop will be located 0.21 mile northwest of Cheesequake State Park's boundary in Middlesex County, New Jersey. Cheesequake State Park is a 1,610-acre park with recreational facilities that include an interpretive center, trails for hiking and biking, and picnicking, swimming, boating, fishing, hunting, and winter sports areas (NJDEP 2016c). None of the built facilities supporting these recreational activities are within 0.25 mile of the Madison Loop. The area of the park closest to the Madison Loop comprises wetlands and creeks. Boat access to the tidal creeks is prohibited. The recreational feature that is nearest to the Project is a covered picnic area located 0.69 mile southeast of MP10.67. The park is open year-round; however, the camping areas are closed during the winter.

The family camping area is located 1.54 miles southeast of MP11.46, and Hooks Creek Lake day use area is located 0.92 mile southeast of MP10.49. No temporary or permanent impacts from construction or operation of the facilities are likely to occur given the distance of the park and its recreational features from the Project and the vegetative cover that creates a visual buffer and will diminish any potential noise impacts. The HDD entry point, at MP11.97, is the portion of the Madison Loop near Cheesequake State Park that is likely to generate the most noise during construction. Farry Point Picnic Area, the nearest Cheesequake State Park recreation feature, is located 1.25 mile southwest of MP11.97.

New Jersey deer hunting seasons for deer management zone 50, in which Cheesequake State Park is located, vary each year but generally extend from mid-September through mid-February. Deer hunting is permitted (by special hunting permit only) within the Special Deer Hunt Area of Cheesequake State Park (NJDEP n.d.). Construction activities associated with the Madison Loop will likely overlap with hunting seasons in zone 50. No impacts from construction on hunting within the park will occur. Transco will notify the NJDEP Division of Parks and Forestry about construction before beginning construction activities.

Municipal and County Lands

<u>Raritan Bay Waterfront Park</u>

The outer edge of the Raritan Bay Loop offshore temporary workspace is located approximately 0.04 mile southeast of Raritan Bay Waterfront Park, Sayreville Township, New Jersey. However, the closest area where offshore excavation will occur is approximately 0.20 mile away from the park and is associated with the installation of the Raritan Bay Loop CP system within the offshore temporary workspace. The park, a New Jersey Green Acres Program encumbered parcel managed by Middlesex County, New Jersey, encompasses 136 acres, 86 of which are considered wetlands that provide an area for park visitors interested in exploring its unique flora and fauna (Middlesex County n.d.[a]). This portion of the park is designated as a New Jersey environmentally sensitive area; however, it is not crossed by the Project workspace and therefore neither construction nor operation of the Project facilities will impact these designations.

The portion of the park containing wetlands is closest to the Project. The park also includes athletic fields, walking and biking paths, a Raritan Bay Overlook and performance gazebo, and a memorial for victims of terrorism. The walking and biking trail, which is 0.37 mile northwest of the Raritan Bay Loop offshore temporary workspace, is the closest recreational feature to the Project.

Construction activities in the vicinity of the Raritan Bay Waterfront Park are expected to occur between the third and fourth quarters of 2021. Except for installation of the anode sled, construction activity associated with installation of the offshore portion of the Raritan Bay Loop will be at least 0.30 mile away from the park, seaward of the HDD exit point. Construction and operation of the Project is unlikely to affect the park or its visitors. To reduce impacts on the park and its visitors, Transco will notify Middlesex County of construction before beginning construction.

Old Bridge Waterfront Park

The temporary workspace of the offshore Raritan Bay Loop near MP12.33 is located approximately 0.14 mile northeast of Old Bridge Waterfront Park. The Old Bridge Waterfront Park, which is maintained by Middlesex County and located on Old Bridge Township property, is a 67-acre waterfront property containing a boardwalk, a beach, an environmental education trail, and a fishing pier (Middlesex County n.d.[b]). The northwestern portion of the park is designated as a New Jersey environmentally sensitive area. This property is also Green Acres encumbered; however, it is not crossed by the Project workspace and therefore neither construction nor operation of the Project facilities will impact either of these designations. Construction and operation of the Project is unlikely to affect the park or its visitors; any impacts will be temporary and negligible. Transco will notify Middlesex County about construction activities before construction begins.

Veterans Memorial Waterfront Park

The contractor yard that Transco proposes using for construction of the Raritan Bay Loop (the C&ME facility), is located 0.21 mile southwest of Veterans Memorial Waterfront Park in the city of Elizabeth, Union County, New Jersey. This contractor yard will be used for construction-related activities throughout construction activities. The park's boardwalk recreation area contains a fishing pier, tables for chess, bike racks, and benches (City of Elizabeth n.d.). The park also includes a city-run marina that has dry-docking facilities for more than 60 privately owned leisure and fishing boats. The marina is 0.38 mile northeast of the contractor yard. Every year the park hosts a Memorial Day Weekend Waterfront Festival, which attracts people from the region. The festival includes rides, games, food, and concerts (City of Elizabeth n.d.).

Veterans Memorial Waterfront Park is a Green Acres encumbered property. However, it is not crossed by the Project workspace; therefore, neither construction nor operation of the Project facilities will impact its designation. Because the park is also located within an active waterfront district, boat traffic and dockside use of the C&ME facility will be consistent with current land uses and activities. Construction activities at the contractor yard may cause temporary traffic- and noise-related impacts on Veterans Memorial Waterfront Park and its visitors as equipment and materials are transported to and from the site. Transco will notify Elizabeth County of construction activities before construction begins.

Green Acres

In its May 14, 2018 comments on FERC's Draft EIS, NJDEP indicated that there may be potential impacts to a Green Acres-restricted parcel owned by the Borough of Sayreville (Block 454, Lot 1) located within the Madison Loop workspaces. However, based on August 2, 2016 correspondence with the attorney for the Borough of Sayreville, Transco was informed that this property is not Green Acres encumbered. Accordingly, Transco's Project does not impact Green Acres-encumbered property.

NJDEP also indicated that there may be potential impacts to a conservation easement on the Golden Age property (Block 451, Lot 1.10). However, Transco has modified its workspace so that there are no permanent or temporary impacts to the Conservation Easement on the Golden Age Property.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Public Open Space Rule.

7:7-9.39 Special hazard area

Special hazard areas are areas with a known actual or potential hazard to public health, safety, and welfare, or to public or private property, such as the navigable air space around airports and seaplane landing areas, potential evacuation zones, and areas where hazardous substances as defined at New Jersey Statutes Annotated 58:10-23.11b are used or disposed of, including adjacent areas and areas of hazardous material contamination.

Project construction has the potential to disturb soils that were previously contaminated. Transco obtained federal and state search reports from Environmental Data Resources, Inc., (EDR) to determine the presence and location of potential soil contamination near all proposed onshore pipeline facilities in New Jersey. Two sites identified within a 0.25-mile radius of the Madison Loop and onshore portion of the Raritan Bay Loop within the New Jersey coastal zone were confirmed to have soil and/or groundwater contamination that have the potential to impact the soil in the vicinity of the Project facilities. These include the 1788 Route 35 and the Morgan Fire House sites, both located near MP12.00 (EDR 2016a, 2016b). In addition to these two sites, the New Jersey Open Public Records Act database identified the Raritan Bay Slag site located along the southern shore and in Raritan Bay in Old Bridge Township and Sayreville, New Jersey (NJDEP 2016d). As discussed below, contamination from these sites is not expected to adversely affect the soils and sediments disturbed as part of the Project. However, if material with unexpectedly high levels of contamination is unearthed, Transco will adhere to its Unanticipated Discovery of Contamination Plan to appropriately manage and dispose of the sediment. General procedures and site-specific requirements for addressing and minimizing worker exposure and handling of encountered excavation materials and backfill during planned construction activities are provided in the attached draft Madison Loop and Raritan Bay Loop Materials Management Plans (Appendix G).

1788 Route 35 in Sayreville, New Jersey

The New Jersey Open Public Records Act database indicates that the property located at 1788 Route 35 North in South Amboy, New Jersey, is located less than 0.1 mile northeast of MP12.0

of the Madison Loop and less than 0.1 mile north of MP12.0 of the Raritan Bay Loop (NJDEP 2016d). This property is a gas station that is listed on the underground storage tank active remediation list (NJDEP 2016d). This site contains an active NJDEP Classification Exception Area and Well Restriction Area in effect from October 2015 to October 2026, which extends within 200 feet northeast of Madison Loop and 165 feet north of the Raritan Bay Loop (NJDEP 2016e). Since neither the Madison Loop nor the Raritan Bay Loop are included in the Classification Exception Area and Well Restriction Area, it is unlikely that any contamination associated with this site would be present in the soil that will be disturbed by the Project.

Morgan Fire House

The New Jersey Open Public Records Act database indicates that the Morgan Fire House property is located at Route 35 and Old Spye Road in Sayreville, New Jersey, which is less than 0.1 mile south of MP12.0 of the Madison Loop and approximately 0.1 mile southwest of MP12.0 of the Raritan Bay Loop (NJDEP 2016d). The site is listed on both the NJDEP Active Sites with Confirmed Contamination list and the NJDEP Closed Sites with Remediated Contamination list (NJDEP 2016d). The site is included on the Known Contaminated Site list but is classified as no further action (restricted use) with an active deed notice and engineering controls in the NJDEP post-remediation group. Contamination at this site was due to a leaking 550-gallon underground storage tank that contained medium diesel fuel (#2-D). The site is approximately 150 feet south of the Project facilities, and the specifics of the active deed notice and engineering controls are not known. However, since no further action is required for the site, it is unlikely that significant contamination associated with this site would be present in the soil that will be disturbed by the Project.

Raritan Bay Slag Site

The Raritan Bay Slag site (NJDEP Program Interest Number 514709) is located along the southern shore and in the Raritan Bay in Old Bridge Township and Sayreville, New Jersey (NJDEP 2016d). The site is included on the NJDEP Known Contaminated Site list (NJDEP 2016a) and is on the EPA National Priorities List site list (EPA ID NJN000206276) (EPA 2016). The site is approximately 1.5 miles long and consists of waterfront areas between Margaret's Creek and the areas just beyond the western jetty at the Cheesequake Creek Inlet. The site is located approximately 0.5 mile south of the Raritan Bay Loop, which is outside the EDR search radius. In the late 1960s and early 1970s, the Laurence Harbor seawall, which makes up a portion of the site, was reported to have metal slag from blast furnace bottoms deposited along the beachfront. The primary sources of contamination are slag from a lead reclamation process and battery casings. The prevailing currents in the vicinity of the western jetty promote sediment deposition on the western side of the jetty and transport sediment into Raritan Bay (EPA 2016).

Although the physical address of the site is located outside the EDR search radius, Study Areas 7 and 11 (Jetty Sector) of the National Priorities List site are located within the Project facility temporary workspace in Raritan Bay. However, areas associated with Project disturbance are outside the areas currently planned for remediation by the EPA. Transco conducted additional sampling in the area of the Morgan Shore Approach HDD exit pit to further investigate the extent of contamination near Area 7 and determined that sediments that will be disturbed during construction of the Raritan Bay Loop have concentrations of lead lower than in the identified remediation areas (CDM 2011) (see Appendix D for these sampling results). All excavated

material from construction of the Raritan Bay Loop within Study Areas 7 and 11 will be disposed of at appropriately permitted upland facilities in accordance with Transco's draft Raritan Bay Loop Materials Management Plan (Appendix G). All Raritan Bay Loop excavations in the Study Areas will be backfilled with clean, suitable material from approved sources as required by Project permits, thereby reducing overall sediment contamination in Raritan Bay in the long term.

Ambrose Channel

While not a designated contamination site, the Ambrose Channel may be considered a special hazard area in New Jersey crossed by the Raritan Bay Loop due to the frequent vessel traffic, including large commercial ships, which could pose a significant risk to the construction and operation of infrastructure within the channel. Transco will avoid this special hazard area by using HDD to install the Raritan Bay Loop more than 70 feet below the current channel bottom.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Special Hazard Area Rule.

7:7-9.45 Geodetic Control Reference Marks

Based on a review of the NOAA National Geodetic Survey Data Explorer, the nearest known geodetic control reference marks are outside the Project ROW. A licensed engineer or surveyor will supervise the discovery of any unanticipated markers.

Consistency Finding: Considering the statement above, Transco concludes that the Project complies with the Geodetic Control Reference Marks Rule.

7:7-9.48 Lands and waters subject to public trust rights

Public access to lands and waters subject to public trust rights will be provided in accordance with the public access rule, N.J.A.C. 7:7-16.9. While physical access to these areas may be temporarily restricted during construction to protect public safety and welfare, no access restrictions are proposed following construction. Refer to discussion under Rule 7:7-16.9, below, for further details regarding public access to the waterfront.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Public Trust Rights Rule.

7:7-9.49 Dredged material management areas

Transco intends to take all of the dredged material excavated during construction of the Raritan Bay Loop to an upland disposal facility. See N.J.A.C. 7:7-12.9 for further discussion of dredge material disposal. However, Transco is in the process of obtaining agency comments and the necessary approvals from the USACE regarding offshore disposal sites. If USACE provides authorization for Transco to utilize the offshore dredged material management area identified as the HARS in the future, Transco would seek to modify the NJDEP permit accordingly, with guidance provided by the NJDEP DLUR.

The HARS is a 15.7-square-nautical-mile area located in federal waters approximately 4 miles seaward of the Sandy Hook Peninsula (Highlands, New Jersey) (USACE and EPA 2010). Since

its designation in 1997, an average of over 3.5 million cubic yards of dredged material has been deposited in the HARS annually (USACE 2014a). Placement of suitable material in the HARS is a beneficial use of dredged material because it is used to "cap" existing material that historically has higher levels of contaminants and associated biotoxicity. Disposal of this material in the HARS would not affect the land use of the HARS. Based on communications with the USACE, Transco understands that the Project has reached a technical milestone with an indication that the dredged material proposed for disposal at the HARS passed a technical review and is now waiting for approval from the USACE. See further discussion of Project-related dredged material disposal under Rule 7:7-12.7.

In the event that material is needed for backfill, authorized dredged materials from the Ambrose Channel (seaward of LNYBL) in New Jersey would be utilized, as described above in Section 2.3.2 of the Project Description. This material will be acquired from one or more existing commercial vendors that currently operate under active permits to dredge Ambrose Channel. The material will be obtained from within the same dimensions of the channel(s) as a previous dredging activity. As necessary, Transco will coordinate with the NJDEP to obtain an "acceptable use" determination for the beneficial use of dredged material as backfill, in accordance with Appendix G of N.J.A.C. 7:7, The Management and Regulation of Dredging Activities and Dredged Material in New Jersey's Tidal Waters. Transco will control turbidity during the maintenance dredging activities in a manner that meets applicable New Jersey Surface Water Quality Standards at N.J.A.C. 7:9B.

The volume of offshore material needed for backfill will depend on final decisions regarding factors such as the dredge method(s) and required pipeline burial depth.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Dredged Material Management Areas Rule.

B. GENERAL WATER AREAS

7:7-12.7 New dredging

The temporary and/or permanent displacement or removal of sediment for the purpose of installing the Raritan Bay Loop is considered new dredging. Transco will use offshore pipeline construction techniques (described above in Section 2.2) that ensure safe and reliable transmission facilities, consistent with FERC, USDOT, USCG, and USACE specifications and applicable safety standards and regulations in place at the time of construction. Pursuant to N.J.A.C. 7:7-9.2(e), new dredging is prohibited within shellfish habitat. However, as described above in response to N.J.A.C. 7:7-9.2, the Project does not meet the definition of shellfish habitat.

Need/Justification
As described above, Transco's existing natural gas transportation system currently supplies natural gas to the New York City metropolitan region via National Grid's existing receipt points. However, National Grid is experiencing incremental firm demand and anticipating system

growth. In 2017, the New York Independent System Operator forecasted that additional natural gas pipeline capacity would be needed in New York City due to increased population growth and the closure of two Indian Point nuclear power plants (Resource Report 1 p. 25 [FERC accession #20170907-5176]), citing the 2017 Electricity Outlook: Powering New York City's Future). National Grid has stated that the Rockaway Transfer Point is the only delivery point that could serve their projected load growth and enhance reliability in its downstate service territories (National Grid 3/14/19 Letter to the NYSDEC; Final EIS, Appendix M, p. M-117). In March 2019, National Grid warned that during the 2018-19 winter season its infrastructure was again "put to the test," as its gas system was called on to deliver unprecedented volumes of gas to millions of customers (National Grid 3/14/19 Letter to NYSDEC). According to National Grid, most of its nearly two million customers in Nassau and Suffolk counties and in Brooklyn, Queens, and Staten Island, are residential customers that rely on natural gas for critical basic needs including heating, cooking, and hot water (National Grid 4/2/19 Letter to FERC [FERC accession #20190402-5186]).

Although the capacity is fully subscribed to serve peak day requirements in downstate New York, the Project will provide an important benefit to natural gas shippers and consumers in New Jersey:

- The New Jersey facilities will provide redundancy during planned and unplanned maintenance activities on Transco's natural gas infrastructure within the State.
- The Project is designed to provide 400,000 Dth/d under peak conditions, however, shippers (especially LDC type shippers) do not typically require their full contractual volume except during an abbreviated time period during extreme weather conditions. Under normal conditions, the facilities constructed as part of the Project will enable Transco to manage maintenance outages and repairs; thus, minimizing impacts or interruption to all shippers on the system, especially those in New Jersey.

In the event that the permits for the Project are denied and the Project is not constructed, the anticipated increase in the average deliveries off of the Transco system could result in material degradation of delivery pressures at existing delivery points and challenges associated with delivering existing firm shipper entitlements in New Jersey.

- Without the Project, utility providers would continue signing up customers to their service territory because they are obligated by the New York State Public Service Commission to provide safe, reliable energy service upon request.
- This could, in turn, result in an increase in the normal load from the interstate pipeline transmission grid, resulting in an overall increase in average deliveries off of the Transco pipeline system in New Jersey.
- An increase in the average load would lead to operational challenges related to the scheduling of maintenance activities and a greater chance of impacts to all shippers in the northeast region, including those in New Jersey.

  As noted in Transco's Alternatives Analysis for the Project (see Appendix A), the purpose of the new Compressor Station 206 is to offset the pressure drop associated with transporting the additional volume of natural gas flowing through the pipeline.

As detailed in Transco's Alternatives Analysis (included as Appendix A to Transco's Application for a Freshwater Wetlands Individual Permit), there is a demonstrated need for the Project that cannot be satisfied by existing facilities.

Sediment Sampling

Transco will conduct the new dredging activities in accordance with Appendix G of N.J.A.C. 7:7, The Management and Regulation of Dredging Activities and Dredged Material in New Jersey's Tidal Waters. During the planning stage, Transco followed the Appendix G guidance in working with the NJDEP to develop an offshore sediment sampling plan for the Project. More specifically, Transco conducted sediment sampling in late 2016 to evaluate sediments for geotechnical, (bulk) chemistry, and benthic community characteristics at 69 sites along the proposed Raritan Bay Loop route, 15 of which were in New Jersey. The sampling was conducted in accordance with the Project's Offshore Sampling and Analysis/Quality Assurance Project Plan, which was revised to incorporate input from the NJDEP Office of Dredging and Sediment Technology (Thein 2016). The list of chemical analyses performed was based on guidance documents from NYSDEC (NYSDEC 2004), the NJDEP (NJDEP 1997), USACE and EPA (2016), and input from the NJDEP and NYSDEC staff. Upon completion of the analyses, detected analytes were compared with sediment guidance values provided in the NYSDEC guidance document, as supplemented by NYSDEC's Screening and Assessment of Contaminated Sediment (2014), and ecological screening criteria provided in 2009 by the NJDEP's Site Remediation Program (NJDEP 2009). The contaminant levels were generally higher in the upper 3 feet of the seabed, except for a few notable sites where several contaminants were observed to be comparatively higher below the 3-foot depth, including VC16 and VC17 (at Raritan Bay Channel), VC42 (near Chapel Hill Channel), and VC54 (near Ambrose Channel). The complete sediment chemistry results from the 2016 sampling survey are available in the Project's Offshore Environmental Sampling Report, included as Appendix D. The 2016 sampling survey data have been used to develop a hydrodynamic sediment model to numerically predict the suspended sediment plumes that may be generated by the Project's offshore construction activities, described above. Transco will coordinate with the NJDEP and USACE to evaluate the need for additional sampling and testing following the submission of hydrodynamic sediment modeling completed to date and in conjunction with further development of dredged material placement strategy for the Project.

Effects, Minimization, and Mitigation

Transco and NJDEP are aware of the presence of existing sediment contamination that exceeds ER-M values, indicating the potential for adverse effect on benthic communities, within the Project area. Additionally, Transco and NJDEP considered that there is an increased risk of SWQS exceedances for certain contaminants when dredging sediments with corresponding contaminant concentrations that exceed the ER-M thresholds ("ER-M sediments"), compared to non-ER-M sediments, assuming the dredging methods and ambient water conditions are the same. As a result, Transco proposed to implement several BMP when dredging ER-M sediments, such that no exceedance of SWQSs are anticipated, consistent with previous NJDEP-approved dredging projects in the vicinity such as the Bayonne Energy Center Project (NJDEP File No. 0901-08-0001.1 WFD 080002) and the U.S. Navy Earle Channel Dredging Project. These BMPs include the following:

- Use of HDD for the Morgan Shore crossing, which reduces disturbance of contaminated nearshore sediments.
- Use of an environmental bucket for all clamshell dredging in New Jersey waters[4].
- No side-casting of dredged material.
- No barge scow overflow in areas with ER-M sediments.
- Adjustment of dredging rate as necessary to provide reasonable assurance that SWQSs are being met.
- Development of a water quality monitoring plan, to be reviewed and approved by NJDEP prior to commencement of offshore construction (see Transco's Draft Water Quality Monitoring Plan for New Jersey Waters included as Appendix N).

Transco has conducted modeling of the contaminated parameters identified in NJDEP's Notice of Denial (dated June 5, 2019) to provide additional assurance that these BMPs will be sufficient to prevent exceedances of the SWQSs for chemical contaminants. Based on a June 6, 2019, conference call with NJDEP staff, Transco has evaluated the concentrations of these contaminants at a distance of 500 feet from the dredging activity in comparison to SWQSs in N.J.A.C. 7:9B. The results of this modeling effort (provided as Appendix M and discussed in further detail in Section 2.5, above), coupled with the BMPs Transco has committed to implement, including a monitoring program during construction, support a conclusion that there will be no adverse impacts to water quality due to resuspension of contaminants. In addition, any contaminant concentrations that are introduced into the water column will be localized, temporary and of short duration.

In addition to BMPs used to minimize the release of sediment contaminants during dredging, Transco will apply the following BMPs to reduce turbidity:

- Backfill material will be clean, sandy material, with a limited amount of fine-grained material (i.e., silt and clay).
- During backfilling, the clamshell bucket will be lowered below the water line before releasing any material.
- Where appropriate, a jet trencher will be used, reducing the area of sediment disturbance compared to clamshell dredging and minimizing or avoiding backfill activities along these segments.

By letter, dated November 27, 2019, NJDEP outlined certain regulatory deficiencies associated with Transco's June 12, 2019 applications for a Freshwater Wetlands Individual Permit, Flood Hazard Area Individual Permit and Verification, and Waterfront Development Individual Permit. In the letter NJDEP requests information regarding Transco's proposed plans for water quality monitoring and what adaptive management procedures Transco would implement in the event of an SWQS exceedance. In response, Transco acknowledges that NJDEP can require a permittee

[4] A conventional bucket may be used at certain locations where initial attempts to use an environmental bucket are found to be ineffective due to sediment characteristics (e.g., areas with predominantly sandy material).

to conduct water quality monitoring under N.J.A.C. 7:7-12.6, though the absence of a monitoring plan was not previously identified as a deficiency of the permit application.

Nevertheless, accounting for NJDEP feedback during a January 6, 2020 conference call, Transco is providing its Draft Water Quality Monitoring Plan for New Jersey Waters (Appendix N) describing Transco's proposed monitoring methods to ensure that all proposed BMPs and operational procedures are implemented such that construction of the Raritan Bay Loop complies with NJDEP's SWQSs. During the January 6, 2020 conference call, NJDEP staff informed Transco that chemical contaminant monitoring is not typically required and that turbidity monitoring would be sufficient to evaluate whether there were any potential exceedances in SWQSs described in N.J.A.C. 7:9B.

Based on the January 6, 2020 meeting with NJDEP staff, as well as an earlier (August 1, 2018) meeting with NJDEP staff, the Department would provide guidance on appropriate adaptive management solutions that Transco could employ in the event that in-field monitoring indicates that construction activities may be causing an exceedance of a threshold identified in the WFD permit and water quality certificate. Transco has committed to implementing adaptive management methods such as adjusting dredging and/or jet trenching rates as necessary to ensure the Project adheres to water quality monitoring requirements outlined in the anticipated NJDEP WFD permit and water quality certificate. Transco may also employ a "slack-tide pause" as an adaptive management method, whereby dredging is paused for 1 hour during each slack-tide period (i.e., during peak high tide and low tide intervals), particularly for activities where modeling indicated a slack-tide pause would be more practicable for controlling sediment plumes compared to further reductions in dredging rates. These potential measures will be identified in the construction plans. Transco will consider what other adaptive management procedures may be practicable and effective, such as adjusting the type and/or intensity of monitoring depending on the turbidity monitoring results.

As discussed under Special Water Area policies 7:7-9.2 through 7:7-9.15, above, the Project will minimize or avoid impacts on special water areas to the maximum extent practicable. The seabed will be backfilled to match existing contours following completion of pipeline installation, so impacts will be temporary (hours to days for suspended sediment plumes) or short term (one to three years for complete benthic community recovery). Transco expects the Project to have insignificant effects on overall fish and benthic community populations, given the area of sediment disturbance (approximately 68 acres, of which approximately 17 acres are in New Jersey), which is a small fraction of the available habitat in the adjacent waterbodies. Further, Transco will mitigate unavoidable impacts on shellfisheries resources as discussed under Rule 7:7-9.3.

As discussed under Special Water's Edge Area Rules 7:7-9.16 through 7:7-9.30, above, the Project will minimize or avoid impacts on special water's edge areas to the maximum extent practicable, primarily by using HDD crossing methods, as well as by implementing the Transco Plan and Transco Procedures. Any disturbance of these resources will be temporary and/or insignificant. While onshore excavation/trenching will occur within or adjacent to some wetlands in the New Jersey coastal zone, dredging will not occur within 10 feet of any wetlands.

Based in part on the discussion under Rule 7:7-9.39, above, Transco does not expect the Project to affect groundwater quality. Transco performed hydrodynamic sediment modeling to confirm the ability of the Project to adhere to New Jersey SWQSs (N.J.A.C. 7:9B). See Rule 7:7-16.3, below, for further discussion of potential Project effects on surface water quality and potential BMPs to minimize Project-related offshore turbidity. Also see the discussion under Rule 7:7-16.2 regarding potential species-related construction timing restrictions.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the New Dredging Rule.

7:7-12.9 Dredged material disposal

Material excavated using a clamshell dredge is proposed for upland disposal. Transco has also secured an agreement with an upland disposal facility company in New Jersey to accept materials that will be dredged during excavation (Appendix H).

Transco will use supplemental backfill material from a compatible offshore source, acquired from a vendor to restore the seabed to surrounding (ambient) contours. As described above in Section 2.3.2 of the Project Description, selected material will be predominantly sandy and have only a limited amount of silt and clay, which will help ensure stability and minimize deposition outside of the target backfill area. Transco has been advised that enough suitable material can be commercially obtained from Ambrose Channel seaward of the Raritan Bay Loop to fulfill all Project needs for offshore supplemental backfill. Transco expects the material from the Ambrose Channel to be HARS-suitable and requests the NJDEP's concurrence that no further testing for contaminants is necessary.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Dredged Material Disposal Rule.

7:7-12.12 Mooring

Transco will install temporary mooring piles (i.e., dolphin/fender piles) adjacent to the Ambrose Channel Crossing (MP29.40 and MP30.48) and adjacent to the offshore Morgan Shore HDD exit pit (MP12.59) to facilitate safe positioning of support vessels and barges during the HDD activities. The temporary piles will be installed using a vibratory hammer and/or impact hammer and removed using a vibratory device, as described in the discussion under Rule 7:7-9.5, above. The piles will be marked in accordance with USCG guidelines and will not hinder navigation.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Mooring Rule.

7:7-12.15 Submerged pipelines

A portion of the Madison Loop and the majority of the Raritan Bay Loop within the New Jersey coastal zone will be submerged pipeline. The pipeline loops in the coastal zone will consist of three HDD crossings of waterbodies, including the Lockwood Marina (MP11.49 to MP11.84), the Morgan Shore Approach (MP12.00 to MP12.50), and Ambrose Channel (MP29.52 to

MP30.40). The remaining sections of the pipeline will be installed by conventional methods because it is not feasible to use HDD to install the entire 23.33-mile offshore pipeline. Offshore, the pipeline will be externally coated with concrete-weight coating and generally buried to a minimum depth of 4 feet below the seafloor, consistent with USDOT requirements and in accordance with any USACE permit conditions. If Transco cannot achieve the required burial depth, e.g., at the Neptune Cable crossing near offshore MP13.88, then equivalent protection will be provided by covering the pipeline with concrete mattresses (or similar layering). Following construction, all areas will be backfilled to match existing (ambient) contours.

Some of the conventionally installed offshore pipeline will cross special areas, defined at N.J.A.C. 7:7-9, as discussed under Subchapter 9, above. However, no prudent or feasible alternative route exists. More specifically, the Madison Loop is 100% co-located with an existing pipeline ROW. Furthermore, Transco considered various route alternatives for the offshore pipeline facilities, outlined in Resource Report 10 of Transco's application for a FERC Certificate Public Convenience and Necessity, the 404(b)(1) analysis in Transco's application for a USACE permit, and in the Alternatives Analysis included as Appendix A to Transco's Freshwater Wetlands Individual Permit Application submitted concurrently with this application. Transco evaluated alternatives to determine whether the Project's purpose and need could be met while avoiding or minimizing potential adverse environmental impacts to the greatest extent practicable. Transco identified eight routing alternatives, including seven offshore and one predominantly onshore alternative. Each alternative was developed to either take advantage of existing infrastructure, avoid specific environmental resources or engineering constraints either identified by Transco or resource agencies, or optimize crossings of existing navigation channels. These considerations were also used to evaluate the alternatives and determine the route that minimizes logistical and engineering constraints, environmental constraints, and conflicts with other marine uses/users. These considerations included the location of anchorage areas, submarine cables and other utility infrastructure, navigation channels, ocean conditions, geological hazards and mapped obstructions, shellfish beds, and marine users. The current Project route was also developed in consultation with agencies such as the USCG Harbor Safety Navigation and Operations Committee Energy Subcommittee, USACE, USCG, NYSDEC, and NJDEP. Any impacts on special areas, including strategies to minimize those impacts, are discussed under specific rules of Subchapter 9, above.

Transco has selected a suite of offshore construction methods for the Raritan Bay Loop to complement the site-specific conditions located along the pipeline route, with particular focus on installation efficiency, minimization of sediment disturbance in conjunction with site-specific burial depth requirements, and future success of facility operations. As discussed in Section 2.2 of the Project Description above, the approach of expanding the areas for HDD installation was determined to be infeasible early in the evaluation of installation methodologies, not only from a construction feasibility standpoint, but also (and more importantly) due to the marked increase in duration of in-water construction and additional ecosystem impacts. Therefore, Transco chose installation methods that reflect the least amount of environmental impacts and the shortest duration of time for in-water construction overall.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Submerged Pipelines Rule.

C. GENERAL LOCATION RULES

7:7-14.1 Rule on location of linear development

As discussed under Rule 7:7-12.15, above, Transco has selected the most acceptable route through the New Jersey coastal zone; there is no prudent or feasible alternative alignment that would have less impact on sensitive areas and marine fish or fisheries. Furthermore, there will be no permanent or long-term loss of unique or irreplaceable areas as a result of the project. Impacts on special areas and strategies to minimize these impacts, such as the use of HDD for certain crossings, are described under rules in Subchapter 9, above. Impacts on coastal resources and strategies to minimize those impacts are described under Subchapter 7:7-16. Mitigation is discussed under Subchapter 7:7-17.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Location of Linear Development Rule.

7:7-14.2 Basic location rule

The overriding consideration in siting the Madison Loop and Raritan Bay Loop was ensuring protection of public health, safety, and welfare, as well as the environment. Other considerations included regulatory compliance, environmental constraints, engineering design feasibility, and construction feasibility. Accounting for these factors, Transco identified a route for the Madison Loop that avoids or minimizes impacts on resources of environmental concern (e.g., streams, wetlands, and sensitive species habitats) to the maximum extent practicable, particularly by co-locating with existing pipeline ROW. Transco also sited onshore construction workspaces within previously disturbed areas (e.g., existing pipeline ROWs and/or other previously cleared areas), to the extent practicable, to avoid or minimize impacts on sensitive resources. Further, Transco considered input from agencies such as the USCG and the USACE in selecting an offshore route that largely avoids currently designated offshore anchorage areas, which would have required greater burial depth (and therefore greater sediment disturbance). Other specifics regarding how the components of the proposed Project within the New Jersey coastal zone would (a) promote health and safety, (b) protect property, and (c) protect and preserve fish, wildlife, and the natural environment are discussed under other policies throughout this Coastal Zone Consistency Assessment.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Basic Location Rule.

7:7-14.3 Secondary impacts

Because the Project's incremental gas supply is fully subscribed by National Grid for its New York market, this Project is not expected to have any long-term secondary impacts such as increased development, traffic increases, or increased recreational demand in New Jersey. The Project serves the region, including New Jersey, by assisting New York City in the phase-out of fuel oil, which will reduce nitrogen oxides, sulfur dioxide, and carbon emissions. By ensuring the availability and reliability of natural gas for the New York Market, the Project will provide

the flexibility and affordability needed to bridge the gap as the growing renewable energy market in the region develops.

As noted above, the Project will indirectly benefit the State by adding facilities which increase the overall reliability of existing energy infrastructure and have economic benefits to the State and local communities. In addition, the Project would have significant health and safety benefits to the surrounding area in New Jersey as it will displace the use of No. 2 fuel oil in New York City and Long Island, significantly reducing ozone precursors of NOx, SO2, and PM. Reducing emissions of these compounds will improve air quality within the Northern New Jersey-New York-Connecticut air quality control region. Transco's voluntary emissions reduction projects, coupled with Transco's retiring of Emission Reduction Credits, would result in more than double the permanent offset of temporary construction emissions and the ongoing operational emissions at Compressor Station 206.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Secondary Impacts Rule.

D. USE RULES

7:7-15.4 Energy facility

The Energy Facility Use Rule, Subsection 15 of the Coastal Zone Management Rules N.J.A.C. 7:7, (i) describes standards relevant to pipelines and associated facilities. While the Project is not directly associated with bringing natural gas ashore from offshore wells, Transco acknowledges that the proposed Project pipeline may be considered an energy facility under Rule 7:7-15.4. The proposed pipeline route will cross several special areas defined in Subchapter 9 of N.J.A.C. 7:7 and marine fish and fisheries areas defined at Rule 7:7-16.2. Transco has sited the route to minimize impacts on these resource areas to the maximum extent practicable. Considering construction methods, amount of sediment disturbance, and anticipated construction timelines, the Project will not result in adverse impacts on the identified resource areas, as addressed under Transco's previous rule discussions for Subchapter 9 and Rule 7:7-16.2. This includes consideration for mitigation where appropriate, e.g., for shellfish habitat (Rule 7:7-9.2), such that significant unavoidable impacts will be appropriately compensated.

The Project is not located in the Coastal Area Facility Review Act Zone, nor is it located in the Western Ocean, Southern, Mullica Southern Ocean, Great Egg Harbor River, or Delaware Estuary regions, as defined at N.J.A.C. 7:7-13.6(d). Public access is addressed in accordance with the lands and waters subject to public trust rights rule and the public access rule, as addressed under Rules 7:7-9.48, above, and 7:7-16.9, below. The scenic and visual qualities of coastal areas will be maintained as important public resources in the siting and construction of the Project, as addressed Rule 7:7-16.10, below.

The Project construction and operation is not expected to result in a net loss of employment in New Jersey since it will not obstruct or interfere with residential or business access in the coastal zone, except for temporary detours and increases in traffic congestion around active construction sites that will affect some onshore commuters or offshore vessel users, as addressed under Rule

7:7-16.12, below. The Project-related activities in New Jersey to install both the Madison Loop and Raritan Bay Loop, which cross the New Jersey coastal zone, will create 2,400 union jobs and generate $240 million in additional economic activity. The Project would generate additional employment in New Jersey for construction of facilities outside the coastal zone.

The proposed pipeline is conditionally acceptable under this rule because it adds a single new corridor that is necessary to satisfy the Project's purpose and need, and the pipeline corridor has been co-located with existing pipeline ROWs to the maximum extent practicable. The pipeline does not originate from or terminate at the outer continental shelf.

The proposed pipeline route has been sited through coastal waters to avoid the following features to the maximum extent feasible: offshore munitions, chemical and waste disposal areas (see discussion under 7:7-9.39), heavily used waterways (see discussion under 7:7-9.7), geological faults (see discussion under 7:7-9.32), wetlands (see discussion under 7:7-9.27), and significant fish or shellfish habitats (see discussion under 7:7-9.2, 7:7-9.5, 7:7-9.36, and 7:7-16.2). The pipeline will be buried to depths prescribed by the USACE, which will be sufficient to minimize exposure by scouring, ship groundings, anchors, fishing and clamming, and other potential obstacles on the sea floor. Transco will conduct trenching operations in accordance with applicable federal regulations, consistent with all pending permits and authorizations from federal regulatory agencies, including FERC and the USACE.

During construction, Transco will use visual, sound, and vegetative buffers to appropriately minimize disturbances to adjacent communities. See the discussion under Rule 7:7-9.38 for a summary of how the Project may temporarily affect aesthetics of the surrounding public areas. Onshore, the majority of the pipeline facilities in the coastal zone will be buried beneath the ground and the area will be revegetated as appropriate, and all offshore facilities will be buried beneath the seafloor, such that no significant noise or visual impacts will occur during Project operation.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Energy Facility Use Rule.

E. RESOURCE RULES

7:7-16.2 Marine fish and fisheries

Construction of submerged portions of the Madison Loop and Raritan Bay Loop is conditionally acceptable with this rule because the Project complies with the appropriate general water area rules, discussed under Subchapter 12, above.

Fishery resources crossed by the Project include finfish and benthic invertebrates (including shellfish). Finfish are harvested both commercially and recreationally in the Project area. Descriptions of the marine fish and fisheries in the Project area, anticipated impacts, and measures to minimize or avoid those impacts are discussed under Special Area Rules 7:7-9.2 through 7:7-9.5 and 7:7-9.36, above.

Following pipeline installation, Transco will restore offshore construction workspaces to match existing (ambient) contours. Transco anticipates that permanent loss of soft-bottom habitat may occur at locations where concrete mattresses are installed over the pipeline; however, these locations will be limited to cable crossings. Additionally, the toe ends of the concrete mattresses will be buried to a minimum depth of 3 feet below the seafloor, such that bottom-tending gear (e.g., clam dredges) is expected to slide over the mattresses. All other offshore Project facilities will be buried a minimum of 4 feet below the seafloor and are not expected to directly interfere with fishing gear. While the pipeline will be backfilled with a minimum 4 feet of cover, uneven seafloor conditions may persist through one or more fishing seasons. The pipeline route will be added to NOAA nautical charts, so dredge/trawl fishing vessels that might be affected by rough seafloor conditions will be aware of the route and can avoid it at their discretion. The route was sited to avoid highly dynamic areas of erosion, e.g., near the Sandy Hook Peninsula, so Transco does not expect the offshore pipeline to be exposed in a manner that would adversely affect fishing equipment. In New Jersey waters, however, the NJDEP indicates that certain shellfish harvesting activities may be avoided within a buffer around the installed pipeline as a safety precaution (Normant 2017). Any effective loss of fishing grounds due to the presence of the buried pipeline facilities will be mitigated appropriately in coordination with the NJDEP. Reduction of trawling/harvesting along the pipeline corridor could also help promote and sustain recovery of the benthic community in the affected area.

Transco has committed to no dredging in waters shallower than 20 feet or within a 500-foot buffer of the 20-foot MLLW contour (winter flounder avoidance areas) during the winter flounder TOY restriction (December 15 through May 31) to protect winter flounder spawning, eggs and larvae. However, in a November 9, 2018 meeting, the NOAA Fisheries and NYSDEC indicated to Transco they would be willing to allow backfilling activities in the winter flounder avoidance areas to continue from December 15 to January 1. During a December 13, 2018 conference call, NYSDEC staff further indicated that if Transco is unable to complete backfilling activities by January 1, they were agreeable to leaving portions of the trench partially backfilled during the remainder of the winter flounder TOY restriction. In a March 11, 2019 submission to FERC and Transco, the NJDEP ENSP concurred with the winter flounder TOY restriction flexibility granted by NOAA Fisheries and NYSDEC. Therefore, Transco plans to backfill as necessary in the winter flounder avoidance areas until January 1, but no backfilling will take place in these areas from January 1 through May 31. Best management practices to limit turbidity during backfilling between December 15 and January 1 will include releasing the backfill material below the sea surface, approximately 5 feet above the seafloor.

At this time, Transco commits to adhering to the TOY restriction in New Jersey waters for blue crab (December 15 through May 31), with the flexibility to perform backfilling and reinstatement activities through December 10 at the Ambrose HDD east and west pits (MP30.4 and MP29.5), approved by NJDEP in correspondence dated February 7, 2019. Allowance of this activity during the blue crab timing restriction would minimize the overall duration of construction and cap the HDD pits with sand to restore the habitat prior to the subsequent blue crab and winter flounder TOY restriction periods (through May 31). At the recommendation of the NJDEP Bureau of Marine Fisheries (BMF), Transco also commits to notifying crab fishermen at least 30 days in advance of construction activities during the blue crab timing restriction. A similar notice will be provided to harvest permit holders. This will allow the

commercial harvesters sufficient time to harvest the affected areas in advance of construction if they so choose.

Recognizing that noise impacts to sensitive species is an ongoing concern with regulatory agencies, Transco has conducted additional underwater acoustic noise modeling for impacts associated with pile driving and use of a vibratory hammer. See N.J.A.C. 7:7-9.36 above for further discussion of acoustic noise modeling impacts and Appendix M for the noise modeling memos.

The results of Transco's Project-specific sediment modeling results for TSS and deposition indicate that the Project will not adversely affect marine fish and fisheries (see Rules 7:7-9.2, 7:7-9.3, 7:7-9.5, and 7:7-9.36, above, for further discussion of potential Project effects on marine fish and fisheries).

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Marine Fish and Fisheries Rule.

7:7-16.3 Water quality

Project construction will affect water quality, as described below. However, Transco will minimize the generation of turbidity and the resuspension of contaminants to the maximum extent practicable and in a manner that meets applicable Surface Water Quality Standards specified in N.J.A.C. 7:9B, accounting for any NJDEP-approved mixing zone(s). As a requirement for the Project, Transco will obtain and adhere to a Water Quality Certificate from the NJDEP pursuant to Section 401 of the federal Clean Water Act. As such, the proposed Project will not violate the Clean Water Act, or New Jersey laws, rules, and regulations enacted or promulgated pursuant to the act.

Project Effects on Water Quality

<u>Turbidity</u>
Trenching and other substrate-disturbing activities have the potential to adversely impact water quality from re-suspension and deposition of sediments resulting in increased turbidities. General, localized effects of turbidity on water quality could include reduced light penetration (and corresponding primary production of aquatic plants, algae, and phytoplankton), increased biological and chemical concentrations in the dredge area, and lower dissolved oxygen concentrations (resulting in a temporary displacement of motile organisms or stress and reduction in numbers to sessile benthic organisms within the affected area).

The extent and longevity of turbidity is partly dependent on sediment type and size. Coarse sediment (i.e., sand and gravel) will fall out and re-settle quickly. Finer sediments could remain suspended for longer periods of time, although large concentrations of silt and clay present in dredge-related plumes tend to flocculate in marine waters and settle at faster rates than dispersed particles (Smith and Friedrichs 2011). Publicly available databases indicate that the majority of the offshore route crosses substrate in the Atlantic Ocean and Lower New York Bay that is primarily fine to coarse sand, including a mixed sand/gravel seabed northeast of Ambrose Channel (Mecray et al. 2003; USGS 2005). The remainder of the route in Raritan Bay crosses a

mixture of sand, silt, and clay. Transco conducted sediment sampling in late 2016 to determine sediment types along the proposed Raritan Bay Loop route. Sediment grab samples confirm that the Raritan Bay Loop route crosses primarily sandy surficial sediments in Lower New York Bay and the Atlantic Ocean, with a higher proportion of fine sediments (i.e., silt and clay) in Raritan Bay.

Turbidity also depends on ambient currents and the longevity (and rate) of sediment disturbance activities. Circulation within Raritan Bay and the New York–New Jersey Harbor estuary is driven by tides with predominant semi-diurnal variability but is also affected by the Hudson and Raritan Rivers' freshwater outflow and surface winds (Gopalakrishnan and Blumberg 2011). In 2009, Transco measured ocean current speeds near the Rockaway Transfer Point that were up to approximately 2 knots (3.3 feet per second using an Acoustic Doppler Current Profiler. In comparison, a depth-averaged maximum velocity of 1.6 feet per second was modeled for a one-year return interval storm at a site along the Raritan Bay Loop route in Raritan Bay south of Raritan Channel and Staten Island (approximate MP16.60) (HDR 2016).

Sediment disturbance activities will occur during construction of the offshore pipeline, which is expected to last up to nine months. Within that timeframe, construction activities may take place 24 hours a day, seven days a week, weather and sea conditions permitting. However, excavation at any given location along the route will generally be limited to periods as short as a few hours and as long as a few weeks. Considering sediment type, the strength of the currents in the offshore Project area, and the duration and rate of sediment-disturbing activities, ambient turbidity conditions are expected to return shortly following completion of each proposed offshore excavation activity. This assessment is based in part on monitoring of several dredging events associated with recent deepening of the New York–New Jersey Harbor. In particular, turbidity plumes generated during the harbor-dredging activities dissipated to ambient conditions within 656 feet in the upper water column and within 2,625 feet in the lower water column, even when dredging sediments were predominantly silt and clay (50% to 95%) (USACE 2015b). Moreover, numerical modeling for the RDL project predicted that sediment plumes generated seaward of the Rockaway Peninsula would disperse within 5 hours of excavation, which may generally reflect conditions that can be expected during Project construction at the Rockaway Transfer Point. However, water quality monitoring during RDL construction in 2014 and 2015 indicated that the modeling results were generally conservative (i.e., overestimated). Therefore, only localized and temporary impacts on water quality are expected.

As described above, Transco used hydrodynamic sediment modeling to evaluate the potential effect of using advanced technology (i.e., jet trenching) and potential BMPs (i.e., an environmental bucket, reduction or restriction of scow overflow, and reduced rate of backfill) in lieu of previously modeled scenarios for clamshell dredging with a conventional bucket, higher estimates for scow overflow, and faster backfill rates. As expected, the additional controls in the Addendum 2 scenarios led to reduced Project-related sediment plumes and associated sediment deposition compared to previously submitted clamshell dredging scenarios for the respective construction activities. For instance, in Addendum 1 Transco assumed a near-maximum historically documented sediment release to the water column for a clamshell dredge with a conventional (open) bucket and barge overflow (i.e., 10% loss). In Addendum 2 of the sediment modeling report, Transco reanalyzed dredging of HDD pits using a clamshell dredge with an

environmental bucket (0.5% to 2.5% loss). These specific examples and additional numerical result comparisons for the corresponding scenarios are presented in Table 3-4, below.

Based in part on these results, Transco commits to using an environmental bucket for all Project-related offshore clamshell dredging activities. The restriction of all scow overflow would also reduce the amount of TSS and associated sedimentation compared to some scow overflow. However, as discussed above, Transco will consider allowing some scow overflow (i.e., discharge of decant water following a suitable holding period) for certain clamshell dredging areas to increase dredging efficiency and potentially shorten the duration of dredging. Such overflow will be conducted in a manner that adheres to all NJDEP and NYSDEC requirements for water quality, accounting for any permitted mixing zones limits.

The decision to allow or prohibit scow overflow in the field may not apply consistently to the entire area represented by any single modeled scenario. For example, scow overflow is not proposed in areas with higher levels of contaminants. Therefore, scow overflow may be considered when dredging outside the areas with higher levels of contaminants in sediments along this segment of the route. In the event turbidity measurements at compliance monitoring stations for scows discharging decant water are in exceedance of the thresholds outlined in the anticipated WFD permit and water quality certificate, Transco will consider increasing scow hold times or restricting all scow overflow at a given work site as an adaptive management measure to bring construction activities back into compliance.

In Addendum 2 and 3, Transco conducted a reanalysis of two representative backfilling scenarios (i.e., those with the largest TSS plumes) using a reduced rate of backfill than previously modeled backfilling scenarios. For the original scenarios (Scenarios A-5 and A-9), Transco assumed a backfilling ("production") rate of 11,520 cubic feet per hour. In Addendum 2, Transco reanalyzed these two backfill scenarios using reduced backfilling rates that were based on contractor feedback as of January 2018 (i.e., 7,500 cubic feet per hour). In Addendum 3, Transco reanalyzed Scenario A-5 using a further reduced backfilling rate to evaluate whether implementing reasonably slower backfilling rates in the respective areas could effectively reduce resultant suspended sediment plumes to meet anticipated mixing zone criteria.

Table 3-4
Comparison of Total Suspended Solids and Sedimentation Impacts from Base-Case, Addendum 1, Addendum 2, and Addendum 3 Modeling Scenarios

Location	Modeling Report, Modeled Scenario[a]	Construction Activity[b]	Equipment Type	Time for TSS to return to ambient (hrs)	Maximum distance of TSS Plume exceeding ambient by 100 mg/L (ft)	Maximum distance of deposition exceeding 3.0 cm [1.2 in] (ft)	Area of deposition exceeding 3.0 cm [1.2 in] (acres)[c]
MP12.50 – MP16.60	Base Case, Scenario 2	Pre-lay trenching between the Morgan HDD exit and the Midline tie-in (10% loss)	Conventional clamshell	9.87	4,331	62	5.3
	Addendum 2, Scenario B-1	Pre-lay trenching between the Morgan HDD pit and the Midline tie-in (2.5% loss)	Environmental clamshell	1.7	591	0	0.0
	Addendum 2, Scenario B-2	Pre-lay trenching between the Morgan HDD pit and the Midline tie-in (0.5% loss; no scow overflow)	Environmental clamshell	0.4	0	0	0.0
	Addendum 2, Scenario B-3	Post-lay trenching between the Morgan HDD pit and the Midline tie-in (2 passes; 5% loss)	Jet trencher	0.2	1,476	0	0.0

Table 3-4
Comparison of Total Suspended Solids and Sedimentation Impacts from Base-Case, Addendum 1, Addendum 2, and Addendum 3 Modeling Scenarios

Location	Modeling Report, Modeled Scenario[a]	Construction Activity[b]	Equipment Type	Time for TSS to return to ambient (hrs)	Maximum distance of TSS Plume exceeding ambient by 100 mg/L (ft)	Maximum distance of deposition exceeding 3.0 cm [1.2 in] (ft)	Area of deposition exceeding 3.0 cm [1.2 in] (acres)[c]
(i) MP12.50 (ii) ~1,200 ft north of MP12.30	Base Case, Scenario 1	Excavation activities at Morgan Shore (10% loss)	Conventional clamshell	3.33	1,099	154	0.9
	Addendum 2, Scenario B-4	Excavation activities at Morgan Shore (0.5% loss)	Environmental clamshell	0.4	148	0	0.0
MP29.52	Base Case, Scenario 10	Excavation of the Ambrose Channel HDD pit (West) (10% loss)	Conventional clamshell	12.45	2,756	289	1.6
	Addendum 2, Scenario B-7	Excavation of the Ambrose Channel HDD pit (West) (2.5% loss)	Environmental clamshell	1.1	0	0	0.0
	Addendum 2, Scenario B-8	Excavation of the Ambrose Channel HDD pit (West) (0.5% loss)	Environmental clamshell	0.0	0	0	0.0
MP30.40	Base Case, Scenario 11	Excavation of the Ambrose Channel HDD pit (East) and tie-in (10% loss)	Conventional clamshell	1.97	0	256	2.9

Table 3-4
Comparison of Total Suspended Solids and Sedimentation Impacts from Base-Case, Addendum 1, Addendum 2, and Addendum 3 Modeling Scenarios

Location	Modeling Report, Modeled Scenario[a]	Construction Activity[b]	Equipment Type	Time for TSS to return to ambient (hrs)	Maximum distance of TSS Plume exceeding ambient by 100 mg/L (ft)	Maximum distance of deposition exceeding 3.0 cm [1.2 in] (ft)	Area of deposition exceeding 3.0 cm [1.2 in] (acres)[c]
	Addendum 2, Scenario B-9	Excavation at the Ambrose HDD pit (East) and Ambrose Channel tie-in (2.5% loss)	Environmental clamshell	0.0	0	187	1.4
MP12.50 – MP16.60	Addendum 1, Scenario A-5	Backfilling of trench between Morgan HDD exit and the Midline tie-in (11,250 ft^3/hr)	Clamshell [d]	1.5	2,444	381	158.7
	Addendum 2, Scenario B-21	Backfilling of trench between Morgan HDD exit and the Midline tie-in (7,500 ft^3/hr)	Clamshell [d]	1.2	1,329	282	161.5
	Addendum 3, Scenario C-11	Backfilling of trench between Morgan HDD exit and the Midline tie-in (4,800 ft^3/hr)	Clamshell [d]	1.1	591	266	183.2
MP29.52	Addendum 1, Scenario A-9	Backfilling of Ambrose Channel HDD exit pit (West) (11,250 ft^3/hr)	Clamshell [d]	3.3	1,952	525	5.1
	Addendum 2, Scenario B-22	Backfilling of Ambrose Channel HDD exit pit (West) (7,500 ft^3/hr)	Clamshell [d]	1.3	1,526	499	5.1
MP30.40	Addendum 1, Scenario A-10	Backfilling of Ambrose Channel HDD entry pit (East) and tie-in (11,250 ft^3/hr)	Clamshell [d]	3.0	2,231	453	7.0
	Addendum 3 Scenario C-13	Backfilling of Ambrose HDD pit (East) and tie-in (4,800 ft^3/hr)	Clamshell [d]	0.4	5,151	456	9.5

Table 3-4
Comparison of Total Suspended Solids and Sedimentation Impacts from Base-Case, Addendum 1, Addendum 2, and Addendum 3 Modeling Scenarios

Location	Modeling Report, Modeled Scenario[a]	Construction Activity[b]	Equipment Type	Time for TSS to return to ambient (hrs)	Maximum distance of TSS Plume exceeding ambient by 100 mg/L (ft)	Maximum distance of deposition exceeding 3.0 cm [1.2 in] (ft)	Area of deposition exceeding 3.0 cm [1.2 in] (acres)[c]

Notes:

[a] The modeling reports included in this table are the *Hydrodynamic and Sediment Transport Modeling Results: Base Case Simulations* ("Base Case"); *Hydrodynamic and Sediment Transport Modeling Results: Addendum 1* (Addendum 1); *Hydrodynamic and Sediment Transport Modeling Results: Addendum 2* (Addendum 2); and *Hydrodynamic and Sediment Transport Modeling Results: Addendum 3* (Addendum 3).

[b] All clamshell dredge pre-lay trenching and excavation rates assumed to be 11,250 cubic feet per hour.

[c] Potential areas of impact for these scenarios do not include areas of deposition within the bounds of navigational channels, as these areas are considered to be regularly disturbed.

[d] The type of clamshell dredge bucket was not specified in the model scenarios for backfilling because all material will be released regardless of bucket type.

Key:

cm	=	centimeters
ft	=	feet
ft^3	=	cubic feet
HDD	=	horizontal directional drill
hr/hrs	=	hour/hours
in	=	inches
mg/L	=	milligrams per liter
MP	=	milepost
TSS	=	total suspended solids

For base-case modeled with a conventional clamshell bucket and scow overflow, adjusting construction methods to an environmental clamshell bucket with scow overflow reduced the distance of TSS plumes with concentrations exceeding the ambient conditions by 100 mg/L between 410 and 5,332 feet. Adjusting construction methods for these activities reduced the time for TSS concentrations to return to ambient conditions by 0.4 hour for Scenario A-2 (from Addendum 1).

For base-case scenarios modeled with a conventional clamshell bucket and scow overflow, adjusting construction methods to an environmental clamshell bucket with no scow overflow eliminated TSS plumes with concentrations exceeding the ambient conditions by 100 mg/L. Adjusting construction methods for these activities reduced the time for TSS concentrations to return to ambient conditions by between 0.3 and 1.0 hour.

For backfill scenarios modeled with production rate of 11,250 ft^3/hr (i.e. Scenario A-5), adjusting production rates to 4,800 ft^3/hr (Scenario C-11) reduced the extent of TSS plumes with concentrations exceeding the ambient conditions by 100 mg/L by 1,853 feet. Adjusting construction methods for these activities reduced the time for TSS concentrations to return to ambient conditions by between 0.4 hours. The exception where reducing the production rate resulted in a larger maximum plume extent is the modeled scenario for backfilling of the Ambrose HDD pit (east). This is likely because the longer model duration (i.e., longer period of backfilling resulting from reduced backfilling rates) expose the modeled activity to a greater range of metocean conditions in an area subject to high current velocities. However, statistical analysis indicates that 99% of the time concentrations of 50 mg/L are not expected to extend more than 1,300 feet from the Ambrose HDD pit (east) during backfilling at 4,800 ft^3/hr. This statistical analysis is provided in Table 3 of Appendix F-4.

Transco acknowledges that NJDEP can require a permittee to conduct water quality monitoring under N.J.A.C. 7:7-12.6. At this time Transco commits to monitoring turbidity levels in site waters down-current of active offshore construction during the Project. Based on consultations with NJDEP in a January 6, 2020 meeting, Transco anticipates that the NJDEP WFD permit and water quality certificate will require that turbidity measurements at compliance monitoring locations are not more than 50% higher than the ambient turbidity measured at corresponding background monitoring locations. However, compliance measurements less than 3 NTUs above the background measurements will not be considered reportable exceedances in order to account for natural turbidity variability.

Based on the January 6, 2020 meeting with NJDEP staff, as well as an earlier (August 1, 2018) meeting with NJDEP staff, the Department will provide guidance on appropriate adaptive management solutions that Transco could employ in the event that in-field monitoring indicates that construction activities may be causing an exceedance of a threshold identified in the WFD permit and water quality certificate. Transco has committed to implementing adaptive management methods such as adjusting dredging and/or jet trenching rates as necessary to ensure the Project adheres to water quality monitoring requirements outlined in the anticipated NJDEP WFD permit and water quality certificate. Transco may also employ a "slack-tide pause" as an adaptive management method, whereby dredging is paused for 1 hour during each slack-tide period (i.e., during peak high tide and low tide intervals), particularly for activities where modeling indicated a slack-tide pause would be more practicable for controlling sediment plumes compared to further reductions in dredging rates. These potential measures will be identified in

the construction plans. Transco will consider what other adaptive management procedures may be practicable and effective, such as adjusting the type and/or intensity of monitoring depending on the presence of contaminated material.

For any backfill activities, material will be selected to be generally compatible with existing sediment but with a limited amount of fine-grained material (i.e., silt and clay) to help ensure stability and avoid excessive turbidity generation. As described above, it is anticipated that authorized dredged materials from the Ambrose Channel (seaward of LNYBL) in New Jersey would be utilized, as described above in Section 2.3.2 of the Project Description. This material will be acquired from one or more existing commercial vendors that currently operate under active permits to dredge Ambrose Channel. Where excavation is completed using an environmental bucket, an additional measure to minimize turbidity will be taken during backfill activities by lowering the clamshell bucket below the water line before releasing any material. Transco evaluated whether a "tremie" tube would be an effective backfill tool to help reduce turbidity. Based on contractor feedback the effects of using tremie technology for backfilling activities would be similar to or greater than using a clamshell dredge. For instance, the use of the tremie tube is expected to generate a larger suspended sediment plume than the use of a clamshell dredge for similar backfilling rates. This is mainly because a tremie tube would likely be fixed to a barge in a manner that releases material at a height of more than 5 feet above the seafloor in order to prevent the tube from impacting the seafloor given highly variable wave and tide conditions in the offshore environment. In comparison, a clamshell dredge can release sediment at a height of 5 feet or less above the seafloor as a best management practice. Backfilling "production" rates would likely be slower using a tremie tube, i.e., roughly half the rate of using a clamshell dredge due to anticipated inefficiencies in the tremie conveyer system. A slower rate would likely reduce the extent of a suspended sediment plume, but a clamshell dredge backfilling rate can also be reduced, as warranted, to limit the concentrations of suspended sediments. Other measures such as silt curtains may be considered, but such measures may be ineffective and problematic to maintain in the open coastal waters along the Raritan Bay Loop route.

Resuspended Contaminants

Sediments within marine ecosystems can absorb and contain metals and other contaminants and function as final storage, making them potentially hazardous to the surrounding water (Burton 2002; Salomons and Brils 2004). If contaminants are undisturbed, they generally remain bound to the sediments; however, as contaminants become integrated within the sediments, biogeochemical transformations occur due to diagenetic reactions (Nguyen 2008). If contaminated sediments are resuspended in the water column, contaminated particles can be mobilized, which may result in shifts in pH, redoximorphic conditions, bacterial activities, and natural/artificial re-suspension (Nguyen 2008). The ability of sediments to absorb and retain contaminants, and the contaminants themselves, determine the type and extent of water quality impacts.

Substrate-disrupting construction activities such as those described above will cause sediments to become suspended, transported, and re-deposited downstream of prevailing currents, increasing nearby siltation and potentially re-suspending contaminated sediments. Dredging activities in particular have the potential to release a high amount of hydrophobic organic contaminants and metals as the sediments are disturbed (Latimer et al. 1999; Olsen et al. 1982). As discussed above, the majority of the offshore route crosses substrate in the Atlantic Ocean and Lower New

York Bay that consists primarily of fine to coarse sand. These sandy sediments are less likely to contain contaminants and will likely be re-deposited quickly near the excavated areas. A higher percentage of silt and clay found in substrate along the route in Raritan Bay is more likely to carry contaminants a greater distance from the dredging activity. However, as noted above, plumes can be expected to dissipate within approximately 800 meters of the dredging activity even in areas with high levels (more than 50%) of silt and clay (Burton 1993, in NOAA Fisheries 2012). Thus, the majority of material and undissolved contaminants will likely re-settle within this distance.

As discussed above, Transco conducted sediment sampling in late 2016 to obtain site-specific data regarding sediment composition, including contaminant levels. A full compilation of all sediment chemistry analyses, including original laboratory data sheets, is presented in the Project's Offshore Environmental Sampling Report, which is included with Transco's application for a USACE permit. This information will be used to further develop the assessment of potential Project impacts and dredged material handling activities. Additionally, a more complete analysis of the anticipated fate of Project-related re-suspended contaminants, including the potential for ecological impacts from exposure of biological receptors to contaminants released during dredging/jetting activities associated with the offshore Raritan Bay Loop is provided in Appendix I.

Transco and NJDEP are aware of the presence of existing sediment contamination that exceeds ER-M values, indicating the potential for adverse effect on benthic communities. Additionally, Transco and NJDEP considered that there is an increased risk of SWQS exceedances for certain contaminants when dredging sediments with corresponding contaminant concentrations that exceed the ER-M thresholds ("ER-M sediments"), compared to non-ER-M sediments, assuming the dredging methods and ambient water conditions are the same. As a result, Transco proposed to implement several BMP when dredging ER-M sediments, such that no exceedance of SWQSs are anticipated, consistent with previous NJDEP-approved dredging projects in the vicinity such as the Bayonne Energy Center Project (NJDEP File No. 0901-08-0001.1 WFD 080002) and the U.S. Navy Earle Channel Dredging Project. These BMPs include the following:

- Use of HDD for the Morgan Shore crossing, which reduces disturbance of contaminated nearshore sediments.
- Use of an environmental bucket for all clamshell dredging in New Jersey waters[5].
- No side-casting of dredged material.
- No barge scow overflow in areas with ER-M sediments.
- Adjustment of dredging rate as necessary to provide reasonable assurance that SWQSs are being met.
- Implementation of a water quality monitoring plan, to be reviewed and approved by NJDEP prior to commencement of offshore construction (see Transco's Draft Water Quality Monitoring Plan for New Jersey Waters included as Appendix N).

[5] A conventional bucket may be used at certain locations where initial attempts to use an environmental bucket are found to be ineffective due to sediment characteristics (e.g., areas with predominantly sandy material).

Transco has conducted modeling of the contaminated parameters identified in NJDEP's Notice of Denial (dated June 5, 2019) to provide additional assurance that these BMPs will be sufficient to prevent exceedances of the SWQSs for chemical contaminants. Based on a June 6, 2019, conference call with NJDEP staff, Transco has evaluated the concentrations of these contaminants at a distance of 500 feet from the dredging activity in comparison to SWQSs in N.J.A.C. 7:9B. The results of this modeling effort (provided as Appendix M and discussed in further detail in Section 2.5, above), coupled with the BMPs Transco has committed to implement and the implementation of a monitoring program during construction, support a conclusion that there will be no adverse impacts to water quality due to resuspension of contaminants. In addition, any contaminant concentrations that are introduced into the water column will be localized, temporary and of short duration.

As discussed under N.J.A.C. 7:7-12.6, above, Transco has prepared a Draft Water Quality Monitoring Plan for New Jersey Waters (Appendix N). Transco's Draft Water Quality Monitoring Plan for New Jersey Waters is based on input received from NJDEP during a January 6, 2020 conference call with NJDEP staff during which NJDEP informed Transco that chemical contaminant monitoring is not typically required and that turbidity monitoring would be sufficient to evaluate whether there would be any potential exceedances in SWQSs described in N.J.A.C. 7:9B.

Transco has committed to implementing adaptive management methods such as adjusting dredging and/or jet trenching rates as necessary to ensure the Project adheres to water quality monitoring requirements outlined in the anticipated NJDEP WFD permit and water quality certificate. Transco may also employ a "slack-tide pause" as an adaptive management method, whereby dredging is paused for 1 hour during each slack-tide period (i.e., during peak high tide and low tide intervals), particularly for activities where modeling indicated a slack-tide pause would be more practicable for controlling sediment plumes compared to further reductions in dredging rates. These potential measures will be identified in the construction plans. Transco will consider what other adaptive management procedures may be practicable and effective, such as adjusting the type and/or intensity of monitoring depending on the presence of contaminated material.

HDD Fluid

As previously discussed (e.g., under Rule 7:7-9.15, above), Transco plans to use HDD methods during onshore construction. This crossing method will help avoid or minimize impacts on water quality within the waterbodies that are crossed. For the Lockwood Marina HDD crossing, the clay-based drilling fluid will be captured at the entry and exit pits and disposed of at an appropriate upland facility.

At the Morgan Shore Approach, much of the fluid will be captured at the onshore HDD entry pit, but approximately 9,931 cubic yards of HDD fluid and cuttings will be released into the offshore exit pit, which includes a 30% contingency volume to ensure that all materials can be contained within the HDD pit. At the Ambrose Channel Crossing, the eastern HDD pit will be able to accommodate approximately 32,450 cubic yards of material, and the western pit will be able to accommodate approximately 14,050 cubic yards of material, both of which include a 25% contingency volume. Theoretically, discharged drilling fluid could become entrained in the water column and spread down current, with a potential for ecological impacts on aquatic life occurring within this environment. While there is a potential for release of drilling fluid from the

offshore HDD entry and exit pits, the likelihood of this occurring is low, as the density of seawater (64.2 pounds per cubic foot) is less than the density of the drilling fluid (generally ranging in density between 65 and 89 pounds per cubic foot). The drilling fluid would also thicken as it is mixed with cuttings from the borehole. Additionally, Transco expects that the bentonite materials will settle out at the bottom of the offshore excavation site because the basic (i.e., pH near 9) freshwater properties that would be used to maintain fluidity of the clay-based drilling fluid in the bore hole would change when it reaches the HDD exit pit and enters the saltwater environment (i.e., salinity greater than 3 parts per trillion), causing the clay to flocculate. Following completion of the HDD activities, the entry and exit pits will be mechanically backfilled (capped) with native or other compatible material.

For both onshore and offshore HDD methods, Transco will use water-based drilling fluids and will not use petroleum-based drilling fluid additives. Transco will also provide information of all HDD fluid additives to the applicable state permitting authorities to solicit their approval prior to use.

While HDD typically reduces impacts on a waterway compared with open-cut or dry crossing techniques, an inadvertent release of drilling fluid may substantially increase the turbidity of the waterway for a short time because of the high clay content of the water-based drilling fluids. In the event of an inadvertent release of drilling fluids, Transco would implement its Onshore HDD Contingency Plan or Offshore HDD Contingency Plan (see Appendix J), as appropriate, to limit potential impacts of the release. Such measures include daily monitoring along the drill path and cleanup procedures to be used in the event of an inadvertent release. Both HDD contingency plans are included in Transco's application for a USACE permit.

Operation

Impacts on water quality from operation of the pipeline are not anticipated because the pipeline will be a closed system, and it will be buried with a minimum of 4 feet of cover (or equivalent concrete mats at cable and pipeline crossings) to isolate the pipeline from contact with the open water. Routine maintenance activities do not require sediment disturbance and, therefore, are not expected to impact water quality.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Water Quality Rule.

7:7-16.4 Surface water use

The Project will primarily use surface water for HDD crossings and hydrostatic testing of the pipeline, as described below. Proposed surface water sources within the New Jersey coastal zone include municipal lines (e.g., hydrants) that may draw from surface reservoirs, Cheesequake Creek, and offshore waters (i.e., Raritan Bay, Lower New York Bay, and/or the Atlantic Ocean).

Within the coastal zone along the Madison Loop, freshwater will be used for the Lockwood Marina HDD. Following completion of the HDD, Transco will haul all HDD water off site and dispose of it in accordance with applicable regulations. When possible, freshwater for HDD crossings will be drawn from onshore municipal sources in accordance with any state or local withdrawal permits. If a direct connection (e.g., a hydrant) is not available onshore for the Lockwood Marina HDD or Morgan Shore Approach HDD, then water may be trucked to the

site. A barge will likely be used to bring fresh water to the Ambrose Channel HDD site. See Rule 7:7-16.3, above, for a discussion of the drilling fluid that would be created using these water sources.

Transco will hydrostatically test the onshore pipeline segments in New Jersey in accordance with USDOT regulations, 49 CFR Part 192. The pipeline will be filled with water and maintained at a test pressure for 8 hours in compliance with Transco's engineering standards and applicable federal regulations. Transco proposes to use 462,000 gallons of water to hydrostatically test the Madison Loop in accordance with applicable permits. Transco will hydrostatically test the Madison Loop in its entirety in one segment. After the completion of a satisfactory test of the Madison Loop, Transco will discharge the water through a dewatering structure back to the withdrawal location in accordance with applicable permit conditions. The discharge rate of the test water will be regulated using valves and energy-dissipation devices to reduce the potential for erosion.

To prevent potential transfer of non-native aquatic species between the test water source and surface waters at or adjacent to discharge sites during hydrostatic testing, Transco will treat discharge water, where necessary, to eradicate or neutralize nuisance non-native aquatic species. Water sources requiring treatment will be determined in consultation with the applicable regulatory agencies. Most non-native aquatic species can be prevented from entering the test water by using 0.25-inch mesh screens at intake locations; however, mesh screens will not adequately prevent contamination of test water by organisms smaller than 0.25 inch, including vegetation and pathogens, and water treatment may be required before discharge. Where test water treatment is necessary, an appropriate treatment method will be determined in consultation with the appropriate regulatory agencies.

Following testing, Transco will depressurize each test section and, if needed, direct water into a filter bag or other erosion control barrier. Treated water will be discharged into well-vegetated upland infiltration sites at discharge rates low enough to not affect waterbodies. If hydrostatic test water is discharged to upland areas, Transco will conduct activities in accordance with applicable regulatory requirements, including monitoring receiving waters for contaminants both before and after discharge. If discharging directly to receiving waters, Transco will use diffusers (energy diverters) to minimize the potential for stream scour.

Hydrostatic testing of the Raritan Bay Loop will involve flooding the pipeline with filtered seawater. A total of approximately 3,450,000 gallons of seawater will be used for all offshore hydrostatic testing and associated pipeline dewatering. A non-toxic fluorescent dye (Hydro Tag Clear) will be added to allow easier detection of any underwater pipe leaks during the test(s). If water is to remain in the pipeline for an extended period of time, Transco will evaluate the need to control internal corrosion by chemical treatment. In the event it is needed, Transco has selected CORRTREAT 15316 to use as the corrosion inhibitor based on the results of an analysis of the three options that indicated CORRTREAT 15316 to be both biodegradable and a better corrosion inhibitor than the other alternatives evaluated. The test water would also be treated with a non-toxic fluorescent dye, Hydro Tag Clear to help detect potential leaks. The selected additives will be used at concentrations that do not cause adverse effects on the receiving waterbody at the time of test water discharge, accounting for any permit-approved mixing zone. Treatment and discharge of the hydrostatic test water will meet applicable NJDEP regulatory requirements. Transco will submit an application to the NJDEP for a National Pollution

Discharge Elimination System permit in advance of the commencement of offshore construction activities. No other additives are planned to be used during hydrostatic testing of the Raritan Bay Loop.

During testing, the seawater will be drawn from below the water line at a maximum depth of 10 feet (or approximately mid-depth in waters shallower than 20 feet), to minimize the entrainment of items floating near the surface and avoid disturbance of the seafloor.

Before pipeline commissioning, Transco will discharge the withdrawn water back into the ocean in accordance with any applicable permit requirements. The rate of discharge back into the ocean will be approximately 2,350 gallons per minute, and the rate will be regulated using valves and energy-dissipation devices. The exact location of discharge is to be determined by Transco in consultation with the contractor and according to any applicable permit requirements. A dewatering pig would be used to discharge the water from the pipe after the hydrostatic test. Swabbing chemicals/drying agents may be used during the dewatering process and, if used, would be disposed of in accordance with applicable regulatory requirements. Clean filtered, oil-free air also would be used for the displacement of dewatering pigs.

During discharge, the salinity of the test water would be similar to that of the receiving water, and the total volume of water required for the hydrostatic testing is a minor fraction of the total water available in the Raritan Bay, Lower New York Bay, and surrounding Atlantic Ocean. Therefore, the hydrostatic test water discharge is expected to have a negligible impact on offshore water quantity and quality.

Transco does not anticipate any significant water quality effects resulting from discharge of hydrostatic test water. New pipeline facilities will consist of new steel pipe, coated internally, that will be free of chemicals and lubricant, and Transco does not propose to use any chemical additives for drying or other purposes. Transco will consult with the NJDEP regarding hydrostatic test water withdrawal and discharge permits within the New Jersey coastal zone.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Surface Water Use Rule.

7:7-16.6 Stormwater management

As a whole, the Project meets the definition of "major development" at N.J.A.C. 7:8-1.2, and Transco has developed a corresponding storm water management plan for Compressor Station 206, which is located in New Jersey outside of the coastal zone. However, the portion of the Project within the New Jersey coastal zone is a linear development consisting of an underground utility line and, in accordance with N.J.A.C. 7:8-5.2(d)1, is exempt from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements at N.J.A.C. 7:8-5.4 and 5.5.

Transco will implement storm water management measures along the onshore portions of the Project within the New Jersey coastal zone during construction, as described below.

Following establishment and clearing of workspace boundaries, Transco will install temporary soil erosion- and sediment-control measures along the proposed construction ROWs, ATWS

areas, access roads, and other work areas, as applicable, in accordance with the Transco Plan and Transco Procedures, which are included with Transco's application for a USACE permit. The BMPs presented in the Transco Plan and Transco Procedures, as well as those presented in Transco's applications for NJDEP permits, will minimize erosion of disturbed soils and prevent the transportation of sediment outside the construction ROWs, thus protecting adjacent environmentally sensitive areas such as wetlands and waterbodies. Temporary erosion- and sediment-control measures may include the use of temporary slope breakers, temporary trench plugs, sediment barriers, mulch, erosion-control matting, and/or temporary seeding.

Temporary erosion controls will be properly maintained throughout construction and reinstalled as necessary until they are replaced with permanent erosion controls or until restoration is complete. To ensure that appropriate erosion- and sediment-control measures are maintained until the construction workspace is fully stabilized, an environmental inspector will inspect all disturbed areas of the construction spreads (e.g., construction ROW and temporary contractor yards) that have not been permanently stabilized. Inspections will occur in accordance with the following schedule: (a) on a daily basis in areas of active construction, (b) on a weekly basis in areas with no construction or equipment operation, or (c) within 24 hours of a storm with 0.5 inch or more of rain.

After backfilling, Transco will grade disturbed areas to match surrounding contours. As appropriate, Transco will implement permanent erosion-control measures within the construction workspaces, including site-specific contouring, slope breakers, mulching, and reseeding to establish soil-holding vegetation. Transco will complete final grading, topsoil replacement, and installation of permanent erosion-control structures within 20 days of backfilling the trench and within 10 days in residential areas. If seasonal or other weather conditions prevent compliance with these timeframes, Transco will maintain temporary erosion control devices until the cleanup is completed.

Operation of the pipelines is not anticipated to result in any soil erosion. Transco's operations personnel will monitor the effectiveness of revegetation and permanent erosion control measures during routine inspections and maintenance of the facilities and pipeline ROWs. Transco will operate and maintain the proposed facilities and pipelines in compliance with USDOT regulations provided in 49 CFR Part 192, FERC guidance in 18 CFR 380.15, and the maintenance provisions of the Transco Plan and Procedures.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Stormwater Management Rule.

7:7-16.7 Vegetation

Vegetation communities for the onshore portions of the Project, located in New Jersey, can be grouped into the broad categories of upland forest, open land, wetland, and developed lands. Offshore, the Raritan Bay Loop is not located in the vicinity of any currently documented SAV beds, as discussed under Rule 7:7-9.6, above. Transco will install the nearshore portion of the Raritan Bay Loop via HDD, thus avoiding areas where SAV could potentially be present.

Vegetation Effects and Mitigation

Impacts on vegetation have been minimized as the onshore portion of the Project within the New Jersey coastal zone consists of looping, which will be co-located with Transco's existing pipeline facilities. Effects on vegetation from pipeline construction will be temporary disturbances from clearing the construction ROW. Per the Transco Plan, herbaceous areas will be restored by seeding the areas in accordance with written recommendations from the local soil conservation agency and/or landowner agreements, as applicable. Other than limiting tree growth within the permanent ROW, disturbed areas not maintained as permanent ROW will be allowed to return to pre-construction conditions.

During operation, Transco will maintain a permanent ROW for the Madison Loop, co-located with the existing Transco LNYBL pipeline. In accordance with the Transco Plan, maintenance within uplands and wetlands along the permanent ROW will include seasonal mowing of the ROW, following the timing restrictions outlined in the Transco Plan. Vegetation in upland areas of the permanent ROWs will be maintained as an herbaceous cover; maintenance in uplands will occur at a frequency of approximately one to three years. In wetlands, Transco will limit maintenance to a 10-foot-wide swath along the permanent ROW to facilitate route patrols and emergency access; maintenance in wetlands will occur approximately every year. Additionally, to maintain pipeline integrity, selective cutting and removal of trees may be required within the permanent ROW. Transco will apply herbicides, if needed, in accordance with manufacturer specifications and any applicable regulations to reduce spills or overspray.

The temporary construction ROW outside the permanent ROW will be allowed to revert to preconstruction land use/land cover, with no further vegetation maintenance by Transco.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Vegetation Rule.

7:7-16.8 Air quality

Project construction will generate emissions of fugitive dust. Fugitive dust could result from land clearing, grading, excavation, and vehicle traffic on paved and unpaved roads. Transco will also develop and implement a Fugitive Dust Control Plan to control fugitive dust-generation based on a site-by-site and time-specific basis during periods when wind erosion and dust generation will occur or are probable. Fugitive dust emissions will be controlled primarily by limiting the area of earth to be disturbed and will be mitigated by spraying water to dampen the surfaces of dry work areas and/or by applying other approved dust suppressants as needed.

The use of construction vehicles and equipment will also generate air emissions during the construction period because construction vehicles and equipment will burn diesel fuel or gasoline. Offshore construction operations will involve using marine vessels of various types for pipe delivery, trenching, work crew transport, etc. These vessels will burn marine diesel fuel, resulting in emissions. Equipment and supplies will be delivered during this period, and some emissions will be attributable to on-road construction vehicles (e.g., light diesel and gasoline passenger trucks) used at the site and to vehicles driven by construction workers commuting to and from the Project work site. The air quality effects of emissions from fugitive dust, construction vehicles, and equipment will be temporary because these emissions will occur only during construction.

The construction of the onshore portion of the Project may result in temporary effects on local ambient air quality. To minimize these effects, Transco and its contractors will employ the following practices, as necessary:

- Require contractors to meet all federal, state, and local air quality regulations and emission standards applicable to their equipment;
- Use low sulfur fuel in non-road construction equipment;
- Post idling limit signs at construction sites and limit idling of on-road and non-road construction equipment to three minutes or less;
- Where feasible and locally available, use construction equipment with engines meeting EPA Tier 4 non-road emission standards or best available emission control technology;
- Apply water or dust suppressants to disturbed areas, as necessary, to reduce vehicle traffic dust, as specified in the Fugitive Dust Control Plan;
- Assess designated truck routes that are designed to minimize effects on residential areas and sensitive receptors; use paved roads for construction vehicle traffic, wherever practical;
- Limit vehicle speeds as required to reduce dust generation;
- Respond promptly to any significant particulate emission concerns that occur during construction by evaluating the source of emissions; and
- Upon completion of construction activity, stabilize disturbed areas.

In addition to the general mitigation measures described above, pipeline construction for the Madison Loop, and the onshore portion of the Raritan Bay Loop are subject to General Conformity for emissions of nitrogen oxide. Mitigation would be required for the construction year in which nitrogen oxide emissions exceed General Conformity thresholds. Transco is in discussion with the NJDEP regarding these mitigation requirements for the onshore portion of the Project in New Jersey.

During the operation phase, the Project will not directly generate emissions within the New Jersey coastal zone. Overall, operation of the Project will improve regional air quality through a long-term reduction in nitrogen oxide, sulfur dioxide, and carbon emissions resulting from the conversion of fuel oil heating systems to natural gas systems in the National Grid service area.
Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Air Quality Rule.

7:7-16.9 Public access

Under N.J.A.C. 7:7-16.9, the proposed activities are characterized as “new industrial or public development” because the Project includes development of areas not within the parcel containing the existing development. During Project construction, Transco will maintain all existing public access routes that cross Project workspace to and along tidal waterways and their shores, except when physical access to these areas will be restricted to protect public safety and welfare. No access restrictions are proposed following construction.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Public Access Rule.

7:7-16.10 Scenic resources and design

Visual effects associated with onshore construction activities will result from the removal of vegetation during construction of the pipeline and aboveground facilities. Such clearing is most frequently seen where the pipeline parallels or crosses roads and where vegetation is removed between the ROWs and residences. Potential mitigation measures may be implemented along roadways and in residential areas in coordination with regulatory agencies and landowner agreements, as necessary.

Visual impacts are also often associated with recreation areas and waterways that are valued for their scenic quality. However, as the onshore pipeline facilities consist of looping, visual impacts will be minimized. During construction, temporary visual impacts from construction equipment and disturbed soil will occur. Additionally, some visual impacts are expected where the pipeline will be constructed via HDD. In areas where the HDD rigs are set up, the HDD entry and exit areas will be fenced and screened in order to reduce potential visual impacts. Other than the maintained ROW, the proposed pipelines associated with the Project will be located underground. The pipeline ROW will be maintained as it is currently, so in these areas, the proposed pipeline ROW will be consistent with existing conditions and have negligible additional visual impacts.

Visual impacts associated with the offshore portion of the Project will occur only during the offshore construction period. The barges and support vessels used in excavation and pipe-laying operations will be visible for a majority of the construction period but will typically be more than 0.25 mile away from the New Jersey shore, and no vessels will remain at any particular offshore location for more than approximately three months. Visual impacts associated with the temporary fixed platform will occur while the platform is in place for the HDD activities between June 2021 and August 2021. The platform will be 14 feet above MLLW. Visual impacts on residents and users of the Old Bridge Waterfront Park will be temporary, occurring only during the time that the offshore platform is present (approximately 50 days). As the platform will be stationary, it and its associated construction equipment will be notable to residents and visitors to the area, especially the crane. Due to the close distance to the New Jersey shoreline and wide variety of construction equipment, the offshore platform will have a moderate, but temporary visual impact on residents and visitors. All offshore facilities will be buried below the seafloor and will therefore not be visible during operation. Vessels will not be required during routine maintenance activities.

Therefore, no adverse, long-term impacts on visual resources are anticipated due to construction or operation of the Project.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Scenic Resources and Design Rule.

7:7-16.11 Buffers and compatibility of uses

The Madison Loop is considered to be compatible with adjacent land use since it is 100% co-located with the existing Transco ROW. Following the completion of construction, all pipeline segments within the coastal zone, except for a small mainline valve, will be buried underground, and therefore will not impact the compatibility of other uses, onshore or within Raritan Bay. Specifically, the establishment of suitable buffers to avoid aesthetic or functional conflicts and facilitate compatibility with Special Areas (e.g., wetlands, endangered/threatened species and habitats, shellfish habitat, prime fishing areas, and navigation channels) are discussed under the rules of Subchapter 9, above, and are further supported by details provided throughout this Coastal Zone Consistency Assessment (i.e., compliance statement). This includes consideration of burial depth as a type of buffer.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Buffers and Compatibility of Uses Rule.

7:7-16.12 Traffic

Onshore Traffic
Construction of the Project may result in temporary effects on traffic in or near the onshore Project area. Construction activities associated with road crossings, ROW access points, and additional traffic generated by commuting construction workers and offshore transport and construction vessels could all affect local traffic flow and volume. Transco is developing a Traffic and Transportation Management Plan that prescribes procedures for avoiding or mitigating these impacts.

Major road crossings and most high-volume state and local road crossings may be constructed using conventional boring techniques. Roads and drives that are smaller and less frequently traveled, both paved and unpaved, typically will be crossed using an open trenching method. If an open cut crossing requires extensive construction, provisions will be made for detours and/or other traffic control measures to facilitate traffic flow during construction, including methods to maintain emergency vehicle access and school bus access to inhabited houses. Transco will apply for road crossing permits from appropriate state or local jurisdictions.

Throughout the construction phase of the Project, Transco will access the ROW primarily at public road crossings. In addition, Transco will construct permanent and temporary access roads to afford access to construction workspaces, taking into account safety and traffic congestion issues. Transco will contact local government authorities before specific traffic control measures or potential road closures are implemented.

A temporary increase in traffic may occur as construction workers commute to the Project sites and as equipment and materials are transported to the ROW. To minimize disruptions of traffic on local roads, large multi-lane highways will be used as much as practicable to transport heavy construction equipment and large deliveries of materials to the Project sites. Commuting construction workers will generate increased traffic volume in the Project area. However, most construction workers will commute during off-peak hours. If necessary, Transco will provide shuttle bus service from various off-site locations. When shuttle bus transportation is not

practicable, workers will be encouraged to carpool to further reduce any potential effects on traffic flow or volume.

Once construction is complete, Transco's construction contractors will repair any damage to the roads that occurred as a direct result of pipeline construction, and roadways will be returned to their preconstruction condition. Negligible effects on traffic volume, traffic flow, rail service, or rail transport are expected to occur during operation of the Project.

Offshore Traffic

Offshore pipeline construction may impact non-Project vessel traffic either by increasing the general level of traffic in the Project area waters or by discouraging transits through the portions of the offshore workspace where construction is underway. Installation of the Raritan Bay Loop will necessitate the use of several types of vessels, which can be characterized as either construction vessels (e.g., pipelay barges) or support vessels (e.g., tugs). During the construction period, there will be an average of approximately 20 active vessels, and the maximum number of vessels will remain below 40.

The presence of construction and support vessels will temporarily increase vessel traffic in Raritan Bay, Lower New York Bay, and the adjacent area of the Atlantic Ocean coincident with active construction areas in the workspace. In addition, traffic will increase temporarily in Arthur Kill and Kill Van Kull and the Upper New York Bay, as construction and support vessels navigate from the C&ME facility in Elizabeth, New Jersey, to destinations within the workspace. Approximately 40% of these vessels will use Arthur Kill and 60% will use Kill Van Kull. However, the construction and support vessels will constitute a negligible and temporary increase in the number of vessels currently operating in the busy New York–New Jersey Harbor waterbodies and adjacent bays.

Consistent with Transco's Offshore Safety Measures, included with Transco's application for a USACE permit, transits through specific portions of the offshore temporary workspace where construction is underway will be discouraged at various times during the construction period, and non-Project vessels will be directed to alternate routes and through-crossings. However, only portions of the temporary workspace will be undergoing construction at any given time during the construction period. Thus, Transco proposes to employ 24-hour picket boats and tug boats, as necessary, along those active workspaces only, to discourage non-Project vessels from entering and to encourage them to use alternate routes. At night, the lighted perimeter buoys will clearly delineate the Project safety zone to alert any non-Project vessels that may be in the area.

The temporary fixed platform will be lighted appropriately to maintain safe navigation around it. As a potential obstruction to vessel traffic, the fixed platform will be roughly analogous to the lift boat, which was previously proposed to support Morgan Shore HDD construction. Picket boats will be present during construction to direct traffic away from active construction zones and associated structures, including the platform. Given the impermanence of the fixed platform, and mitigation measures requiring other vessels to be alerted of the presence of the fixed platform, the offshore platform impact on vessel traffic will be negligible. As stated, several mitigation measures will be utilized to minimize disruptions to navigation, including regularly updated local Notice to Mariners, marking and lighting of active construction zones, and picket boats directing non-Project-related vessel traffic. Given these measures and the brief duration of construction, impacts on vessel traffic from the surface tow will not be significant.

Traffic through Ambrose Channel, a high-use transit route into the Port of New York and New Jersey, will remain uninterrupted because Transco will use the HDD method to install the pipeline beneath the channel. Transco will closely coordinate with the USCG Waterways Management Coordinator to schedule construction across this channel and will publish construction times and locations in the local Notice to Mariners in advance of and throughout construction.

Leading up to and throughout the construction period, Transco will maintain regular communication with the USCG Waterways Management Coordinator and circulate information about work schedules and locations through the local Notice to Mariners, local newspapers, and posted notices in local marinas in and near the Project area. These measures will manage potential interference to transit times and routes during the temporary construction period so that construction impacts on vessel transits in the affected waterways will be negligible. Through consultation with the New Jersey Department of Transportation Office of Maritime Resources, Transco has identified stakeholders to include in outreach efforts relating to construction at the Morgan Shore Approach.

During operation, no effects on commercial shipping are anticipated. No transit restrictions will be enacted over the operational ROW associated with the pipeline, nor will Project-related vessels be required during routine maintenance inspections.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Traffic Rule.

7:7-16.14 Solid and hazardous waste

Transco will manage any onshore solid or hazardous waste according to the Transco Plan. Additionally, Transco has developed a Spill Plan that describes measures that will be implemented by Transco personnel and contractors to prevent and, if necessary, control any inadvertent spill of hazardous materials that could affect the aquatic environment. The Transco Spill Plan is included with Transco's application for a USACE permit and will be updated with site-specific information before construction activities begin. After backfilling, Transco will properly dispose of any trash and debris remaining in the onshore workspaces. An incident report will be prepared for hazardous waste releases and submitted as soon as possible to applicable agencies, including the NJDEP.

Operational waste such as bilge and ballast waters, trash and debris, and sanitary and domestic waste will be generated by vessels associated with the Project. Project vessels will comply with all USCG requirements for the handling of marine debris and liquid wastes (e.g., MARPOL, Annex V, Pub. L. 100−220 (101 Stat. 1458)). No untreated sewage will be discharged from the Project's offshore work vessels. General trash will not be released into Project workspaces or overboard from work vessels. Large vessels (longer than 79 feet) would adhere to the provisions of the EPA Vessel General Permit for Discharges Incidental to the Normal Operation of Vessels, which specifies vessel effluent limits. All vessels associated with the Project will also comply with USCG requirements for the prevention and control of oil and fuel spills (MARPOL, Annex I, Pub. L. 96-478 (94 Stat. 2297)). Precautions such as continual monitoring of fuel transfer and use of spill kits will be employed. Disposal of any potential hazardous materials will also be

conducted in accordance with the Transco Spill Plan.

Consistency Finding: Considering the statements above, Transco concludes that the Project complies with the Solid and Hazardous Waste Rule.

F. MITIGATION

7:7-17.2 General mitigation requirements

As described above under N.J.A.C 7:7 16.3, Transco has selected construction techniques and incorporated BMPs to reduce turbidity resulting from offshore construction in New Jersey waters. Transco recognizes that the installation of the pipeline in Raritan Bay and Atlantic Ocean will result in temporary impacts to shellfish species within the bay, and to surf clam habitat areas near the mouth of the bay and in the Atlantic Ocean proper, where bait clam harvest is allowed under special permit to harvest in Prohibited waters. However, some Project impacts may result in mitigation for lost and impacted resources, and compensation may be required. Appropriate mitigation will be provided for unavoidable adverse impacts, such as impacts to shellfish beds or wetlands, pending further consultation with the NJDEP.

Consistency Finding: Considering the statements above, Transco concludes that the Project will comply with the rules pertaining to mitigation.

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