

Article VII Application for a Certificate of Environmental Compatibility and Public Need

Pipeline E37 Reliability and Resiliency Project

Towns of Bethlehem, East Greenbush, and North Greenbush

Rensselaer and Albany Counties, New York

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ACRONYMS

<u>Abbreviation</u>	<u>Meaning</u>
APE	Area of Potential Effect
ASME	American Society of Mechanical Engineers
BCA	Bird Conservation Area
CRIS	Cultural Resources Investigation System
CRM	Cultural Resources Management
EM&CS&P	Environmental Management and Construction Standards and Practices

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ECL	Environmental Conservation Law
EI	Environmental Inspector
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
ESC	Erosion and Sediment Controls
FEMA	Federal Emergency Management Agency
GIS	Geographic Information Systems
HASP	Health and Safety Plan
HDD	Horizontal Directional Drill
IBA	Important Bird Areas
IPAC	Information, Planning, and Consultation System
ISCP	Invasive Species Control Plan
JAB	Jack-and-Bore
kV	Kilovolt
LOD	Limits of Disturbance
MAOP	Maximum Allowable Operating Pressure
NWI	National Wetland Inventory
NRCS	Natural Resource Conservation Survey
NYS	New York State
NYS/DAM	New York State Department of Agriculture and Markets
NYS/DEC	New York State Department of Environmental Conservation
NYS/DOT	New York State Department of Transportation
NYS/DPS	New York State Department of Public Service
NYS/M	New York State Museum
NYS/OPRHP	New York State Office of Parks, Recreation and Historic Preservation
NYS/ORPTS	New York State Office of Real Property Tax Service
PHSMA	Pipeline and Hazardous Materials Safety Administration
PRISM	Partnership for Regional Invasive Species Management
PSC	Public Service Commission
PSEG	Public Service Electric and Gas
PSI	Pounds Per Square Inch
PSIG	Pound-Force Per Square Inch Gauge
PSL	Public Service Law
ROW	Right-Of-Way
SASS	Scenic Area of Statewide Significance
SPDES	State Pollutant Discharge Elimination System
S/NRHP	State/National Register of Historic Places
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

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1.0 PROJECT DESCRIPTION

Niagara Mohawk Power Corporation d/b/a National Grid (National Grid or the Applicant) is proposing to install approximately 7.3 miles of 16-inch diameter natural gas transmission pipeline within the Applicant's Eastern New York gas service territory in the Town of Bethlehem in Albany County, New York and the Towns of North Greenbush and East Greenbush in Rensselaer County, New York. The proposed Pipeline E37 Reliability and Resiliency Project (the Project) will begin approximately 885 feet north of the Bethlehem Gate Station on River Road in the Town of Bethlehem, and extend northeast to the Troy Gate Station located on Bloomingrove Road in the Town of North Greenbush.

The Project constitutes a major utility transmission facility pursuant to Article VII (Article VII) of the New York State Public Service Law (PSL) and requires a Certificate of Environmental Compatibility and Public Need (Certificate) from the State of New York Public Service Commission (PSC). The Project is subject to subdivision three of PSL Section 121-a of Article VII because it will be a gas transmission facility of greater than 125 pounds per square inch (PSI), will be less than 10 miles long, and will have a diameter greater than 6 inches.

1.1 PROJECT LOCATION

The Project is located entirely within the Towns of North Greenbush and East Greenbush in Rensselaer County, and the Town of Bethlehem in Albany County. It will run in a generally west to east/northeast direction, from approximately 885 feet north of the Bethlehem Gate Station located on River Road in Bethlehem, to the Troy Gate Station located on Bloomingrove Road in North Greenbush (totaling approximately 7.3 miles in length). The proposed location of the Project and Project facilities are shown on Figures 1 and 2. Plan and Profile drawings of the proposed facilities are provided in Attachment A.

National Grid proposes to maintain an existing 20 foot-wide (10 feet on each side) right-of-way (ROW) for the new gas transmission Pipeline E37. The ROW is primarily located along existing land owned by the Applicant and permanent easements on private property and road ROWs. The Project will also cross under CSX and Amtrak railroad lines and other utilities. In addition, temporary easements will be obtained for necessary construction working space, access roads, and marshalling yards. The proposed Project ROW (along with the temporary easement space), access roads, and the marshalling yards comprise what will hereafter be referred to as the "Project Area."

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The Project will predominantly parallel National Grid's Reynolds Road – Feura Bush 345 kilovolt (kV) overhead electric line #5 (Reynolds Road #5). The proposed pipeline and associated workspace will be collocated in the existing cleared corridor associated with the Reynolds Road – Feura Bush line.

The Applicant's proposed route for the Project is as follows:

The pipeline commences 885 feet north of the Bethlehem Gate Station in the Town of Bethlehem. The new Pipeline E37 will tie into Pipeline E30 in this location.

Thence, turning easterly for approximately 3,200 feet including crossing the Hudson River via Horizontal Directional Drilling (HDD) techniques and across American Oil Road via an open cut trench.

Thence, turning southerly for 250 feet, parallel to American Oil Road before continuing easterly to New York State (NYS) Route 9J (River Road), which is approximately 2,300 feet from American Oil Road.

Thence, crossing (via HDD) NYS Route 9J (River Road) to Ridge Road, which is approximately 3,450 feet between the two roads. In addition, the HDD will cross under an Amtrak railroad between these two roads, approximately 700 feet east of NYS Route 9J (River Road).

Thence, the pipeline will turn northeast for approximately 3,000 feet between Ridge Road and NYS Route 20 (Columbia Turnpike). Ridge Road will be crossed via open cut, while Worthman Lane and NYS Route 20 (Columbia Turnpike) will be crossed via HDD.

Thence, the pipeline will continue northeast crossing NYS Route 20 (Columbia Turnpike) and Stock Lane for approximately 4,500 feet. Stock Lane will be crossed with an open cut.

Thence, the pipeline will continue north crossing Old Red Mill Road, and State Route 151 for approximately 850 feet. Old Red Mill Road and State Route 151 will be crossed via HDD.

Thence, the pipeline will continue north/northeast for approximately 4,320 feet between State Route 151 (Red Mill Road) and Tempel Lane. Tempel Lane will be crossed via open cut.

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Thence, the pipeline will continue northeast between Tempel Lane and the NYS Thruway (Interstate Route 90) for approximately 1,500 feet. The NYS Thruway will be crossed via HDD.

Thence, the pipeline will continue northeast between the NYS Thruway and State Route 43 (3rd Avenue Extension) for approximately 3,050 feet. State Route 43 (3rd Avenue Extension) will be crossed via HDD.

Thence, the pipeline will continue northeast between State Route 43 (3rd Avenue Extension) and State Route 43 for approximately 2,050 feet. State Route 43 will be crossed via HDD.

Thence, the pipeline will continue northeast between State Route 43 and Washington Avenue Extension for approximately 1,800 feet. Washington Avenue Extension will be crossed via HDD.

Thence, the pipeline will continue northeast between Washington Avenue Extension and Laura Lane for approximately 500 feet.

Thence, the pipeline will continue northeast between two segments of Laura Lane for approximately 1,310 feet. The crossing of the northern portion of Laura Lane will occur via open cut.

Thence, the pipeline will continue northeast between Laura Lane and Valley View Road for approximately 1,300 feet. Valley View Road will be crossed via open cut.

Thence, the pipeline will continue northeast between Valley View Road and Greenbush Road for approximately 3,000 feet. Greenbush Road will be crossed via jack and bore.

Thence, the pipeline will continue east/northeast between Greenbush Road and the tie-in location at the Troy Gate Station for approximately 1,500 feet.

1.2 GENERAL DESCRIPTION OF PROJECT FACILITIES

In total, the new Pipeline E37 installation will be approximately 7.3 miles. The pipeline will begin approximately 885 feet north of the Bethlehem Gate Station in the Town of Bethlehem, and end at

the Troy Gate Station in North Greenbush. The Project includes the installation of the new 16-inch diameter E37 pipeline and the installation of anodes, grounding grids, charging stations, main line valves, remote blow downs, and all related appurtenances. The new pipeline will have a maximum allowable operating pressure (MAOP) of 300 pound-force per square inch gauge (PSIG). In addition, robotic launch points will be installed at each valve site location.

Table 1.1 below provides certain specific information required by Subpart 85-1 of the PSC Regulations (16 NYCRR Subpart 85-1).

Table 1.1: Project Information

Subpart of 16 NYCRR §85-1.2(a)	Project Information Required	Project Details
85-1.2(a)(1)	Construction date	National Grid anticipates beginning construction in the fall 2019, with an approximately 3-year construction timeframe. National Grid proposes to construct this Project in the following phases: <u>Phase 1</u> - Will begin fall of 2019. Construction activities during Phase I will include tree clearing, erosion and sediment controls (ESC) installation, and pipeline construction. <u>Phase 2</u> - Pipeline construction in 2020-2021 timeframe. <u>Phase 3</u> - Completion of construction and restoration in 2021 – 2022 timeframe.
85-1.2(a)(2)(i)	Pipeline length & diameter	Pipeline E37 will be approximately 7.3 miles in length. The installed pipe will have a diameter of 16-inches and a wall thickness of 0.5 inch.
85-1.2(a)(2)(ii)	Pipeline burial depth	The pipeline is proposed to be buried at a minimum depth of 36 inches including wetlands. Beneath agricultural fields, the pipeline will have a minimum depth of 48 inches, as per New York State Department of Agriculture and Markets (NYSDAM) Standards. Pipeline under roads and waterbodies will be buried at a minimum depth of 60 inches. Depth under railroads will comply with applicable design criteria. HDD depths will vary and are indicated in Attachment A (Plan and Profile Drawings). Any necessary reduction in minimum depth will be implemented according to 16 NYCRR Part 255.327.
85-1.2(a)(2)(iii)	MAOP	The MAOP of the pipeline will be 300 PSIG.
85-1.2(a)(2)(iv)	ROW width	Permanent pipeline easement ROW width will be 20 feet total; 10 feet on each side of the centerline of the new pipeline. Temporary width for the Project to accommodate construction will vary between 40 and 100 feet. Additionally,

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		several larger work spaces will be included in the Project Area to facilitate construction operations. There will also be two marshalling yards used during construction.
85-1.2(a)(2)(v)	Width of area to be cleared	There is existing cleared parallel ROWs for the multiple utilities with which the majority of the Project is collocated; therefore tree clearing will be minimal. Where tree clearing is required, the width of the clearing along the collocated; portion of the ROW will vary (maximum of 40 feet), with the exception of the work area for the HDD on the west side of the Hudson River. The width of clearing within this area will be approximately 150 feet. After construction, a 20-foot wide clear corridor centered on the pipeline will be maintained permanently and the rest will be allowed to naturally re-vegetate.
85-1.2(a)(2)(vi)	Known underground utilities crossed or paralleled	Known utilities crossed and paralleled by this Project include combined sewer system, gas, fiber optic, electric, and water lines; they will be crossed via HDD, conventional bore, and open cut. All known underground utilities are included on the Plan and Profile Drawings (Attachment A).
85-1.2(a)(2)(vii)	Name or permit # of wells connected to gas pipeline	Pipeline E37 will not connect to any gas wells.
85-1.2(a)(2)(viii)	Point where pipeline connects to another pipeline	The Project will connect to the Applicant's 12-inch nominal diameter Pipeline E20 at the Troy Gate Station and to the Applicant's 16-inch nominal diameter Pipeline E30 at Station 98+44, as shown on the Plan and Profile Drawings.
85-1.2(a)(2)(ix)	Existing or proposed access roads	See Table 1.2 below.
85-1.2(a)(2)(x)	Compressor Station	No compressor stations will be constructed as part of this Project.
85-1.2(a)(2)(xi)	Municipalities in which pipeline is located	As depicted on Figures 1 and 2, the Project Area is located within the Towns of North Greenbush and East Greenbush in Rensselaer County, and the Town of Bethlehem in Albany County.

1.3 CONSTRUCTION TECHNIQUES

The Project will be constructed with a 0.5-inch thick, 16-inch diameter coated steel pipe. In addition, ten above-ground main line valve sites with blow downs will be constructed. National Grid and/or approved contractors will design and procure all materials for the Project. The Project will be installed by National Grid and/or approved contractors, and all contractor activities will be monitored by National Grid.

All entry points to the Project Area will be from existing public roads and off-ROW access identified on the Plan and Profile Drawings and in Table 1.2 below. Access will mostly be from existing access roads constructed during the Reynolds Road to Empire #5 Article VII Project (Case # 03-T-0644). Construction vehicles and equipment will subsequently then travel down the ROW to work locations.

Access roads will be characterized as one of two types, either “construction access” or “limited use.” Construction access includes ingress and egress of all necessary construction equipment/vehicles. Limited use access typically includes ingress and egress of equipment and vehicles for forestry activities. If unforeseen circumstances arise, limited use access may be utilized as necessary.

Table 1.2: Access to the ROW

Connecting Road	Existing Conditions	Use Type
NY-144 (River Road) Off ROW	1,700' Paved/Gravel 400' Grass	Construction Access- New permanent gravel road
American Oil Road West Side x2	Ag Field	Construction Access- New Temporary Construction Entrance
American Oil Road East Side x2	Ag Field	Construction Access- New Temporary Construction Entrance
American Oil Road (East Side, off ROW)	Existing Gravel Access for Electric	Construction Access
NY-9J (River Road) West Side	Existing Gravel Access for Electric	Construction Access- Permanent Access to Valve
NY-9J (River Road) East Side	Existing Gravel Access for Electric	Limited Use
N/A - North of Amtrak	Existing Trails	Limited Use
Ridge Road #1 West Side	Maintained Electric ROW	Construction Access- New Temporary Construction Entrance
Ridge Road #2 West Side	Existing Gravel Access for Electric	Construction Access -Permanent Access to Valve
Ridge Road East Side	Existing Gravel Access for Electric	Construction Access
Worthman Lane - Off ROW	Paved Private Road to become Township	Construction Access - Gravel to widen turn
Worthman Lane - Private West Side	Existing Gravel Access for Electric	Construction Access- Temporary Construction Access
NY-9&20 (Columbia Turnpike) West Side	Existing Paved Lot	Limited Use

Connecting Road	Existing Conditions	Use Type
NY-9&20 (Columbia Turnpike) East Side	Existing Gravel Access for Electric & Quarry	Construction Access - Permanent Access to Valve
Stock Lane West Side x2	Grass	Construction Access – Temporary Construction Access
Stock Lane East Side x2	Grass	Construction Access – Temporary Construction Access
Old Red Mill Road South Side	Existing Gravel Access for Electric	Construction Access - Temporary Construction Access
Old Red Mill Road North Side	Brush	Limited Use
NY-151 (Red Mill Road) North Side	Existing Gravel Access for Electric	Construction Access – Permanent Access to Valve
Tempel Lane Off ROW (Hampton Inn)	Existing Gravel Access for Electric	Construction Access - Permanent Access to Valve
Tempel Lane South Side	Existing Gravel Access for Electric	Construction Access
Tempel Lane North Side	Existing Gravel Access for Electric	Construction Access
Temple Lane/Lisa Ave. Off ROW (Regeneron)	Existing Gravel Access for Electric	Limited Use
3rd Avenue Extension South Side x2	Existing Gravel Access for Electric	Construction Access - Permanent Access to Valve
3rd Avenue Extension North Side	Existing Gravel Access for Electric	Limited Use
NY-43 South Side	Existing Gravel Access for Electric	Limited Use
NY-43 North Side	Existing Gravel Access for Electric	Limited Use
Washington Avenue Extension South Side	Existing Paved Private Drive - Van Allen Way & Existing Gravel Access for Electric	Limited Use
Washington Avenue Extension North Side	Existing Gravel Access for Electric	Limited Use
Van Alstyne Drive x2	Grass	Construction Access - New Temporary Construction Entrance
Laura Lane (1st Crossing) South Side	Grass	Construction Access - New Temporary Construction Entrance
Laura Lane (1st Crossing) North Side	Grass	Construction Access - New Temporary Construction Entrance and Permanent Gravel Access to Valve

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Connecting Road	Existing Conditions	Use Type
Van Alstyne Drive	Existing Gravel Access for Electric	Construction Access
Laura Lane (2nd Crossing) South Side	Grass	Construction Access - New Temporary Construction Entrance
Laura Lane (2nd Crossing) North Side	Grass	Construction Access - New Temporary Construction Entrance
Laura Lane Off ROW	Existing Gravel Access for Electric	Construction Access
Valley View Boulevard South Side	Grass	Construction Access
Valley View Boulevard North Side	Grass	Construction Access
Valley View Boulevard South Side - Off ROW	Existing Gravel Access for Electric	Construction Access
Valley View Boulevard North Side - Off ROW	Existing Gravel Access for Electric	Construction Access
Avenue B	Grass & Existing Gravel Access for Electric	Construction Access
NY-4 (N Greenbush Rd) West Side	Paved	Construction Access
NY-4 (N Greenbush Rd) East Side	Paved	Construction Access
NY-4 (N Greenbush Rd) West Side - Off ROW	Existing Gravel Access for Electric	Construction Access
Bloomingrove Drive West Side x3	Existing Gravel Access for Gas	Construction Access

Within the Project Area, clearing of trees and vegetation will occur within the temporary and permanent construction easement areas. Standard forestry equipment will be utilized to remove existing vegetation from work areas and the proposed location of the pipeline trench. Trees, brush, and stumps will be either chipped and ground on-site or disposed of at an approved off-site location. Stumps will remain in place within the temporary easement of delineated wetland areas. Any off-site location proposed to be utilized for off-site tree and chip disposal will be sent to New York State Department of Public Service (NYSDPS) Staff for approval.

Open trench methods will be used for construction, except where described below. Trench excavation depth for the Project will vary based on the National Grid requirements per location type. In general, based on requirements for 16-inch pipe, the excavations will be approximately 52-60 inches deep to

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allow for 36 inches of soil cover. Under roadways, excavations will be approximately 76-84 inches deep. Excavations at the tie-in locations will be deeper to allow for welding. Pipelines beneath agricultural fields require a minimum of 48 inches of cover, and consequently the excavations in such areas will be approximately 64-72 inches deep.

Topsoil will be segregated and windrowed when installing the new pipeline within wetland and agricultural areas, and will be reused for restoration in those areas. Subsoil will be either removed and replaced or stored on mats within emergent wetland when working in wetland areas. No subsoil will be stored within any forested or scrub-shrub wetland areas. Excavated soils will be kept as close to the trench as possible given safety requirements; excavated material which is suitable for use as padding and backfill will be placed back into the trench.

National Grid will be working within an area of residual coal ash on Beacon Island near the western terminus of the Project, for construction associated with the HDD and trenching of the pipeline. The coal ash will be excavated from the bore pit and associated trench, and stockpiled immediately adjacent to the excavated areas. Following pipe installation, the excavated material will be replaced into the excavation.

When necessary, trenchless construction methods will be utilized. Trenchless methods (including HDDs and a conventional bore) will be used for crossing under several roads and the Hudson River, detailed in Table 1.3 below. Utilizing trenchless technology equipment, a path is drilled through the soil. Subsequently, the gas pipe is pulled through the void which has been drilled. Specific to work occurring adjacent to the Sterling Drug Site 3, all excess material generated during construction will be handled in accordance with the applicable regulations and hauled to an approved offsite facility.

Table 1.3: Trenchless Crossing Locations

Trenchless Method	Length (feet)	Roads and Railroads Avoiding	Resources Avoiding
Hudson River HDD	2,517	N/A	Hudson River or S-20 W-MJR-16
CSX/Eastman Kodak HDD	1,202	CSX Railroad	W-29 (Papscanee Creek) W-33
NY 9J HDD	2,647	NY-9J (River Road) Amtrak	W-33 W-MJR-7

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Trenchless Method	Length (feet)	Roads and Railroads Avoiding	Resources Avoiding
Columbia Tpk HDD	1,622	Worthman Lane NY-9&20 (Columbia Tpk)	W-MJR-5 W-MJR-4 W-MJR-3 W-MJR-2 (Pond) W-MJR-10
Quarry North HDD	1,976	None	None
Red Mill Rd HDD	1,155	Old Red Mill Road NY-151 (Red Mill Road)	S-22 S-21
I-90 HDD	951	I-90	W-18 W-17
3rd Ave / Washington Ave HDD	4,355	3rd Avenue Extension NY-43 Van Allen Way-Private Washington Avenue	W-14 S-14 S-10 S-9 W-13 S-8 W-12
Route 4 (Conventional Bore)	170	NY-4 (N Greenbush Road)	None

Main line valve sites and associated blowdowns will be constructed at locations identified in Table 1.4 below. As part of the construction of Pipeline E37, tie-in valves will be installed on the other existing pipelines (National Grid Pipelines E20 and E30) as part of the Pipeline E37 tie-in.

Table 1.4: Main Line Valve Locations

Valve ID	Station No.	Latitude	Longitude
V37-01	102+70	42.599447	-73.765151
V37-02	149+23	42.600696	-73.749079
V37-03	191+20	42.603962	-73.734145
V37-04	232+62	42.611227	-73.722401
V37-05	284+45	42.622565	-73.712324
V37-06	309+41	42.628909	-73.709882
V37-07	359+15	42.642165	-73.705526
V37-08	411+73	42.656048	-73.700561

V37-09	445+35	42.664222	-73.694991
V37-10	481+85	42.671497	-73.687452

Charging stations will be constructed at locations identified in Table 1.5 below.

Table 1.5: Charging Stations

Station ID	Station No.	Latitude	Longitude
CS37-01	132+00	42.601727	-73.754715
CS37-02	175+91	42.602814	-73.7396
CS37-03	208+08	42.606792	-73.72926
CS37-04	255+29	42.615552	-73.71635
CS37-05	269+65	42.618535	-73.71303
CS37-06	295+98	42.625715	-73.71195
CS37-07	324+58	42.632948	-73.70849
CS37-08	343+27	42.637928	-73.70683
CS37-09	429+75	42.660383	-73.69756
CS37-10	466+99	42.669576	-73.69155

Agricultural fields crossed by the Project are all located between the eastern shore of the Hudson River and River Road (NY-9J). During construction, timber matting and/or topsoil stripping and windrowing will be utilized to preserve the existing agricultural soils within work areas of the Project Area. Topsoil will be stripped over the proposed pipeline ditch. Excavated subsoil will be separated from topsoil, so no soil mixing occurs, and replaced following the excavation. Following completion of construction activities within the agricultural fields, stripped topsoil will be decompacted and restored.

Standard equipment will be used for the excavation and pipeline installation. In the event that it is necessary to travel over active transmission gas pipeline mains, construction equipment will be evaluated so as to not exceed the allowable stress on live mains for active pipelines. If equipment is deemed too heavy to travel over the existing pipelines, the equipment will either be restricted from

traversing the pipelines, or adequate protection in the form of air bridges (construction mats with an air gap under the mats and over the pipeline), will be used to cross the pipelines. For pipe handling, the contractors will use a variety of equipment including excavators, cranes, 4x4 tractors with job specific trailers, and side booms. HDDs on the Project will require a drill rig, reclaimers, pumps, and vacuum trucks.

Trucks for moving soils, workers, supplies, and equipment will also be used throughout the Project Area. Multiple means of ground protection, such as matting and temporary gravel, will be used to minimize the impact of vehicular and equipment traffic in the Project Area. Contractors will not use matted travel lanes in upland areas unless saturated conditions occur or if potential compliance issues with the Stormwater Pollution Prevention Plan (SWPPP) and Water Quality Certification occur. However, as stated previously, matting may be used when crossing agricultural areas. If matting is not used within agricultural fields, the topsoil will be stripped and windrowed. Timber mats will be installed at any wetland crossings.

Marshalling yards for the Project will be located at Best Road and at Tempel Lane, and will be approximately 1.23 and 2.96 acres, respectively. Both marshalling yards are already cleared, and will require minimal improvements. The primary marshalling yard will be at Tempel Lane, which will contain construction trailers, along with equipment and materials storage. Best Road will be used as a secondary marshalling yard for equipment and materials storage, vehicular parking, etc.

Project Contractors, under the direct supervision of an environmental inspector (EI), will ensure that the Project is constructed in compliance with all Article VII Certificate conditions, applicable EM&CS&P requirements and other permit conditions. The EI will be on-site on a full-time basis during construction and restoration activities. The EI will observe, document and report on the compliance status of all construction and restoration activities.

The pipe, trench, trucks, and other equipment will be located within any acquired permanent and/or temporary easements. As stated above, approval from NYSDPS Staff for off-site disposal areas for trees and chips will be acquired prior to construction. During final restoration, most cleared disturbed areas will be restored to pre-construction grade, unless identified otherwise on the construction

drawings. All paved and graveled areas will be restored in kind. Once complete, direct tie-in welds will connect the new section of pipe to the existing pipelines.

The entire pipeline will be hydrostatically tested after installation. Water for the hydrostatic testing will be obtained from municipal fire hydrants or hauled in from an outside source. Discharge of hydrostatic test water will be at a controlled rate, within a well vegetated upland area. The EI will regularly monitor the water discharge.

1.4 SAFETY

The proposed pipeline will be designed, constructed, operated, and maintained in compliance with National Grid Policies and Procedures.

All work will be performed in accordance with NYCRR Title 16 Part 753 for proper excavation and mark-out of subsurface facilities. In compliance with New York State Industrial Code Rule 53, contractors are required to have all utilities within the proposed construction areas identified and marked at least 48 hours prior to beginning subsurface construction. Prior to excavation, a survey of surface and subsurface facilities will be performed. All known utilities and facilities—including telephone, electric, gas, storm drain, sewer, traffic control, and water lines—will be included on the Plan and Profile Drawings. In the event that an unknown utility is encountered during construction, contractors will be directed to notify the appropriate agencies. The known underground utilities that the Project will cross and parallel are included on the Plan and Profile Drawings (Attachment A).

Due to the presence of overhead electrical transmission facilities in the Project Area, additional safety-related construction practices will be implemented. Installation of “goal posts,” proper signage posted periodically along the electric ROW warning of the potential overhead electric hazards, and on-site spotters will be employed when construction activities are occurring around each electrical transmission line. In addition, National Grid will require construction personnel to attend training on electrical hazards before working on the Project.

Safety practices will focus on worker and public safety, particularly as they relate to excavation near existing utilities, heavy equipment operation, and work in high traffic areas. Contractors will follow standard industry health and safety practices. All excavation and construction work will be performed

in accordance with National Grid's Health and Safety Plan (HASP), modified as necessary for this Project. With the above-mentioned safety procedures in place, the construction, operation and maintenance of the Project will not present an undue hazard to persons or property along the proposed route.

2.0 PROJECT NEED

The Pipeline E37 Reliability and Resiliency Project involves the installation of approximately 7.3 miles of 16-inch, 300 PSIG gas transmission main (normally operating at 225 PSIG) from the south end of the Albany transmission loop (Albany Loop) in Bethlehem to the northeast end in Troy.

2.1 PROJECT PURPOSE

As part of the Company's system reliability program, National Grid evaluates points on the system (*e.g.*, gate stations, regulator stations, large diameter mains) to determine the potential consequences of an interruption to the system on a typical winter day (*i.e.*, an average daily temperature of 5°F). Once these risks are determined, projects are identified to reduce those risks to maintain safe and reliable service to our customers.

The Albany Loop, which is currently not closed and is shaped like a horse shoe, is an integral component in National Grid's provision of retail gas service to approximately 139,000 customers in its Eastern region. The Project will close the Albany Loop, thus improving system reliability to existing customers as well as allowing for continued system growth. Closing the Albany Loop will enhance the Company's ability to respond to an interruption in supply at the Troy city gate, thereby increasing the reliability of gas supply into the northeastern part of National Grid's system, especially in the Albany area.

The northern part of the Albany Loop area is currently supplied by Dominion Energy Transmission Inc. (DETI) from the Troy city gate. If DETI were to interrupt supply to this gate on a day with a 24-hour average temperature of 5°F, as many as 50,000 National Grid customers could lose gas service. If DETI were to interrupt on a design day (24-hour average temperature of negative 10°F), an even greater number of customers could lose service. The Project would reduce the risk of customer interruption and increase system reliability, allowing the Company to maintain service notwithstanding a DETI interruption. The Commission has stated that this Project would "modernize Niagara Mohawk's eastern service territory."¹

¹ Cases 17-E-0238, *et al.* ("2017 NMPC Rate Case"), Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans, March 15, 2018 ("2017 NMPC Rate Case Order"), p. 18.

By enabling procurement of gas supply from a different pipeline, the Project will also reduce the impact of any interruption of supply on DETI's system. The part of National Grid's system that services the capital region is capacity-constrained during cold weather. The transmission system is supplied via the "East Gate," which collectively refers to nine² DETI city gates and the Tennessee Gas Pipeline (TGP) city gate at Bethlehem, at the southern end of the Albany transmission system. The majority of the gas coming into the East Gate is supplied from DETI. The Albany Loop receives gas at DETI's Troy, Wolf Road and Normanskill gates, which comprise a subset of DETI's East Gate, and TGP's Bethlehem gate.

DETI cannot increase deliveries to the East Gate without significant upgrades. TGP's Bethlehem city gate is about 3.8 miles southeast of Normanskill, and as currently configured, gas can only flow from TGP toward Normanskill. As such, TGP flow into the Albany Loop is limited by what flows through Normanskill, National Grid's system load, and TGP system conditions to approximately 60 Mdt on a design day (75 Heating Degree Days). This may leave the overall system supply constrained, especially during the peak hour on a design day. Ultimately, a moratorium declaration on firm sales in the capital region of the Company's system will be needed if the constraint is not addressed. These constraints impact the Company's ability to serve existing firm and interruptible gas customers and expand gas service in the area.

The Project will help mitigate this East Gate supply constraint. Closing the Albany Loop will allow gas to move in two directions, enabling more gas to flow through TGP into the Company's East Gate by increasing the take away capacity from the TGP Bethlehem city gate. It will allow an additional 40,000 Dt/day to be brought in at that city gate under design conditions to fully maximize utilization of the existing gate; this translates to up to 2000 Dt/hr of hourly capacity relief capability. This will mitigate an on-system problem or an upstream supply problem. In its direct testimony in the 2017 NMPC Rate Case, DPS Staff based its support for the Project on this reason and stated that "the [P]roject is important and necessary."

² Brookview, Burdeck, East Greenbush, Fort Orange, Normanskill, Putnam, Riverside, Troy, and Wolf Road.

The parties to the Joint Proposal in the 2017 NMPC Rate Case acknowledged the importance of alleviating capacity constraints and allowing greater quantities to flow through TGP into the East Gate in their support for the new National Grid transporter nomination procedures recommended in the Joint Proposal.³ These new procedures, which commenced in November 2018, are triggered when average daily temperatures are forecast to fall below a temperature trigger, preliminarily estimated to be 15°F. At such times, each East Gate Daily Balanced gas transportation customer will be required to deliver a specified percentage of its nominations to the Company's system on TGP, and for Monthly Balanced Transportation Customers, the Company will release its TGP capacity to all Energy Service Companies participating in the mandatory capacity/Customer Choice program. In the same vein, the Joint Proposal recommended that the Commission authorize the Project's costs.

Moreover, without the Project the Company will no longer be able to support new gas connections in its East Gate service territory. With the Project in service, commercial and industrial businesses and other energy consumers will be able to use clean, efficient natural gas rather than less environmentally friendly fuels such as heating oil, and the typically lower cost of natural gas compared to oil will support economic development.

For this region, which includes the Albany area, the Company forecasts its peak hour growing by 3,080 dth/hour over the ten-year period (2017/18 to 2027/28), from 26,579 dth/hour to 29,659 dth/hour. This is an average annual growth of 308 dth/hour per year, or 1.1 percent per year, for the combined load of its Primary Firm Load Sendout plus its Daily Balanced Transportation customers. Thus a market for this gas exists. In addition, National Grid believes that sufficient gas supplies will be available to serve existing and potential consumers during the first 10 years of the Project's operation.

2.2 ALTERNATIVES TO THE PROJECT

Alternative 1: New Pipeline Lateral

Contract with one of the upstream interstate pipelines to build a lateral to the northern end of the Albany Loop near the DETI Troy city gate. While this would provide additional supply to help with the

³ See Section 15.2.2 and Appendix 11 of the January 19, 2018 Joint Proposal in the 2017 NMPC Rate Case. The Commission approved the Joint Proposal in the 2017 NMPC Rate Case Order.

East Gate constraint, it is not a comprehensive solution because it would not allow the Company the additional flexibility to move gas at the existing gates.

Alternative 2: Non Pipeline Alternatives (Demand Response and CNG)

One possible non-pipeline alternative is a demand response project, wherein the company seeks to reduce the system demand during the peak usage period to a level that is closer to the average usage period. This approach is intended to help attenuate later growth in peak demand and constraints on the system by having equipment shut down during peak demand periods and operate at a higher rate during off peak periods. It does not reduce the total demand on the system over the course of a given day. An example of this would be heating a building up before and after a peak demand period so that it does not need to be heated as much during the peak period.

A demand response project was approved in the 2017 NMPC Rate Case. The project is targeting a 1% reduction in peak hourly demand on the East Gate. The project approval allows for the first customers to participate in the 2019/2020 heating season. It will be a voluntary program targeting large commercial firm gas customers served through the East Gate and will be largely modeled after the successful downstate pilot now entering its 2nd year. However, an initial review of the potential participating customers shows very different types of customers with more commercial and industrial occupancies as opposed to office and residential occupancies downstate. Hence, it is not yet possible to assess the potential of this program.

Applying demand response programs to the issues addressed by the Project shows demand response to be mismatched to the need, as it would not address the system reliability concerns and supply diversity issues that the Project will help to resolve, nor does it address incremental daily supply needs under any circumstances. Lastly, the company cannot delay infrastructure based on a voluntary program since firm service must be maintained if volunteers elect to use gas during the peak period rather than flatten their demand profile.

The Company also evaluated another non-pipeline alternative in the form of a portable CNG facility for numerous locations in and around Albany. National Grid may utilize this as a short term solution until the Albany Loop closure is completed; however, the output of these facilities can neither address the reliability concerns, nor meet the projected long term growth needs of this region. Approximately

134 CNG trailers (typical usable capacity 300 dth) would be required on a design day to transport the equivalent additional gas supply provided by this project. A substantial number of trucks would be required for warmer-than-design days as well. Large scale CNG trucking includes a logistical risk that exceeds the pipeline option, as the highest demand for deployment would occur during the harshest part of the winter, when adverse weather conditions could increase the potential for roadway incidents or create impediments to delivery. This risk would exist for many days during any given winter, and increases with every additional trailer that is required.

The 2017 NMPC Rate Case initiated a non-pipeline incentive collaborative. That collaborative is proceeding according to plan, and its deadline has recently been approved for an extension at the request of parties to the collaborative so it can be further developed and refined. Additional development work regarding the processes and procedures, including the proposed Benefit to Cost model, is still in progress. This program is being developed in a manner similar to the non-wires alternatives program, and when implemented, will ensure market viable alternatives are fully considered in order to manage future growth in peak demand.

Alternative 3: Do Nothing

If supply issues arise at DETI's Troy city gate or an upstream event occurs on the DETI pipeline feeding the Troy gate, up to 50,000 customers may lose gas service. Such a substantial outage can cost up to \$50 million in restoration costs, including claims for property damage, lost business, etc. Also, without this project, the Company would greatly limit its upstream supply options to meet long term growth and result in a sales moratorium for the region. Without projects that address the supply constraints on the northeastern part of the Company's system, the Company's future gas sales will be hindered and the duration and frequency of service interruptions may increase.

Studies/References That Support the Program:

Studies are run on the Company's network models using Synergi, which is industry standard software. These models are loaded with the forecast provided by the Analytics, Modeling, and Forecasting (AMF) department. The Synergi computer models used for the hydraulic analysis of the distribution network are validated on an annual basis. Field data from one of the coldest days of the year along with the highest distribution send-out is collected from across the network. The computer model is configured to match the system load experienced on that day and then calculated pressures are

compared with field charts and SCADA data. Discrepancies are investigated to determine where the model might require updating and/or where field investigation is warranted. Conditions such as broken valves and mains filled with debris identified through the investigation process are remediated. For the 2017-2018 verification analysis, there was excellent correlation on most pressure systems between model-predicted pressures and actual recorded pressures, with 93.4% of the verification points within acceptable tolerance. This shows that the model is reasonably accurate in predicting future problem areas.

3.0 EXISTING CONDITIONS

This section describes the specific relationship of the Project to certain existing land features. Existing land uses in the vicinity of the Project Area generally include residential, commercial, public services, vacant, industrial, and agricultural land uses (Figure 3). The Project Area will consist of National Grid fee-owned lands, permanent and temporary easements on private property, and public road ROWs.

3.1 LAND USES

This section provides a description of the existing and officially approved planned residential, commercial, industrial, institutional, recreational, and agricultural land uses within the Project Area, in accordance with the requirements of 16 NYCRR §85-1.3(a)(2)(i).

Land use classifications were derived from the Geographic Information Systems (GIS) Albany County Parcel Data Viewer and GIS Rensselaer County Tax Parcel Boundary Lines and Attributes Data Set. Each parcel included in the analysis has an official New York State Office of Real Property Tax Services (NYSORPTS) property classification code. These codes were used to derive six land use types within the Project Area: Agricultural; Vacant; Residential; Commercial; Industrial; and Public Service and Utility. The parcel data obtained from the County did not include road corridors, which were added as Public Service and Utility, and coincide with the real property classification codes.

No institutional land uses are found within the Project Area. Table 3.1 identifies land use types along the Project route by mile segment from River Road in the Town of Bethlehem, to Bloomingrove Drive in the Town of North Greenbush.

Table 3.1: Existing Land Uses Crossed by the Project

Mile Segment	Land Use Type	Length Crossed by Pipeline (approx. feet)	Maximum Area within Project Area (approx. square feet)
0-1	Agricultural	1,130	328,105
0-1	Vacant	2,250	191,070
0-1	Public Service and Utility	105	2,095
1-2	Agricultural	0	15,120
1-2	Vacant	4,875	463,290

Mile Segment	Land Use Type	Length Crossed by Pipeline (approx. feet)	Maximum Area within Project Area (approx. square feet)
1-2	Public Service and Utility	230	9,725
2-3	Agricultural	0	13,385
2-3	Residential	50	31,250
2-3	Vacant	5,125	420,280
2-3	Commercial	0	14,485
2-3	Industrial	0	6,180
3-4	Vacant	5,085	680,485
4-5	Vacant	4,385	538,870
5-6	Vacant	4,700	380,070
5-6	Commercial	0	5,085
6-7	Vacant	2,740	290,400
6-7	Public Service and Utility	2,395	237,535
7-Project End	Public Services and Utility	755	112,355
7-Project End	Residential	770	69,890

3.1.1 RESIDENTIAL LAND USES

3.1.1.1 Existing Residential Land Uses

According to the NYSORPTS, category 200 refers to residential land which includes property that is used for human habitation. Living accommodation such as hotels, motels, and apartments are not included in this category. Most of the residential properties are located within the last 0.5 mile of the Project in the Town of North Greenbush. Rural residences occur primarily along the streets adjacent to the pipeline route, such as River Road and North Greenbush Road. The Project crosses approximately 820 feet of residential land.

3.1.1.2 Officially-Approved Residential Land Uses

Current information regarding approved residential land uses was obtained from the Town of Bethlehem Planning Board, the Town of East Greenbush Planning Board and the Town of North Greenbush Planning Board. No officially-approved residential land uses (i.e., those pending construction) are located along, or in close proximity to, the Project Area.

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3.1.2 COMMUNITY SERVICES AND LAND USES

3.1.2.1 Existing Community Services Land Uses

According to the NYSORPTS, category 600 refers to community services land uses which include properties used for the well-being of the community. The Project Area does not cross this land use type. Therefore, no active community service land will be impacted by construction of the Project.

3.1.2.1 Officially-Approved Community Services Land Uses

Current information regarding approved community services land use was obtained from the Town of Bethlehem Planning Board, the Town of East Greenbush Planning Board and the Town of North Greenbush Planning Board. No officially-approved community service land uses (i.e., those pending construction) are located along, or in close proximity to, the Project Area.

3.1.3 Public Services and Utility Land Uses

3.1.2.1 Existing Public Services and Utility Land Uses

According to the NYSORPTS, category 800 refers to public services and utility land uses which include properties used to provide services to the general public. Within the Project Area, public services and utilities include land used by National Grid and Dominion pipelines, public roads, and utility ROWs. Approximately 3,380 feet of the Project crosses land classified as public services and utility.

3.1.2.2 Officially-Approved Public Services and Utility Land Uses

Current information regarding approved public services and utility land uses was obtained from the Town of Bethlehem Planning Board, the Town of East Greenbush Planning Board and the Town of North Greenbush Planning Board. No officially-approved, but as of yet undeveloped, public service and utility land uses are located within or in close proximity to the Project Area.

3.1.4 Vacant Land Uses

3.1.4.1 Existing Vacant Land Uses

According to the NYSORPTS, category 300 refers to vacant land for property that is not in use, is in temporary use, or lacks permanent improvement. Within the Project Area, vacant land uses include residential vacant land, rural vacant lots of 10 acres or less, rural, residential vacant land over 10 acres, other rural vacant lands, vacant land located in commercial areas, vacant land located in industrial areas, and public utility vacant land. The Project crosses approximately 29,160 feet of vacant land. The largest area of vacant land along the route of the Project is vacant land located in commercial areas located in the central portion of the Project Area, south of Rensselaer County Veterans Memorial Highway.

3.1.4.2 Officially-Approved Vacant Land Uses

Current information regarding vacant land uses was obtained from the Town of Bethlehem Planning Board, the Town of East Greenbush Planning Board and the Town of North Greenbush Planning Board. No proposed vacant land uses are located within or in close proximity to the Project Area.

3.1.5 Recreation and Entertainment Land Uses

3.1.5.1 Existing Recreation and Entertainment Land Uses

According to the NYSORPTS, category 500 refers to recreation and entertainment land uses for property used by groups for recreation, amusement, or entertainment. The Project Area does not cross this land use type. Therefore, no active recreation and entertainment land will be impacted by construction of the Project.

3.1.5.2 Officially-Approved Recreation and Entertainment Land Uses

Current information regarding recreation and entertainment land uses was obtained from the Town of Bethlehem Planning Board, the Town of East Greenbush Planning Board and the Town of North Greenbush Planning Board. No proposed recreation and entertainment land uses are located within or in close proximity to the Project Area.

3.1.6 Agricultural Land Uses

3.1.6.1 Existing Agricultural Land Uses

According to the NYSORPTS, category 100 refers to agricultural land uses which includes property used for the production of crops or livestock. Within the Project Area, agricultural land uses include agricultural vacant land (productive) and field crops. The Project crosses approximately 1,130 feet of agricultural land. There are two tree farms located to the east and west of the Conrail tracks between American Oil Road and River Road.

3.1.6.2 Officially-Approved Agricultural Land Uses

Current information regarding active agricultural land uses was obtained from the Town of Bethlehem Planning Board, the Town of East Greenbush Planning Board and the Town of North Greenbush Planning Board. No proposed agricultural land uses are located within or in close proximity to the Project Area.

3.1.7 Commercial Land Uses

3.1.7.1 Existing Commercial Land Uses

According to the NYSORPTS, category 400 refers to commercial land uses which includes property used for the sale of goods and/or services. Within the Project Area, commercial land uses include an auto body, tire, and other related auto sales shop; a trucking terminal; a minimart; and a professional building. The Project Area has approximately 19,570 ft² of commercial land. The commercial land is off of Columbia Turnpike and 3rd Avenue Extension.

3.1.7.2 Officially-Approved Commercial Land Uses

Current information regarding commercial land uses was obtained from the Town of Bethlehem Planning Board, the Town of East Greenbush Planning Board and the Town of North Greenbush Planning Board. No proposed commercial land uses are located within or in close proximity to the Project Area.

3.1.8 Industrial Land Uses

3.1.8.1 Existing Industrial Land Uses

According to the NYSORPTS, category 700 refers to industrial land which includes property used for the production and fabrication of durable and nondurable man-made goods. The Project Area has approximately 6,180 ft² of industrial land. Within the Project Area, industrial land use is a mining and quarrying facility. The Project will cross an area that is being actively mined for sand. This area is located to the west of Columbia Turnpike in Rensselaer County, between approximate stations 238+00 to 246+00 on the Plan and Profile Drawings (see Attachment A). This area is permitted under NYSDEC Mining Permit Number DEC #4-3824-00018/00001 authorized on May 30, 2017 and valid to May 7, 2022. The name on this permit is the Corellis East Greenbush Sand Pit.

3.1.8.2 Officially-Approved Industrial Land Uses

Current information regarding industrial land uses was obtained from the Town of Bethlehem Planning Board, the Town of East Greenbush Planning Board and the Town of North Greenbush Planning Board. No proposed industrial land uses are located within or in close proximity to the Project Area.

3.2 ECOSYSTEM RESOURCES

This section provides a description of the ecosystem resources, including highly erodible soils; wetlands; floodplains; streams, springs; wells; unique old-growth forests; active sugarbushes; productive timber stands; trees listed in the Registry of Big Trees in New York State; habitats of rare, threatened, and endangered species; and invasive species within and adjacent to the Project Area, in accordance with the requirements of 16 NYCRR §85-1.3(a)(2)(i).

Information on ecosystem resources was obtained through a combination of publicly available information, agency consultations, and data collected through field surveys conducted by TRC Environmental Corporation, Inc. (TRC). Initial data were obtained from federal and state agencies through requests for information. This material, combined with review of available on-line resources, was consulted prior to initiating the field surveys. Available information included the following:

- U.S. Geological Survey (USGS) topographic maps.

- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps.
- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) soils mapping.
- New York State Department of Environmental Conservation (NYSDEC) Freshwater Wetland maps.
- Federal Emergency Management Agency (FEMA) National Flood Hazard data.

The area evaluated during field studies is shown in Figure 2.

3.2.1 HIGHLY ERODIBLE SOILS

The USDA NRCS Web Soil Survey (2017) was used to identify the soil map units that are located within the Project Area. This data was reviewed to identify the soil type(s), slope(s), and limitations with respect to soil erodibility along the route of the pipeline. A total of 32 map units were identified with information including the drainage class and farmland classification. The Erosion Hazard (Off Road, Off Trail) rating was used to indicate the hazard of soil loss after disturbance activities that expose the soil surface.

All soils within the Project Area were described as “slight,” “moderate,” or “severe.” From the description of the ratings on the Web Soil Survey, a rating of “slight” indicates that erosion is unlikely under ordinary climatic conditions; “moderate” indicates that some erosion is likely and that erosion-control measures may be needed; and “severe” indicates that erosion is likely and that erosion-control measures, including revegetation of bare areas, are advised. Soils within the Project Area that were listed as “severe” were selected and depicted as those soils with a higher than average vulnerability to erosion. Only one soil map unit was rated “severe;” Hudson silt loam, steep (HuE); and therefore considered a highly erodible soil. The Project crosses approximately 3,629 feet of highly erodible soils (see Figure 4 and Attachment A).

3.2.2 WETLANDS

Wetland surveys within the Project Area were conducted by TRC ecologists in April, May, June, August, and October of 2018. A preliminary desktop analysis of the Project Area was completed prior to performing on-site delineations. The desktop analysis was performed using NWI mapping,

NYSDEC Freshwater Wetland mapping, USGS topography mapping, soils data and aerial photography.

NWI mapping indicates the presence of 30 wetlands within the Project Area (see Table 3.2 below). The total acreage of NWI mapped wetland within the Project Area is 4.35 acres. NWI mapping indicated that palustrine forested wetlands (1.25 acres) are the dominant NWI wetland community followed by palustrine emergent wetlands (1.24 acres).

Table 3.2: NWI Mapped Wetlands within the Project Area

Location (Nearest Station ID)	NWI Wetland Classification	Mapped Size (Acres)	Area within Project Area (Acres)
101+00	PFO1E	16.62	0.03
101+00	PUBx	0.36	0.10
106+00	PFO1E	1.97	0.72
108+00	PSS1/EM1E	22.75	0.48
118+00	R1UBV	25,166.10	0.40
127+00	PFO1E	6.96	0.09
139+00	PUBHx	8.35	0.23
140+00	PSS1E	2.21	0.22
144+00	PEM1C	1.79	0.16
145+00	PEM1/SS1C	0.58	<0.01
145+00	PEM1C	0.46	0.24
145+00	R2UBHx	1.77	0.04
146+00	R2UBHx	1.78	0.03
148+00	PFO1Eh	5.12	<0.01
150+00	R2UBHx	4.26	0.08
156+00	PFO1Eh	7.28	0.42
179+00	PEM1E	0.30	0.14
180+00	R4SBC	3.42	0.08
219+00	PUBHh	3.38	0.15
224+00	PEM1E	1.73	<0.01
301+00	R3UBH	50.03	0.08
316+00	R4SBC	1.21	0.03

Location (Nearest Station ID)	NWI Wetland Classification	Mapped Size (Acres)	Area within Project Area (Acres)
327+00	PEM1B	1.45	0.18
344+00	PEM1B	1.02	0.03
379+00	PUBHh	0.57	0.20
389+00	R4SBC	7.77	0.01
390+00	R5UBH	1.17	0.08
407+00	PSS1E	0.24	0.09
444+00	R3UBH	13.08	0.03
465+00	R4SBC	6.73	0.01

Review of NYSDEC mapping through access to the online NYSDEC Environmental Resources Mapper indicates that there are two NYSDEC freshwater wetlands and their adjacent 100-foot protective upland buffers mapped within the Project Area, which are regulated under Article 24 of the ECL (Figure 5). The NYSDEC classification system of freshwater wetlands provides class rankings (I-IV) for wetlands according to their specific ability to provide multiple predetermined functions and values (Class I having the highest rank, descending through to Class IV).

Table 3.3: NYSDEC Mapped Freshwater Wetlands within the Project Area

NYSDEC Wetland ID	Class (I, II, III, IV)	Mapped Size (Acres)	Area within Project Area (Acres)
D-102	II	114.3	0.15
EG-1	I	576.5	0.70

TRC identified and delineated 53 wetlands and 35 streams within the Project Area (and larger areas outside the current Project Area) during ecological surveys in April, May, June, August, and October 2018. In addition, Bergman Associates delineated four wetlands on behalf of the Port of Albany (for a separate project) on December 7, 2016. The results from Bergman Associates' delineation are included because they coincide with the Project Area. Approximately 5.9 acres of the approximately 97.4-acre Project Area is classified as wetland. The results of the wetland and stream delineation can be found in Tables 3.4 and 3.7 below, along with the Wetland and Stream Delineation Report included as Attachment D.

The Project route and associated access roads will cross approximately 43 of the delineated wetlands. However, there will be no permanent loss of wetlands as a result of Project construction and operation. Construction matting and/or low-pressure tracked equipment or rubber tires will be used to the extent practicable to minimize disturbance to wetlands. Wetland topsoil will be segregated from subsoil when installing the new pipeline. Wetland topsoil will be windrowed within the wetland. Subsoil will be excavated and either removed from wetland boundaries or stored on timber mats within the wetland boundary. Following installation of the new pipeline, padding and backfilling will occur. Subsoil will be replaced, followed by wetland topsoil, which will then be restored to pre-existing contours within the timeframes allotted in the Environmental Management and Construction Standards and Practices (EM&CS&P) and any other applicable permits. Stabilization will involve application of native wetland seed mix and straw or cellulose mulch.

Table 3.4: TRC Delineated Wetlands within the Project Area

Wetland Field Designation	Wetland Location		Cover Type Classification ¹ Acreage				Total Acreage	Potential Jurisdictional Status
	Latitude	Longitude	PEM	PSS	PFO	PUB		
W-1	42.66897147	-73.69152291	0.01	-	-	-	0.01	USACE
W-2	42.66730339	-73.69300566	0.09		-	-	0.09	USACE
W-3	42.66649136	-73.69370381	0.05	-	-	-	0.05	USACE
W-4	42.66593997	-73.69410298	0.07	0.14	-	-	0.20	USACE
W-5	42.66380766	-73.69520563	0.01	0.07	-	-	0.08	USACE
W-6	42.65640390	-73.70023006	0.16	-	-	-	0.16	USACE
W-7	42.65707236	-73.69954378	0.04	-	-	-	0.04	USACE
W-8	42.65797799	-73.69899804	-	0.11	-	-	0.11	USACE
W-10	42.65944162	-73.69858545	0.01	0.06		-	0.07	USACE
W-11	42.65565044	-73.70063534	0.02	-	-	-	0.02	USACE

Wetland Field Designation	Wetland Location		Cover Type Classification ¹ Acreage				Total Acreage	Potential Jurisdictional Status
	Latitude	Longitude	PEM	PSS	PFO	PUB		
W-12	42.65443877	-73.70103291	0.16	0.003	-	-	0.16	USACE
W-13	42.65033661	-73.70271336	0.24	-	-	-	0.24	USACE
W-14	42.64720173	-73.70345172	0.09	0.03	-	0.07	0.19	USACE
W-15	42.64339864	-73.70506079	0.08	-	0.07	-	0.15	USACE
W-16	42.64104051	-73.70524853	0.58	0.12	-	-	0.70	USACE
W-17	42.63845503	-73.7067724	0.44	0.25	-	-	0.69	USACE
W-18	42.63490262	-73.70804072	0.08	-	-	-	0.08	USACE
W-19	42.63406489	-73.70789752	0.01	-	-	-	0.01	USACE
W-20	42.63306149	-73.70849381	0.26	-	-	-	0.26	USACE
W-21	42.63201968	-73.70887341	0.03	-	-	-	0.03	USACE
W-22	42.63173552	-73.70884570	0.02	-	-	-	0.02	USACE
W-23	42.63070521	-73.70903848	<0.01	-	-	-	<0.01	USACE
W-24	42.63065122	-73.70943071	<0.01	-	-	-	<0.01	USACE
W-25	42.62690277	-73.71077622	0.06	0.14	-	-	0.20	USACE
W-27	42.6009174	-73.75450524	0.05	-	-	-	0.05	USACE
W-29 (NYSDEC Wetland EG-1)	42.60376942	-73.75203005	0.17	-	-	0.19	0.36	USACE/ NYSDEC
W-30	42.6034351	-73.73689441	0.11	-	-	-	0.11	USACE
W-31	42.60277797	-73.73811637	0.08	-	-	-	0.08	USACE
W-32	42.60526278	-73.73108377	0.19	-	-	-	0.19	USACE
W-33	42.60100639	-73.74921593	0.58	0.10	-	0.01	0.69	USACE/ NYSDEC

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Wetland Field Designation	Wetland Location		Cover Type Classification ¹ Acreage				Total Acreage	Potential Jurisdictional Status
	Latitude	Longitude	PEM	PSS	PFO	PUB		
(NYSDEC Wetland EG-1)								
W-MJR-2	42.6086697	-73.72675083	-	0.02	-	0.16	0.18	USACE
W-MJR-3	42.60788707	-73.72768307	0.04	-	-	-	0.04	USACE
W-MJR-4	42.60740527	-73.72816689	0.06	-	-	-	0.06	USACE
W-MJR-5	42.60720173	-73.72851514	0.02	-	-	-	0.02	USACE
W-MJR-7	42.60196605	-73.74270325	0.23	-	-	-	0.23	USACE
W-MJR-10	42.60946458	-73.72460778	0.06	-	-	-	0.06	USACE
W-MJR-12	42.64591082	-73.70352109	0.02	-	-	-	0.02	USACE
W-MJR-13	42.62570309	-73.70770666	<0.01	-	-	-	<0.01	USACE
W-MJR-14	42.62507132	-73.70586106	0.07	-	-	-	0.07	USACE
W-MJR-16 (NYSDEC Wetland D-102)	42.60627759	-73.76011549	0.04	-	0.04	-	0.08	USACE/ NYSDEC
W-MJR-18	42.60143438	-73.75050996	-	-	0.05	-	0.05	USACE/ NYSDEC
W-MJR-19 [†]	42.60384932	-73.76780986	0.01	-	-	-	0.01	USACE
W-4 (Bergman) [‡]	42.599997	-73.762887	0.03				0.03	USACE

¹PEM – palustrine emergent; PSS – palustrine scrub-shrub; PFO – palustrine forested; PUB – palustrine unconsolidated bottom
[†]Part of this wetland overlaps with W-1 (Bergman) delineated by Bergman Associates for the Port of Albany on December 7, 2016.
[‡]Wetland delineated by Bergman Associates for the Port of Albany on December 7, 2016.

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Table 3.5: Proposed Wetland Impacts

Wetland Field Designation	Cover Type	Crossing Distance (Linear Feet)	Temporary Impact (Square Feet)	Permanent Scrub-Shrub Conversion (Square Feet)	Permanent Forest Conversion (Square Feet)
W-1	PEM	10	101	0	0
W-2	PEM	94	941	0	0
W-3	PEM	57	567	0	0
W-4	PEM	57	570	0	0
W-4	PSS	106	1,054	2,143	0
W-5	PSS	60	601	1,238	0
W-6	PEM	141	1,407	0	0
W-7	PEM	17	172	0	0
W-8	PSS	76	764	1,559	0
W-10	PSS	54	540	1,025	0
W-11	PEM	5	49	0	0
W-12	PSS	8	0	152	0
W-14	PSS	27	0	539	0
W-15	PEM	30	296	0	0
W-15	PFO	63	2,549	0	1,273
W-16	PEM	261	2,611	0	0
W-16	PSS	267	2,671	5,338	0
W-17	PEM	140	1,419	0	0
W-17	PSS	297	2,880	4,991	0
W-20	PEM	161	1,612	0	0
W-21	PEM	24	241	0	0
W-22	PEM	11	114	0	0
W-25	PEM	28	311	0	0
W-25	PSS	121	1,205	2,402	0
W-30	PEM	80	802	0	0
W-31	PEM	33	326	0	0
W-32	PEM	133	1,340	0	0
W-33 (NYSDEC Wetland EG-1)	PSS	186	0	4,557	0
W-MJR-2	PSS	34	0	678	0
W-MJR-16 (NYSDEC Wetland D-102)	PFO	57	611	0	1,112
W-MJR-18	PFO	67	0	0	1,297

3.2.3 STREAMS

Based on available NYSDEC stream classification mapping, there are seven mapped streams within the Project Area that are listed as state priority streams. None of these NYSDEC mapped streams within the Project Area have a classification of C(T) or higher; therefore, none of these streams are protected under Article 15 of the ECL. Table 3.6 below provides a detailed summary of all NYSDEC classified priority streams within the Project Area.

Mill Creek will be crossed via open trench, with the pipeline a minimum of 5' below the creek bottom. The crossing will open-cut in the dry, and the native creek bed material will be removed and staged on site and reused for the top layer of backfill (minimum of 12"). The temporary right-of-way (ROW) width was reduced immediately adjacent to the stream crossing to minimize impacts to surrounding tree coverage and stream banks. Prior to proposing this crossing as open trench, both conventional jack-and-bore (JAB) and horizontal directional drill (HDD) were evaluated and deemed not feasible for construction.

A JAB crossing would require >10' deep pits on either side of the stream. Due to the proximity of the steep slope immediately to the south, the grading required to safely enter the pit would extend well beyond the existing cleared ROW onto wooded private property. Additionally, these pits would need to be continuously dewatered and the stabilization of these pits could present a health and safety risk.

A HDD crossing was evaluated and it was determined that this method of installation was not constructable. Space limitations for the drill rig and pullback setup were not feasible. On the south side of Mill Creek, there is approximately 40' of elevation gain to the top of the ravine, at which point the existing cleared electric ROW has a bend. To achieve the proper depth, the exit or entry would end up in the residential area surrounding Alice Lane. On the north side of Mill Creek, there is approximately 75' of elevation gain to the top of the ravine, and only approximately 620' of flat area before another 70' deep ravine, approximately 500' wide, which would result in the proposed pullback needing to span that ravine.

In addition, National Grid has developed a site specific restoration plan for the Mill Creek crossing. Restoration measures will include plantings of wetland trees and, shrubs and spreading

herbaceous wetland seed mix. Please see Attachment M (Mill Creek Crossing Site Restoration Plan).

Table 3.6: NYSDEC Mapped Streams within the Project Area

NYSDEC Stream Name and Regulatory ID Number	NYS Major Drainage Basin	USGS Sub-basin HUC 8 and Name	NYSDEC Classification and Standard	Cumulative Linear Feet within Project Area
Hudson River (858-4)	Lower Hudson	02020006 (Middle Hudson)	C	20
Papscanee Creek (863-599)	Lower Hudson	02020006 (Middle Hudson)	C	94
Papscanee Creek and minor tribs (863-625)	Lower Hudson	02020006 (Middle Hudson)	C	421
Mill Creek and tribs (863-702)	Lower Hudson	02020006 (Middle Hudson)	C	51
Mill Creek (863-705)	Lower Hudson	02020006 (Middle Hudson)	C	53
Minor Tribs to east of Hudson (863-709)	Lower Hudson	02020006 (Middle Hudson)	C	20
Minor Tribs to east of Hudson (864-723)	Lower Hudson	02020006 (Middle Hudson)	C	75

Table 3.7: TRC Delineated Streams within the Project Area

Stream Field Designation	Stream Type	Potential Jurisdictional Status	NYSDEC Classification	Length (Linear Feet)	Temporary Impact (Linear Feet)	Permanent Impact (Linear Feet)	Crossing Type
S-1	Intermittent	USACE	C	55	10	0	Open cut/trench
S-2	Ephemeral	USACE	-	41	10	0	Open cut/trench
S-3	Perennial	USACE	C	90	10	0	Open cut/trench
S-4	Intermittent	USACE	-	97	10	0	Open cut/trench
S-5	Ephemeral	USACE	-	51	10	0	Open cut/trench

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Stream Field Designation	Stream Type	Potential Jurisdictional Status	NYSDEC Classification	Length (Linear Feet)	Temporary Impact (Linear Feet)	Permanent Impact (Linear Feet)	Crossing Type
S-6	Perennial	USACE	-	51	10	0	Open cut/trench
S-7	Perennial	USACE	C	82	0	0	Access road/timber mats
S-8	Perennial	USACE	C	20	0	0	HDD
S-9	Intermittent	USACE	-	22	0	0	HDD
S-10	Intermittent	USACE	-	22	0	0	HDD
S-14	Ephemeral	USACE	-	34	0	0	HDD
S-15	Intermittent	USACE	-	50	10	0	Open cut/trench
S-16	Intermittent	USACE	-	50	10	0	Open cut/trench
S-17	Perennial	USACE	C	57	10	0	Open cut/trench
S-18	Perennial	USACE	C	53	10	0	Open cut/trench
S-20 (Hudson River)	Perennial	USACE	C	41	0	0	HDD
S-21	Ephemeral	USACE	-	33	0	0	HDD
S-22	Ephemeral	USACE	-	44	0	0	HDD
S-23	Ephemeral	None	-	123	10	0	Open cut/trench
S-24	Intermittent	USACE	C	60	0	0	HDD
S-BF-2	Intermittent	USACE	-	58	0	0	Access road/timber mats
S-MR-1	Intermittent	USACE	-	17	0	0	Access road/timber mats
S-MR-2	Intermittent	USACE	-	9	0	0	Access road/timber mats

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3.2.4 FLOODPLAINS

New York State GIS Clearinghouse data and the FEMA National Flood Hazard data layer were reviewed to determine the location of floodplains and flood hazard areas within and adjacent to the Project Area. The Project will cross a mapped floodplain associated with the Hudson River. Figure 5 shows the location of floodplains in the Project's vicinity. There will be no alteration to flood flows and flood storage volumes as existing contours will be restored following pipeline installation.

3.2.5 SPRINGS

Through on-ground field surveys of the Project Area, it was confirmed that no wetland or stream encountered on-site generated from a spring feature in the landscape. As such, no springs are known to be located in the Project Area.

The Environmental Protection Agency (EPA) defines Sole Source aquifers as those that supply at least 50 percent of the drinking water for its service area. In addition, there are no reasonably available alternative drinking water sources should the aquifer become contaminated (US EPA, 2016). The Project does not cross any EPA Sole Source aquifers.

Primary aquifers are defined in the Division of Water Technical & Operational Guidance Series as "highly productive aquifers presently utilized as sources of water supply by major municipal water supply systems" (NYSDEC 2017a). The Project does not cross any primary aquifers.

Principal aquifers are defined as an aquifer that has the potential to be used as a source of potable water for the region but is not intensely used at the present time (USGS 2016). The Project is proposed to cross through a principal aquifer in two places (near the Hudson River and in the area between Washington Avenue Extension and North Greenbush Road).

3.2.6 WELLS

The NYSDEC Water Well Program maintains completed residential water well information. Based on NYSDEC data there are no known wells located within the Project Area.

3.2.7 UNIQUE OLD GROWTH FOREST

No old growth forests were observed in the Project Area or its vicinity during the wetland delineation effort. Based on review of available literature on the known locations of old growth forest in New York (New York Old Growth Forest Association, 2002), the closest old growth forest is located approximately eight miles northwest, near Rensselaer Lake in Albany, New York.

3.2.8 ACTIVE SUGARBUSHES

Based on a review of information available from the New York State Maple Producers Association members, no active sugarbush areas are known to be located within the Project Area.

3.2.9 PRODUCTIVE TIMBER STANDS

Productive timber stands are viable or potential commercial forest stands composed of saplings (0 to 5 inches in diameter), poles (6 to 11 inches in diameter), and/or mature trees (12+ inches in diameter). Much of the ROW within the Project Area has been previously cleared and maintained for portions of National Grid's electric ROW, and the ROW for the Dominion Gas Pipeline. Consequently, this area is either disturbed or is characterized by early-mid successional growth. No areas of productive timber stands were observed within the Project Area during site walkovers, or the ecological and archaeological field investigations.

3.2.10 TREES LISTED IN REGISTRY OF BIG TREES IN NEW YORK STATE

The New York Big Tree Registry does not identify any trees in Rensselaer or Albany Counties, New York.

3.2.11 HABITATS OF RARE, THREATENED AND ENDANGERED SPECIES

The USFWS's Information for Planning and Consultation (IPaC) system was utilized in determining the presence of any federally listed plants or animals. The results of the IPaC search showed the potential presence of the federally threatened northern long-eared bat (*Myotis septentrionalis*). Consultation was initiated with USFWS on October 16, 2018 to determine potential effect on the northern long-eared bat as a result of activities from construction or operation of the Project. A response was received October 30, 2018 acknowledging receipt of determination and a final ESA determination will be required.

Desktop review of publicly available data indicated the potential presence of rare plants and animals within the Project Area. The New York State Natural Heritage Program (NYNHP) Nature Explorer results showed the potential presence of two rare animals and seven New York State listed threatened or endangered plants. The two rare animals are the cobra clubtail dragonfly (*Gomphus vastus*) and alewife floater (*Anodonta implicata*) freshwater mussel. The NYS listed threatened plants are the green rock crest (*Borodinia missouriensis*), swamp lousewort (*Pedicularis lanceolata*), troublesome sedge (*Carex molesta*), violet wood sorrel (*Oxalis violacea*), and woodland agrimony (*Agrimonia rostellata*). The two NYS listed endangered plants are the northern bog violet (*Viola nephrophylla*) and the side-oats grama (*Bouteloua curtipendula* var. *curtipendula*).

Additional consultation with the NYNHP was undertaken to better understand the potential presence of these species within the vicinity of the Project Area. Consultation with NYNHP was initiated October 16, 2018 and a response was received November 8, 2018, indicating the presence of threatened or endangered species. The shortnose sturgeon (*Acipenser brevirostrum*) has been documented in the Hudson River, and the bald eagle (*Haliaeetus leucocephalus*) has been documented nesting within 0.2 miles of the Project Area near the southern/western end. Neither species should be impacted by the Project as the Hudson River will be crossed via HDD, and the bore pits for the HDD are set back hundreds of feet from the River. The shortnose sturgeon and bald eagle were not observed in the Project Area during field surveys (see Attachment B).

The response from NYNHP also indicated the potential presence of violet wood sorrel and side-oats grama, which are both Imperiled in NYS, and the alewife floater which is Critically Imperiled in NYS. According to the NYNHP, the violet wood-sorrell occurs on steep rocky slopes with rich soils. The most common habitat for the violet wood-sorrell is an oak-hickory forest. Portions of the Project, most notably between Ridge Road and River Road, were steep and had an adjacent forest community that included red oaks and hickories among other deciduous trees. It is likely there is habitat for the violet wood-sorrell within the vicinity of the Project, but not necessarily within the Project Area itself as it is already cleared between Ridge Road and River Road, and the majority of the pipeline will be installed via HDD in this area. Violet wood-sorrell was not observed in the Project Area during field surveys.

Side-oats gramma has a strong association with limestone derived soils and disturbance. Side-oats gramma can occur in open habitats with artificial disturbances such as abandoned sandpits, railroads, and powerlines, according to NYNHP. Given the limestone bedrock of the Capital region, the number limestone quarries around the Project, the disturbed nature of the Project Area, and the fact that it crosses multiple railroads, it is likely there is some potential habitat for side-oats gramma. Side-oats gramma was not observed in the Project Area during field surveys.

According to the NYNHP, the alewife floater occurs in the tidal portion of the Hudson River. The Hudson River is considered a tidal estuary up to Troy. The Project crosses the Hudson River where it is considered a tidal estuary; therefore, it is likely there is habitat for the alewife floater. However, the potential habitat is proposed to be crossed via HDD. The alewife floater was not observed in the Project Area during the field surveys.

There are no Bird Conservation Areas (BCA's) or Audubon Important Bird Areas (IBA's) located in the vicinity of the Project.

National Grid minimized potential migratory bird impacts to the maximum extent practicable when selecting a route. The route parallels and overlaps with an adjacent National Grid transmission ROW. This limits the tree clearing that will be necessary for this Project. The Applicant will maintain a 20-foot wide (10 feet on each side) ROW. Minimal tree trimming in the canopy along access roads may be required for the Project; however, all of these roads are existing (mostly two-track roads) so the only tree trimming necessary will be in the canopy. Tree removal will likely be required for line-of-sight at HDD locations with a forested cover type. Having utilized a parallel and overlapping route with a National Grid transmission ROW and using existing access roadways, the Applicant has minimized the extent of necessary tree clearing. In total, up to approximately 4.7 acres of forested covertype will be cleared for construction of the Project and maintained as part of the 20-foot wide permanent easement.

Wood turtles are listed as Species of Greatest Conservation Need by the NYSDEC and may be present at the stream crossings in the Project Area. If wood turtles are within the Project Area,

then the best time period for work is between June 15th and September 30th per initial conversations with NYSDEC Representatives.

At the time of an initial site walk-through with the NYSDEC, an individual trout and a clutch of unidentified turtle eggs was identified by NYSDEC representatives in the vicinity of Mill Creek. As a result, it was recommended by the NYSDEC that a timing restriction be adhered to for construction operations in this area. The timing restriction calls for no work to be done within the associated water from October 1st through June 14th. It is proposed by the NYSDEC that this restriction window would potentially mitigate any adverse impacts to trout during spawning periods or disturbances in winter months where, due to the cold water temperatures, a trout's metabolism slows and it becomes critically important to conserve as much energy as possible for survival. Likewise, a majority of New York's endemic turtle species hibernate to a variable degree. Semi-aquatic turtles are known to hibernate in the benthic sediments at the bottom of ponds and along the shorelines of major lakes and rivers under water. Adhering to the aforementioned restriction window would also mitigate impacts to turtles while sedentary and dormant if hibernating within the Project Area.

3.2.12 INVASIVE SPECIES

Invasive species are defined by New York State ECL 9-1703 as "...a species that is nonnative to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health." Lists of prohibited and regulated species were developed by the NYSDEC using the species assessment and listing process outlined in the NYSDEC 2010 report "A Regulatory System for Non-native Species". The report recommended a regulatory system for preventing the importation and/or release of non-native species. The recommended system created the first-ever official lists of invasive species for New York State that would apply to all species of animals and plants.

During the field survey effort, the Project ROW was surveyed for the presence and abundance of invasive species listed on both the NYSDEC *Prohibited and Regulated Invasive Plants* mentioned above and also the Capital/Mohawk Partnership for Regional Invasive Species Management (PRISM) lists. PRISMs coordinate invasive species management functions including coordinating partner efforts, recruiting and training citizen volunteers, identifying and delivering education and

outreach, establishing early detection and monitoring networks and implementing direct eradication and control efforts. There are eight PRISMs within New York State, each of which is made up of resource managers, non-governmental organizations, industry, resource users, citizens and other state agencies and stakeholders. The PRISMs were enacted under Title 17, Environmental Conservation Law (ECL) 9-1705(5)(g). The counties of Albany and Rensselaer are included in the Capital/Mohawk PRISM.

Each invasive species generated from the aforementioned source lists encountered on-site were recorded according to its abundance within the ROW and was classified according to the following categories:

- S = Sparse (1–5% aerial coverage)
- M = Moderate (5–25%)
- A = Abundant (>25%)

Species of high concern identified by state agencies that occur on the Project ROW include purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), Japanese knotweed (*Reynoutria japonica*), cow parsley (*Anthriscus sylvestris*), mugwort (*Artemisia vulgaris*), honeysuckle (*Lonicera spp.*), common buckthorn (*Rhamnus cathartica*), creeping thistle (*Cirsium arvense*), cutleaf teasel (*Dipsacus laciniatus*), and glossy buckthorn (*Frangula alnus*). All of these species are on the Capital/Mohawk Partnership for Regional Invasive Species Management (PRISM)'s Tie For the purposes of this Project, a tiered approach to invasive species identification has been developed which involves categorizing each patch of invasive species into three tiers of concern.

A description of each tier is provided below:

- Tier I — includes areas with no invasive species currently present to areas that have invasive species present in sparse amounts and did not contain species of high concern as identified by state agencies such as purple loosestrife, common reed, Japanese knotweed, cow parsley, mugwort, honeysuckle, common buckthorn, creeping thistle, cutleaf teasel, and glossy buckthorn.

- Tier II — these are areas with one invasive plant species in moderate levels with various amounts of other invasive plant species present in sparse levels, to areas with one with one invasive plant species present in abundant levels with various amounts of other invasive plant species present in sparse to moderate amounts and did not contain species of high concern as identified by state agencies.
- Tier III — these are areas with two or more invasive plant species present in moderate and sparse levels and/or that contained or are suspected to contain species of high concern as identified by state agencies.

Attachment C (Invasive Species Survey) presents the results of the initial invasive species survey for the Project. Attachment C identifies each invasive species identified, and its location along the ROW.

National Grid will comply with the BMPs identified in the Environment Energy Alliance of New York’s Invasive Species Management Plan in Attachment J.

3.3 VISUAL RESOURCE INVENTORY

3.3.1 SCENIC AREAS

Scenic Areas of Statewide Significance (SASS) are designated by the New York Secretary of State pursuant to the Article 42 of the Executive Law and include coastal regions with aesthetic significance. There are no SASS locations in the vicinity of the Project Area.

Scenic Districts are designated by the Commissioner of the NYSDEC pursuant to Article 49 of the Environmental Conservation Law. There are no Scenic Districts in the vicinity of the Project Area.

Data regarding Wild and Scenic Rivers identified by Congress, pursuant to 16 U.S.C. Section 1271, are available through the National Park Service. Data regarding State-designated Wild, Scenic, and Recreational Rivers are available through the NYSDEC. No state or federally designated stretches of river are located in the vicinity of the Project Area.

3.3.2 SCENIC ROADS

Scenic Roads are designated by the Commissioners of the NYSDEC or the NYSDOT pursuant to Article 49 of the Environmental Conservation Law. The nearest Scenic Road to the Project Area is known as the Revolutionary Trail, which begins in Albany (more than two miles from the Project Area), and travels west along Route 5. The Revolutionary Trail follows the Mohawk River through Fort Johnson, Fort Hunter, and Fonda. Visual impacts to the Revolutionary Trail are unlikely due to the underground location of the pipeline and the existing topography, tree cover, and development between the Trail and the Project Area. The Project Area also consists of an already existing ROW; therefore, construction and operation of the Project will not result in any change of character relative to the current condition.

3.3.3 VISTAS AND OVERLOOKS

The NYSDEC Points of Interest data layer was consulted to determine the location of scenic vistas in New York State. There are no scenic vistas within the Project Area.

3.4 CULTURAL RESOURCES

This section provides a description of the officially designated cultural resources, including archaeological sites, historic districts, places, and properties in the vicinity of the Project Area in accordance with the requirements of 16 NYCRR §85-1.3(a)(2)(i).

The State Historic Preservation Office at the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) was notified about the Project on October 10, 2018.

A Phase I archaeological survey was conducted within the Project Area by TRC from July 9, 2018 to September 28, 2018. Background research and fieldwork for the Phase I survey was conducted under the supervision of the Principle Investigator in a manner consistent with the New York Archaeological Council's (NYAC) Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York State (1994). The Phase I report was prepared in accordance with NYSOPRHP's guidance document, Phase 1 Archaeological Report Format Requirements (2005). The Phase I report was submitted to the NYSOPRHP on December 4, 2018 via the online Cultural Resources Information System (CRIS), to indicate no impacts are anticipated to cultural resources in, or eligible for inclusion in, the State and National Register of Historic Places, as a result of the Project. The Phase 1 Cultural

Resources Survey is included as Attachment E and the correspondence with CRIS is included in Attachment B.

Table 3.8: Archaeological Sites Located Within Approximately 1 km of the Project APE

OPRHP Site #	Name	Distance to APE	Period(s)	NRHP Status
00102.000953	Muhheconnuck 2 Site	0.89 km	Precontact - Woodland	Undetermined
00102.000960	Glenmont Abbey (NYSM 355)	0.25 km	Precontact	Undetermined
08303.000007	Widow Bries House	2.0 km	Historic - 1722	Undetermined
08303.000008	Greenbush Cantonment	0.9 km	Historic - War of 1812	Undetermined
08303.000009	Van Buren Site	0.04 km	Precontact – Woodland & Historic	Eligible
08303.000023	Albany International	0.3 km	Precontact	Undetermined
08303.000024	Historic Farm Complex Ruins	0.3 km	Historic	Undetermined
08303.000050	Goldkrest Arch Site	0.1km	Precontact – Late Woodland	Eligible
08303.000052	Teunis Dircksen Van Vechten Site	0.1 km	Historic – 17 th c.	Eligible
08303.000055	Kost Verloren House Site	0.85 km	Historic	Undetermined
08303.000056	Teunt Je Van Buren House	0.6 km	Historic – 1639-1680	Undetermined
08303.000058	Volkert P. Douw’s House	2.0 km	Historic – 1770-1780	Undetermined
08303.000067	The Turnpike Site (Test Area 3A)	0.4 km	Unknown	Not eligible
08303.000072	Sterling Organic 3 Site	0.1 km	Precontact & Historic 17 th c.	Eligible
08303.000073	Defreest Farmstead Building Site	0.3 km	Historic – mid-late 19 th c.	Not eligible
08303.000078	Besicorp transmission site 1	0.4 km	Precontact – Late Woodland	Undetermined
08303.000079	Besicorp transmission site 2	0.2 km	Precontact	Undetermined
08303.000097	Temple Farmstead Historic Site	0.65 km	Historic – post 1876	Undetermined
08303.000098	Temple Lane Precontact Site #1	0.2 km	Precontact – Snook Kill	Undetermined
08303.000099	Temple Lane Precontact Site #2	0.2 km	Precontact – Late Archaic	Undetermined

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08303.000100	Rensselaer Rural Cemetery	0.6 km	Historic – ca. 1900	Undetermined
08303.000101	Papscaanee Creek Precontact Site (NYSM 11692)	0.8 km	Precontact – Late Woodland	Eligible
08303.000102	Papscaanee Creek Precontact Site 2 (NYSM 11693)	0.1 km	Contact/Late Woodland & Historic - 17 th c	Eligible
08303.000103	Papscaanee Creek Precontact Site (NYSM 11694)	0.4 km	Contact/Late Woodland	Eligible
08303.000125	TRC-1-NYP	0.8 km	Precontact & Historic	Undetermined
08307.000005	Philip Defreest House (NYSM 7072)	0.7 km	Historic	Listed
08307.000007	Site 1 (NYSM 7072)	0.7 km	Precontact – late Archaic	Undetermined
08307.000008	Possible Prehistoric Site	0.9 km	Precontact	Undetermined
08307.000009	Possible Historic Site	0.6 km	Historic – 1860-1920	Undetermined
08307.000016	Site 15 Dudley Heights Rd Site	0.5 km	Historic	Undetermined
08307.000017	Site 14 Access Rd Site (NYSM 7067)	0.7 km	Precontact - Woodland	Not eligible
08307.000022	Site 9 Alfalfa Field Site (NYSM 7062)	0.8 km	Precontact	Undetermined
08307.000026	Site 2 J. Manville Farm Site (NYSM 7059)	0.9 km	Historic – ca. 1767	Undetermined
08307.000027	Defreestville Hotel Shed Site	0.5 km	Historic – late 19 th c. – early 20 th c.	Undetermined
08307.000028	Defreestville Blacksmith Shop Site	0.5 km	Historic – mid-late 19 th c. – early 20 th c.	Undetermined
08307.000029	Defreestville Wagon Shop Site	0.5 km	Historic – mid-late 19 th c. – early 20 th c.	Undetermined
08307.000031	Deforest Site (#8)	0.4 km	Historic – ca. 1800-1850	Undetermined
08307.000076	Activity Area 1	0.9 km	Precontact	Not eligible
08307.000271	Beef Processing Structure	0.35 km	Historic – ca. 1905	Undetermined
08307.002335	Jordn Dump & Defreest Family	0.6 km	Historic – 19 th – 20 th c.	Undetermined

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	Cemetery (NYSM 7056)			
08307.002336	Fisher Site Loci 1 & 2	0.5 km	Unknown	Undetermined
08307.002359	Chip Fab Prehistoric Site Area 1	0.3 km	Precontact	Not eligible
08307.002360	Chip Fab Prehistoric Site Area 2	0.4 km	Precontact	Not eligible
08307.002361	Chip Fab Prehistoric Site Area 5	0.2 km	Precontact	Not eligible
08307.002362	Chip Fab Prehistoric Site 14	0.1 km	Precontact – Middle-Late Woodland	Undetermined
08307.002363	Structure 22-1 R-A Foundation	0.2 km	Historic – ca. 1876	Undetermined
08307.002369	Oak Hill North Greenbush Precontact Site Locus 1 and 2	0.2 km	Precontact	Eligible
08307.002375	Jordan Road Precontact Site (NYSM 7056)	0.6 km	Precontact – Late Archaic, Transitional Archaic, Late Woodland	Eligible
08307.002381	Sharpe Precontact Site	0.0 km	Precontact – Late Archaic/Laurentian	Undetermined
08307.002382	Sharpe Family Cemetery	0.0 km	Historic	Listed
08307.002384	Precontact Find Site	0.5 km	Precontact	Not eligible
08307.002396	Mesko-Prehistoric Locus 1	0.8 km	Precontact	Not eligible
08307.002397	Mesko-Prehistoric Locus 2	0.8 km	Precontact	Not eligible
08307.002398	Skipper Little Creek Site	0.8 km	Precontact	Not eligible
No number	Glenmont Abby (ABI 28-4) (NYSM0355)	0.05 km	Unknown	Undetermined
No number	NYSM 2777 (ACP.ALBY 18)	0.9 km	Precontact?	Undetermined
No number	NYSM 5622 (ACP.RENS No#)	0.7 km	Precontact?	Undetermined
No number	Fisher Locus 1 (NYSM 7057)	0.3 km	Precontact - Archaic	Undetermined
No number	Fisher Locus 2 (NYSM 7058)	0.2 km	Precontact - Archaic	Undetermined
No number	Site 15 (NYSM 7068)	0.6 km	Precontact	Undetermined

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No number	G. Manville House (Site 16) (NYSM 7069)	0.65 km	Historic	Undetermined
No number	NYSM 7902 (ACP.ALBY 36B)	0.4 km	Precontact?	Undetermined

3.4.1 ARCHAEOLOGICAL SITES

From review of the NYSOPRHP’s online CRIS database and available reports, TRC identified 31 cultural resources management (CRM) studies that have been completed within 1 km of the Project Area. Eight of these studies overlap the Project Area. Several locations of Precontact and Historic material were recovered by these CRM investigations; however, no archaeological sites were identified. 58 historic structures occur within 1 km of the Project Area. None of these structures are located in the Project Area. Of the 58 structures, two are listed on the National Register of Historic Places (NRHP), seven are eligible for listing on the NRHP, 37 are not eligible for listing on the NRHP, and the NRHP eligibility for the remaining 12 has not been determined. One additional NRHP listed property, the Sharpe Homestead and Cemetery (03NR05110), is located adjacent to the Project Area.

Sixty-two archaeological sites are located within 1 km of the Project APE. 31 of these sites are associated with the Precontact period, 23 sites date to the Historic period, and the temporal affiliation of three sites remain unknown. Additionally, five sites include both Historic and Precontact period components. Four Precontact sites, one Historic period site, and four sites with both Precontact and Historic components are identified as eligible for the NRHP. Two Historic sites, the Sharpe Family Cemetery and the Philip Defreest House (NYSM 7072), are listed on the NRHP. Nine Precontact period, one Historic period, and one site of unknown temporal affiliation have been determined to be ineligible for listing, while the eligibility of the remaining 40 remains undetermined. Two archaeological sites, the Sharpe Family Cemetery (08307.002382) and the Sharpe Precontact Site (08307.002381), lie adjacent to the Project Area near where it crosses Laura Lane in North Greenbush.

Based on TRC’s table-top review of the Project, a number of archaeologically sensitive areas were identified. These areas were field verified on July 7, 2018. A number of them were eliminated from further field investigation due to factors such as slope, disturbances, wetlands, and streams.

A Phase 1B archaeological field study was conducted within the Project Area in those sensitive areas remaining after walkover inspection. The study included 161 shovel test excavations within the Project Area. Two Precontact period archaeological sites were identified on the east side of the Hudson River. The sites are separated from each other by approximately 135m. National Grid will avoid impacting these sites by performing a HDD below them and placing timber mats on top of them if they need to drive across the location. Additionally, excavation of shovel test holes was conducted within the Project APE adjacent to the NRHP-listed Sharpe Family Homestead (03NR05110) and Cemetery and The Sharpe Precontact Site (08307.002381). No cultural material was found confirming that the Project APE lies outside of the previously established site boundaries (ARCH TECH 2008).

According to a letter received from NYSHPO on October 16, 2018, the Project is located within an archaeologically sensitive area. This designation is based on proximity to previously recorded archaeological sites as documented above. Impact to the two archaeological sites identified during Phase I fieldwork work will be mitigated by avoidance. Therefore, we conclude that the Project will not adversely affect any archaeological sites.

3.4.2 HISTORIC ABOVEGROUND STRUCTURES AND DISTRICTS

The CRIS database identified 58 individual historic structures located within two kilometers of the Project. The NRHP status of the 58 structures includes two Listed, seven Eligible, 37 Not Eligible, and 12 Undetermined structures. There are three historic properties listed within one kilometer of the Project Area. The Historic Structures and Historic Properties are listed in Table 3.9 and 3.10, respectively.

Table 3.9: Historic Structures Located within 2 km of the Project

OPRHP #	Address	Name	Distance to APE	NRHP Status
00102.000222	210 River Rd, Bethlehem	Unnamed	1.0 km	Not eligible
00102.000223	214 River Rd, Bethlehem	Unnamed	0.9 km	Not eligible
00102.000735	151 Glenmont Rd, Bethlehem	Unnamed	0.7 km	Undetermined
00102.000736	46 Glenmont Rd, Bethlehem	Unnamed	0.6 km	Undetermined

00102.000962	461 River Rd, Glenmont	Unnamed	0.9 km	Not eligible
08303.000001	NY 151, E. Greenbush	Cantonment Farm	0.9 km	Undetermined
08303.000003	Red Mill Rd, E. Greenbush	Irwin Bros. House	0.6 km	Undetermined
08303.000015	501 Columbia Tpk, E. Greenbush	F. Spaulding House	0.6 km	Undetermined
08303.000016	280 Columbia Tpk, E. Greenbush	Onderdonk Residence	0.6 km	Eligible
08303.000030	17 Couse Pl, E. Greenbush	Herrington-Kough House	0.8 km	Undetermined
08303.000129	253 Troy Rd, E. Greenbush	Fed Ex Distribution Center	0.35 km	Not eligible
08303.000133	90 Grand View Dr, Rensselaer	Unnamed	1.0 km	Not eligible
08307.000003	402 Bloomingrove Dr, N. Greenbush	Van Den Burg House	0.4 km	Eligible
08307.000004	Washington Ave Ext, DeFrestville	Van Alen House	0.3 km	Listed
08307.000006	27 Jordan Rd, Rensselaer	Defreest House	0.5 km	Listed
08307.000012	Bloomingrove Dr, N. Greenbush	Blooming Grove Meeting House	0.4 km	Eligible
08307.000032	Bloomingrove Dr, N. Greenbush	Unnamed	0.4 km	Not eligible
08307.000033	Washington Ave Ext, N. Greenbush	Unnamed	0.3 km	Eligible
08307.000037	Bloomingrove Dr, N. Greenbush	Unnamed	0.5 km	Not eligible
08307.000038	Bloomingrove Dr, N. Greenbush	Unnamed	0.4 km	Not eligible
08307.000039	604 Bloomingrove Dr, N. Greenbush	Jacob S. Sharpe Residence	0.4 km	Eligible
08307.000046	Bloomingrove Dr, N. Greenbush	Peterson Residence	0.8 km	Not eligible
08307.000047	406 Bloomingrove Dr, N. Greenbush	Unnamed	0.3 km	Not eligible
08307.000048	452 Bloomingrove Dr, N. Greenbush	Phillips Residence	0.25 km	Undetermined
08307.000049	474 Bloomingrove Dr, N. Greenbush	Unnamed	0.35 km	Not eligible
08307.000050	514 Bloomingrove Dr, N. Greenbush	Krull Residence	0.4 km	Eligible
08307.000051	Bloomingrove Dr, N. Greenbush	Pitcher	0.45 km	Undetermined
08307.000052	Bloomingrove Dr, N. Greenbush	Scott Residence	0.4 km	Not eligible

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08307.000053	Bloomingrove Dr, N. Greenbush	Gallogy Residence	0.4 km	Not eligible
08307.000054	Bloomingrove Dr, N. Greenbush	Blooming Grove Reformed Church	0.4 km	Not eligible
08307.000057	263 Bloomingrove Dr, N. Greenbush	DeFreest Residence	0.8 km	Not eligible
08307.000058	519 Bloomingrove Dr, N. Greenbush	Wehnau Residence	0.6 km	Undetermined
08307.000059	Bloomingrove Dr, N. Greenbush	Boyers Residence	0.6 km	Not eligible
08307.000060	Bloomingrove Dr, N. Greenbush	Unnamed	0.6 km	Not eligible
08307.000061	Bloomingrove Dr, N. Greenbush	Chevalier Residence	0.6 km	Not eligible
08307.000170	US 4, N. Greenbush	Icehouse	0.5 km	Not eligible
08307.000171	US 4, N. Greenbush	Old Parsonage	0.5 km	Undetermined
08307.000233	Snyders Lake Rd, N. Greenbush	Belltop School	0.7 km	Not eligible
08307.000234	54 Snyders Lake Rd, N. Greenbush	Unnamed	0.6 km	Not eligible
08307.000238	Snyder Lake Rd, N. Greenbush	Passage Cole Farm	1.0 km	Not eligible
08307.000245	Washington Ave, N. Greenbush	Ruso Residence	0.3 km	Not eligible
08307.000246	Washington Ave, N. Greenbush	Austin Residence	0.3 km	Not eligible
08307.000248	Washington Ave, N. Greenbush	Unnamed	0.2 km	Not eligible
08307.000250	Washington Ave, N. Greenbush	Schen Residence	0.2 km	Not eligible
08307.000251	Washington Ave, N. Greenbush	Boyer Residence	0.1 km	Not eligible
08307.000252	Washington Ave, N. Greenbush	Unnamed	0.1 km	Not eligible
08307.000253	Washington Ave, N. Greenbush	Unnamed	0.15 km	Undetermined
08307.000254	Washington Ave, N. Greenbush	Baehr Residence	0.1 km	Eligible
08307.000255	Washington Ave, N. Greenbush	Chudosky Residence	0.15 km	Not eligible
08307.002326	Bloomingrove Dr, N. Greenbush	Building AB	0.4 km	Not eligible
08307.002358	600 North Greenbush Rd, N. Greenbush	Bank	0.4 km	Not eligible
08307.002376	159 Snyders Lake Rd, N. Greenbush	Converted Barn	1.0 km	Not eligible

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08307.002400	6601 Oak Hill Circle, Rensselaer	Oak Hill Apartments	0.2 km	Not eligible
08307.002401	5 Phillip St, N. Greenbush	Unnamed	0.9 km	Undetermined
08307.002417	1 Thompson Court, N. Greenbush	Unnamed	0.5 km	Not eligible
08307.002420	573 North Greenbush Rd, N. Greenbush	Unnamed	0.5 km	Not eligible
08341.001150	990 Washington Ave, Rensselaer	Janiise Kalquist	0.9 km	Not eligible
08341.001159	124 Lindbergh Ave, Rensselaer	Unnamed	0.4 km	Not eligible

Table 3.10: NRHP Listed Historic Properties within 1 km of the Project Area

NRHP #	Structure(s)	Date	Name	Address
90NR00964	Buildings	18 th c.	Defreest Homestead Troy	Jordan Rd, North Greenbush
03NR05110	Building	ca. 1740	Sharpe Homestead and Cemetery	44 Laura Lane, North Greenbush
03NR05164	Building	1793-1794	Van Alen, John E. House	1744 Washington Ave Ext, North Greenbush

3.5 PROPERTY BOUNDARIES

This section identifies the property boundaries, fences, walls, and hedgerows that will be crossed by the Project, in accordance with the requirements of 16 NYCRR §85-1.3(a)(2)(ii). Property boundary data was mapped based on data received from Albany and Rensselaer Counties and the NYS GIS Office Lands and Boundaries Unit. The Applicant has identified a total of 30 distinct parcel identification numbers crossed by the centerline of the pipeline (see Table 3.11).

Table 3.11: Properties Crossed by the Project Centerline

Tax Assessor's Map Identification Number or Other Identifier
98.002-10.1
98.00-2-10.21
98.00-2-10.23
165.-1-35
165.-1-30
165.-1-32

Tax Assessor's Map Identification Number or Other Identifier
165.-1-25.1
165.-1-6.2
165.-1-5
165.-1-6.112
165.-1-31.1
165.-1-23
165.-1-14
165.-1-11
166.-1-17./1
166.-1-9
155.-12-2.113
155.13-21-20
155.-12-2.114
155.-3-1
155.-3-2.111
155.-3-2.112
144.-3-5.1
144.-4-48
133.-2-23
133.-2-25
134.-1-7
133.-1-2.1
134.-1-8.1
134.-1-14

3.6 ADJACENT DWELLINGS

This section identifies dwellings within 150 feet of the centerline of the Project in accordance with the requirements of 16 NYCRR §85-1.3(a)(2)(iii). For the purpose of this assessment, dwellings are considered to be any residential-type structure that is presumed to be inhabited on a regular basis. A spatial analysis was conducted to determine the proximity of all existing dwellings within 150 feet of the Project centerline. Aerial imagery (2017) in combination with local tax assessors' maps were used to identify structures. Table 3.12 below includes data describing the relative location of dwellings

along the route. The Plan & Profile drawings attached as Attachment A depict the proposed centerline and identifies dwellings within 150 feet of the proposed centerline.

A total of 26 dwellings were identified within 150 feet of the proposed pipeline centerline, all of which are located in the Town of Rensselaer. Of the 26 dwellings, there are fifteen single family residences, six apartments, one one-family residence with an apartment, one rural residence, one public utility vacant, and two truck terminal.

Table 3.12: Dwellings within 150 feet of the Centerline of the Project

Tax Assessor's Map Identification Number	County	Latitude	Longitude	Distance from Pipeline Centerline (feet)
166.-1-20.11	Rensselaer	42.607658°	-73.728718°	80
155.14-23-5.2	Rensselaer	42.616614°	-73.715883°	120
155.-2-19	Rensselaer	42.617327°	-73.714869°	125
155.-2-20.2	Rensselaer	42.617740°	-73.714285°	115
155.15-2-3	Rensselaer	42.618320°	-73.713567°	130
155.15-2-2	Rensselaer	42.618823°	-73.713519°	135
155.-2-8.1	Rensselaer	42.619688°	-73.713499°	150
155.11-1-12	Rensselaer	42.623071°	-73.713144°	135
155.11-1-11	Rensselaer	42.623307°	-73.712934°	115
155.11-1-10	Rensselaer	42.623601°	-73.712838°	95
155.11-1-9	Rensselaer	42.624064°	-73.712799°	150
155.11-1-41	Rensselaer	42.625005°	-73.712557°	130
155.11-1-40	Rensselaer	42.625296°	-73.712478°	125
144.-4-51	Rensselaer	42.642533°	-73.705891°	75
144.-4-50	Rensselaer	42.643022°	-73.705943°	150
144.-4-48	Rensselaer	42.643894°	-73.704718°	30
144.-4-10	Rensselaer	42.645998°	-73.704939°	60
144.-4-10	Rensselaer	42.647047°	-73.704751°	100
144.-10-33.14	Rensselaer	42.651478°	-73.702851°	90
144.-10-33.14	Rensselaer	42.651821°	-73.702735°	90
144.-10-33.14	Rensselaer	42.652129°	-73.702656°	100
144.-10-33.14	Rensselaer	42.652488°	-73.702615°	120
144.-10-33.14	Rensselaer	42.652781°	-73.702450°	100
144.-10-33.14	Rensselaer	42.653128°	-73.702553°	130
144.-10-12	Rensselaer	42.654054°	-73.702091°	115
133.-2-3.1	Rensselaer	42.663252°	-73.6965	145

4.0 CHECKLIST OF EM&CS&P MEASURES AND TECHNIQUES

This section addresses the checklist of those measures and techniques from the approved EM&CS&P that will be followed to minimize adverse impact associated with the Project in accordance with the requirements of 16 NYCRR §85-1.2(a)(3).

4.1 MEASURES AND TECHNIQUES FROM THE APPROVED EM&CS&P APPLICABLE TO THE PROJECT

During construction of the Project, National Grid and its contractors will follow the approved standards and practices set forth in the EM&CS&P (revised February 2006) adopted by the Commission on December 7, 2006, in Case 06-T-1383. National Grid has certified that it agrees to install and maintain the Project in accordance with the EM&CS&P (Attachment F), as required by PSL Section 121-a(1) and 16 NYCRR Subpart 85-1.1(b). Pursuant to 16 NYCRR Subpart 85-1.2(a)(3), National Grid has developed a checklist of those measures and techniques from this EM&CS&P, which it has agreed will be followed in an effort to minimize or avoid adverse impacts on sensitive resources affected by the Project to the maximum extent practical.

4.2 NAME, TITLE AND QUALIFICATIONS OF THE COMPANY REPRESENTATIVES DIRECTLY RESPONSIBLE FOR SEEING THAT ALL ENVIRONMENTAL REQUIREMENTS ARE FULLY MET

1. Nate Butera
National Grid Senior Environmental Scientist
12 Years of Environmental Monitoring and Permitting Experience
Bachelor of Technology in Renewable Resources

2. Seth Herman
National Grid Senior Project Manager
18 years of Project Management Experience
Bachelor of Science of Geology at Rutgers University

3. Llewellyn Potter
National Grid Manager of Capital Delivery Project Management and Complex Construction in Upstate New York
8 years of Engineering and Management Experience
Bachelor of Science in Mechanical Engineering

4. Environmental Inspector

TBD

5.0 LIST OF APPLICABLE STATE AND LOCAL LAWS AND REGULATIONS

In accordance with the requirements of 16 NYCRR §85-1.2(c)(2), this section provides a list of applicable State and local laws and regulations issued thereunder, including copies of any local ordinance, law, resolution or other action, any regulation issued thereunder, or any local standard or requirement that, as applied to the Project, the Applicant believes to be unreasonably restrictive in view of the existing technology, factors of cost or economics or the needs of consumers.

5.1 STATE

A Certificate of Environmental Compatibility and Public Need under Article VII of the New York Public Service Law.

New York Environmental Conservation Law (ECL) Articles 15 and 24 (crossing of wetlands and streams).

ECL Article 17 (State Pollutant Discharge Elimination System (SPDES) Permit for Stormwater Discharges from Construction Activities), including any required municipal separate storm sewer system (MS4) acceptance.

New York State Department of Transportation (NYSDOT) Utility Work Permits pursuant to 17 NYCRR Part 131 to locate Project facilities in highways under State jurisdiction.

Executive Law Article 42 (determination of coastal zone consistency under New York Coastal Management Program).

New York Public Lands Law, Article 6, Section 75 and 19 NYCRR Parts 270 and 271 (use and occupancy of underwater lands in New York State).

5.2 LOCAL

5.2.4 County of Albany⁴

Albany County Local Law K of 2007. Stormwater Pollution Prevention

Albany County Local Law O of 2008. Restriction on Idling Vehicles

Albany County Local Law B of 2015. Blasting

5.2.5 Town of Bethlehem⁵

Chapter 69. Flood Damage Prevention

Chapter 97. Solid Waste

Chapter 98. Stormwater Management

Chapter 119. Vehicles and Traffic

Chapter 128. Zoning

Pursuant to Section 128.12 of this Chapter and the town's Zoning Map, the Project will be located in the Heavy Industrial (I) zoning district in this town.

Pursuant to Sections 128-14, 128-22 and 128-99 of this Chapter, the town's Schedule of Uses, and Article V of this Chapter, an underground natural gas pipeline is not listed in the town's Schedule of Uses as a use allowed by right, a use allowed subject to site plan approval, or a use permitted subject to special use permit and site plan approvals and certain special permit criteria in the Heavy Industrial (I) zoning district. The town's Schedule of Uses lists "public utility" use as a use allowed subject to site plan approval in the Heavy Industrial (I) zoning district, but Section 128.22 excludes from the definition of a "public utility" use the "transmission lines of [a public] utility." Therefore, the Project is a prohibited use in the Heavy Industrial (I) zoning district.

The Applicant requests that the Commission refuse to apply to the Project the use prohibition referenced in the foregoing paragraph because it is unduly restrictive in view of the existing technology and the needs of consumers. The Project's location within the Town of Bethlehem is a function of the overall integrated Project design and reflects the requirements of constructability,

⁴ The Charter of the County of Albany is available online at <https://www.ecode360.com/AL3660>.

⁵ The local laws of the Town of Bethlehem are available online at <https://www.ecode360.com/BE1011>.

security and public safety. The Applicant has selected its proposed Project route through this town with the objective of minimizing its length in the town by taking a direct route from the town border at the Hudson River to the Project’s southwestern terminus at the Applicant’s existing 16 inch gas line. This route mitigates, to the maximum extent practicable, any adverse impacts of granting this request. This request cannot be obviated by design changes to the Project and is the minimum necessary because a natural gas pipeline use is not a permitted use, special permit use or accessory use in any zoning district in this town and the Project cannot be made to conform to the prohibition without it ceasing to be a public utility use altogether.

Section 128-38(D)(3). Specific regulations for the (Heavy Industrial) District, requiring that equipment and mechanical devices “be shielded from view from the main roadways”

Section 128-38(E)(4). Design Guidelines, requiring that outdoor storage of goods and materials “be screened from view from the main roadways”

Section 128-49. Grading, Erosion and Sediment Control

Section 128-52. Lighting

Section 128-53(A). Lots Bordering Streams

Section 128-59. Signs

5.2.1 County of Rensselaer⁶

Local Law No. 2 of 2015. Blasting

Local Law No. 1 of 2008. Separate Storm Sewer Systems

⁶ The Charter and local laws of the County of Rensselaer are available online at, respectively, <https://www.rensselaercounty.org/wp-content/uploads/Rensselaer-County-Charter-Rev-12-2012.pdf> and <http://www.rensselaercounty.org/local-laws>.

5.2.3 Town of East Greenbush⁷

Local Law No. 6 of 2007. To Prohibit Illicit Discharges, Activities and Connections to Separate, Storm Sewer System

Chapter 15-B. Freshwater Wetlands

Chapter 15E. Grading and Filling; Section 15E-4C

Chapter 17. Flood Damage Prevention

Chapter 33. Sewer Regulations

Chapter 46. Vehicle and Traffic

Comprehensive Zoning Law

Pursuant to Sections 2.1 and 2.2 of the Comprehensive Zoning Law, including the town's Zoning Map, the Project will be located in the following zoning districts in this town:

PDD - Planned Development District

OC - Corporate Office / Regional Commercial District

R-B - Residential-Buffer District

O - Corporate Office Only District

B-1 - General Business Mixed Use District

B-2 - General Business District

R-2 - Residence District

A-R - Agriculture-Residential District

CI - Coastal Industrial District

WMO - Watercourse Management Overlay District

The Project crosses Streams, Water Courses, and Surface Water

An underground natural gas pipeline does not meet the definition of "Utility; public service" in Section 4.5 of the Comprehensive Zoning Law, which is "a structure or right of way *necessary to serve areas within the community*, excluding business office, repair or storage of equipment, wastewater treatment plants, water storage and related accessory improvements" [emphasis

⁷ The Comprehensive Zoning Law of the Town of East Greenbush is available online at https://www.eastgreenbush.org/download_file/view/198/197.

added]. Pursuant to Section 2.4 of the Comprehensive Zoning Law, which is the town's Use Schedule, an underground natural gas pipeline is not listed in the town's Use Schedule as a permitted use, special permit use or accessory use in any of the above districts. Therefore, the Project is a prohibited use in the above districts.

The Applicant requests that the Commission refuse to apply to the Project the use prohibition referenced in the foregoing paragraph because it is unduly restrictive in view of the existing technology and the needs of consumers. The Project's location within the Town of East Greenbush is a function of the overall integrated Project design and reflects the requirements of constructability, security and public safety. The electric transmission right-of-way on which the Applicant proposes to site the Project in most of this town presently exists and is situated primarily on lots owned by the Applicant and joined in a contiguous linear path. The Applicant's use of an existing electric transmission right-of-way for most of the Project route mitigates, to the maximum extent practicable, any adverse impacts of granting this request. This request cannot be obviated by design changes to the Project and is the minimum necessary because a natural gas pipeline use is not a permitted use, special permit use or accessory use in these zoning districts and the Project cannot be made to conform to the prohibition without it ceasing to be a public utility use altogether. (A small portion of the Project route nearest to the Hudson River in this town is not on an existing electric transmission right-of-way. This is where the Applicant proposes to locate the horizontal directional drilling ("HDD") staging site, with the drill alignment running beneath the waterfront land and then under the river. This placement allows a direct route beneath the river to the Project's southwestern terminus at the Applicant's existing 16 inch gas line. The Applicant does not propose to locate the HDD staging site on the existing electric ROW due to constructability limitations there.)

Comprehensive Zoning Law Section 2.5.1(C)01. Transition Requirements for District Boundaries

This section of the Town of East Greenbush local law requires that where a lot in a non-residential district abuts a lot in a residential district, a landscape buffer be provided along such abutting side of the non-residential district lot. This local law would require the Applicant to install a 20-foot wide buffer comprised of a mix of at least 6 foot tall trees and 3.5 foot tall shrubs on its existing ROW at a location in a non-residential district just west of Ridge Road, in order to provide a visual

screening of an above-ground remote blowdown proposed for the Project, because the ROW property line abuts a residential district at this location.

The Applicant requests that the Commission refuse to apply the landscape buffer requirement of Section 2.5.1(C)01 because it is unduly restrictive in view of the existing technology, cost, and the needs of the Applicant's consumers. This request cannot be obviated by design changes, because the Project consists of an underground gas pipeline that requires the installation of this above-ground blowdown in a location near the pipeline but a safe distance from the collocated electric transmission line, and the blowdown needs to be connected to the pipeline by an underground eight inch gas pipe. For pipeline safety and operational reasons, the blowdown and underground connecting pipe proposed for this location must remain accessible in a mowed area clear of trees, shrubs or other landscape plantings. Moreover, the Applicant would incur considerable additional cost if it were required to achieve full compliance with this local law requirement by continually planting landscaping to screen these necessary pipeline appurtenances and then removing the plantings in order to access them when necessary. These costs and consumer needs outweigh the impact on this municipality that would result from the Commission's refusal to apply this local law requirement. The request is the minimum necessary.

Comprehensive Zoning Law Section 2.7.7.03. Required Waterfront Access

This section requires that all new development with water frontage along the Hudson River in the Coastal Industrial District must build a continuous pedestrian esplanade along the width of the developer's property adjacent to the waterway as a recreational trail. This section contains numerous requirements for the esplanade, including that it be linked to a public right-of-way by a waterfront access path that is identified, with a town-approved sign, as a throughway to and from the water and provides a view of the water from the public way.

The Applicant requests that the Commission refuse to apply the pedestrian esplanade requirement of Section 2.7.7.03 to the Project because it is unduly restrictive in view of factors of cost and economics. The Applicant has determined that the Project must traverse the Coastal Industrial District in order to allow a direct route across the Hudson River to the Project's southwestern terminus at the Applicant's existing 16 inch gas line. The Project will include an HDD boring beneath the Hudson River, with the HDD staging site located in this district and the drill alignment

running beneath the waterfront land and then under the river. The necessary excavation of the HDD staging site appears to meet the definition of “development” in Comprehensive Zoning Law Section 4.5. Still, the Project would not disturb any land fronting the Hudson River, and its disturbance at the HDD staging site will be only temporary. So to require the Applicant to comply with Section 2.7.7.03 would unduly encumber the Applicant and its ratepayers with a considerable cost. The Applicant’s use of HDD rather than open-trenching at this location mitigates, to the maximum extent practicable, any adverse impacts of granting this request. This request cannot be obviated by design changes to the Project.

Comprehensive Zoning Law Section 3.2. Landscaping

Section 3.2 imposes certain landscaping requirements on development in six of the districts crossed by the Project (Planned Development District, Corporate Office / Regional Commercial District, Corporate Office Only District, General Business Mixed Use District, General Business District, and Coastal Industrial District). Since “development” is defined in Section 4.5 to include any activity which “materially affects the existing condition of land or improvements, including ...substantial excavation, ... construction ... of any improvement [, or] ...commencement of any use of the land or improvements and any change in the type or intensity ...,” it appears that the construction of the Project will meet this definition. Among the landscaping requirements established by Section 3.2 are minimums for tree and landscaping coverage (Section 3.2.2.B) and minimum plant sizes (Section 3.2.2.E), as well as requirements for buffers and fences (Section 3.2.1.A.06).

The Applicant requests that the Commission refuse to apply the landscaping requirements of Section 3.2 because they are unduly restrictive in view of the existing technology, cost, and the needs of the Applicant’s consumers. This request cannot be obviated by design changes, because the Project consists of an underground gas pipeline that cannot reasonably be fenced or landscaped, and the limited aboveground features (e.g., valve sites) cannot be fenced or landscaped because herbicide application will be made around it in accordance with the Applicant’s Commission-approved practices. Moreover, the Applicant would incur considerable additional cost if it were required to achieve full compliance with these local law requirements by installing fencing or landscaping. These costs and consumer needs outweigh the impact on this

municipality that would result from the Commission's refusal to apply these local law requirements. The request is the minimum necessary.

Comprehensive Zoning Law Section 3.3. Signs

Comprehensive Zoning Law Section 3.6. Performance Standards (and Local Law No. 1 of 2009)

Comprehensive Zoning Law Section 3.6.1.A prohibits any vibration discernible at or beyond the lot lines. Comprehensive Zoning Law Section 3.6.1.H prohibits continuous or intermittent noises exceeding certain specified decibel levels, measured at the lot lines. Section 50-5(F) of Local Law No. 1 of 2009 (the town's "Noise Control Local Law") prohibits noises that "annoy, disturb, injure or endanger the comfort, repose, health, peace, safety or welfare of a reasonable person of normal sensibilities" that exceed certain specified decibel levels at residential and commercial properties measured at the lot lines.

The Applicant requests that the Commission refuse to apply the prohibitions detailed in the foregoing paragraph because they are unreasonably restrictive in view of the existing technology, cost and the needs of consumers. A number of the processes and activities to be conducted in the course of the Project, including use of motorized equipment engaged in excavation and HDD, make compliance technically impossible or impracticable. The types of heavy equipment used during the relatively short period of Project construction in this town will occasionally produce vibration detectable at the property line or cause annoyance to a person of reasonable sensitivity. Some pieces of equipment will occasionally produce continuous or intermittent noises at the lot lines exceeding the specified decibel levels. All of these impacts will be occasional and will occur only for the limited period in which Project construction takes place in this town, and they are unavoidable given the nature of such construction activities. These impacts will be mitigated by the Project's use of industry standard methods that muffle heavy equipment noise. The Applicant will implement noise mitigation measures during the course of the Project. The electric transmission right-of-way on which the Applicant proposes to site the Project presently exists and is situated primarily on lots owned by the Applicant and joined in a contiguous linear path. The property boundaries between these Applicant-owned lots are in arbitrary locations along the length of the right-of-way because they were drawn before the Applicant acquired the lots. These

measures demonstrate that this request is the minimum necessary, and the adverse impacts of granting the request are mitigated to the maximum extent practicable.

Comprehensive Zoning Law Section 3.7.5. Excavations and Soil Mining

Section 3.7.5 prohibits excavation that creates “objectionable noise.”

The Applicant requests that the Commission refuse to apply the prohibition detailed in the foregoing paragraph because it is unreasonably restrictive in view of the existing technology, cost and the needs of consumers. A number of the processes and activities to be conducted in the course of the Project, including use of motorized equipment engaged in excavation and HDD, make compliance technically impossible or impracticable. Some pieces of equipment will occasionally produce noise that some would find objectionable. These impacts will be intermittent and will occur only for the limited period in which Project construction takes place in this town, and they are unavoidable given the nature of such construction activities. These impacts will be mitigated by the Project’s use of industry standard methods that muffle heavy equipment noise. The Applicant will implement noise mitigation measures during the course of the Project. These measures demonstrate that this request is the minimum necessary, and the adverse impacts of granting the request are mitigated to the maximum extent practicable.

Comprehensive Zoning Law Section 3.13.7. Stormwater Pollution Prevention Plan Contents

Comprehensive Zoning Law Section 3.13.13. Maintenance During Construction

5.2.2 Town of North Greenbush⁸

Chapter 75. Building Code

Chapter 152, Section 152-10. Industrial or Construction Activity Discharges

Chapter 155, Section 155-6.1. Planned Commercial District Design Guidelines

Chapter 155, Section 155-6.3. General Business Overlay District Design Guidelines

Chapter 155, Section 155-7. Development standards

⁸ The local laws and Zoning Map of the Town of North Greenbush are available online at <http://www.townofng.com/departments/building/> and at <https://www.ecode360.com/NO0677>.

Chapter 165. Stormwater Management and Erosion and Sediment Control

Chapter 175. Vehicles and Traffic

Chapter 197. Zoning

Pursuant to Section 197.4 of this Chapter and the town's Zoning Map, the Project will be located in the following zoning districts in this town:

C - Commercial District

BG - General Business District

TP - Technology Park

R1 - Residential - Single Family

IG - Industrial District

R4 - Residential District

Pursuant to Section 197-7 of this Chapter, the town's Schedule of Use Regulations, and Article V of this Chapter, an underground natural gas pipeline is not listed in the town's Schedule of Use Regulations as a permitted use, special permit use or accessory use in any of the above districts. Therefore, the Project is a prohibited use in the above districts.

The Applicant requests that the Commission refuse to apply to the Project the use prohibition referenced in the foregoing paragraph because it is unduly restrictive in view of the existing technology and the needs of consumers. The Project's location within the Town of North Greenbush is a function of the overall integrated Project design and reflects the requirements of constructability, security and public safety. The electric transmission right-of-way on which the Applicant proposes to site the Project presently exists and is situated primarily on lots owned by the Applicant and joined in a contiguous linear path. The property boundaries between these Applicant-owned lots are in arbitrary locations along the length of the right-of-way because they were drawn before the Applicant acquired the lots. The Applicant's use of an existing electric transmission right-of-way for the Project route mitigates, to the maximum extent practicable, any adverse impacts of granting this request. This request cannot be obviated by design changes to the Project and is the minimum necessary because a natural gas pipeline use is not a permitted

use, special permit use or accessory use in these zoning districts and the Project cannot be made to conform to the prohibition without it ceasing to be a public utility use altogether.

Section 197-16(C). Encroachments - Obstructions at Street Intersections

Section 197-30. Earthwork

Article VIII. Signs

Chapter 197, Section 197-37(G)(6) prohibits locating a freestanding sign less than 15 feet from the front property line or less than five feet from the side property line.

The Applicant will place signs on and near the Project for safety reasons.

The Applicant requests that the Commission refuse to apply the above prohibitions of Section 197-37(G)(6) to the Applicant's safety-related signs because the prohibitions are unduly restrictive in view of the existing technology and the needs of consumers. To most effectively warn the general public of dangers associated with hazardous construction activity, placement of warning signs near construction areas is warranted and appropriate. If sign placement were to be determined by lot lines rather than by the locations where construction activities are to occur, these safety considerations would be frustrated. The electric transmission right-of-way on which the Applicant proposes to site the Project presently exists and is situated primarily on lots owned by the Applicant and joined in a contiguous linear path. The property boundaries between these Applicant-owned lots are in arbitrary locations along the length of the right-of-way because they were drawn before the Applicant acquired the lots. This request is the minimum necessary and cannot be obviated by design changes to the Project. Any adverse impacts of granting this request are mitigated to the maximum extent practicable.

Section 197-39 (C) and (D). Required Screening for Nonresidential Uses

Article XVIII. Transportation Corridor Overlay District

The Project will cross the T - Transportation Overlay District.

Pursuant to Section Article XVIII of this Chapter, the only use permitted within the Transportation Corridor Overlay District is highway construction. Therefore, the Project is a prohibited use in the Transportation Overlay District.

The Applicant requests that the Commission refuse to apply to the Project the use prohibition referenced in the foregoing paragraph because it is unduly restrictive in view of the existing technology and the needs of consumers. The Project's location within the Town of North Greenbush is a function of the overall integrated Project design and reflects the requirements of constructability, security and public safety. The electric transmission right-of-way on which the Applicant proposes to site the Project presently exists and is situated primarily on lots owned by the Applicant and joined in a contiguous linear path. The Applicant's use of an existing electric transmission right-of-way for the Project route mitigates, to the maximum extent practicable, any adverse impacts of granting this request. This request cannot be obviated by design changes to the Project and is the minimum necessary and the Project cannot be made to conform to the prohibition without it ceasing to be a public utility use altogether.

Section 197-111. Area requirements (Commercial District)

Section 197-113. Design Requirements and Design Guidelines (Commercial District)

Section 197-122. Design Requirements and Design Guidelines (General Business District)

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