Wetland Delineation Report

National Grid
New York Energy Solution

Edic to Princetown Junction and Rotterdam Segment

Oneida, Herkimer, Montgomery, and
Schenectady Counties
New York

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October 2014
Updated August 2016

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1.0 INTRODUCTION

Beginning in 2012, the New York State Public Service Commission ("NYSPSC" or "Commission") initiated a number of proceedings to consider potential actions to address long-standing concerns that there is insufficient transmission capacity between upstate power generation sources and downstate consumers on New York's alternating current (AC) bulk electric transmission system. On December 17, 2015, the NYSPSC issued an order ("NYSPSC Order") identifying numerous public policies that together constitute Public Policy Requirements ("PPR") driving transmission needs associated with the Central East and UPNY/SENY interfaces of the New York State Transmission System. The NYSPSC referred the Central East and UPNY/SENY transmission needs (collectively named the "AC Transmission Public Policy Transmission Needs", or "PPTN") to the New York Independent System Operator ("NYISO") for the solicitation and evaluation of potential solutions. The NYISO issued the AC Transmission PPTN solicitation on February 29, 2016 and accepted proposals from potential project developers on April 29, 2016.

The NYSPSC Order requested that the New York Transmission Owners ("NYTO") propose to the NYISO the NYTOs' Edic to New Scotland ("ED-NS") and Princetown Junction to Rotterdam ("PT-RD") transmission solution and the NYTOs' Knickerbocker to Pleasant Valley ("KB-PV") transmission solution. National Grid was one of the NYTOs that originally proposed these transmission solutions in the NYSPSC Case 13-M-0457, and National Grid is the developer member of the NYTOs that responded to the NYISO PPTN solicitation with the requested submittal of these transmission solutions collectively as the New York Energy Solution ("NYES").

The NYISO PPTN solicitation reflected the project configuration that was presented in the Commission's December 17, 2015 Order: Segment A and Segment B. Segment A addresses the Central East transmission need and Segment B addresses the UPNY/SENY transmission need. Segment A of the NYES consists of construction of a new 345 kV line from Edic to Princetown Junction ("ED-PT") and Princetown Junction to New Scotland ("PT-NS") on existing right-of-way; construction of two new 345 kV lines from Princetown Junction to Rotterdam ("PT-RD") on existing right-of-way (to replace two, existing 230 kV lines, which will be removed from this same right-of-way); and includes a rebuild and expansion of the existing 230 kV Rotterdam Substation to include a 345 kV yard, and modifications to the existing Edic and New Scotland Substations. The total distance from the existing Edic Substation to the existing New Scotland Substation, including the distance from Princetown Junction to the existing Rotterdam Substation, is approximately 92 miles.

Segment B of the NYES consists of a new double-circuit 345/115 kV line from a new Knickerbocker Switching Station to the existing Pleasant Valley Substation on existing right-of-way (to include removal of one, existing 115kV line and modification/consolidation of a second, existing 115 kV line), including a rebuild of the Churchtown 115 kV Switching Station and an upgrade of the existing Pleasant Valley 345/115 kV Substation. The Knickerbocker to Pleasant Valley segment of the NYES includes Knickerbocker to Churchtown ("KB-CT") and Churchtown to Pleasant Valley ("CT-PV"). The total distance

from the proposed Knickerbocker Switching Station to the existing Pleasant Valley Substation is approximately 54 miles.

This Wetland Delineation Report documents the wetlands and surface waterbodies that were delineated within the Edic to Princetown Junction and Rotterdam portion of Segment A of the proposed Project. Wetlands associated with the remaining portions of Segment A and Segment B of the referenced Project (Princetown Junction to New Scotland ("PT-NS"), Knickerbocker to Churchtown ("KB-CT"), and Churchtown to Pleasant Valley ("CT-PV")) are described in three (3) separate reports. The purpose of this Wetland Delineation Report is to describe methods and results of the field survey to identify and delineate freshwater resources that may be subject to regulation under either federal or state jurisdiction and provide a characterization of these resources. Included are a description of the Project segment, methods used to delineate wetlands, information reviewed (concerning wetlands and soils), field survey results (relating to wetlands, surface waterbodies, vegetation, soils, hydrology, and functions and values), a summary, and a literature cited section. Appendices include wetland and surface waterbody data forms and photographic logs, and a description of Natural Resources Conservation Service (NRCS) Mapped Soil Units .

1.1 Regulatory Framework

In New York, wetlands are jointly regulated by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (USACE). New York State's freshwater wetlands are protected under Article 24 of the Environmental Conservation Law, commonly referred to as the Freshwater Wetlands Act. Pursuant to Article 24, New York regulates wetlands greater than 12.4 acres or wetlands of any size that possess unique qualities. In addition, to protect and preserve wetlands New York regulates a wetlands adjacent area, defined as those areas of land or water that are outside a wetland and within 100 feet of the wetland boundary. The USACE has regulatory jurisdiction over waters of the United States including wetlands pursuant to Section 404 of the Clean Water Act, and jurisdiction over Navigable Waters of the United States pursuant to Section 10 of the 1899 Rivers and Harbors Act.

This Project will be subject to Article VII of the NYS Public Service Law, and following selection through the NYISO solicitation process, National Grid will prepare an Article VII Application (Application) for submittal to the NYSPSC to procure a Certificate of Environmental Compatibility and Public Need (Certificate). National Grid will also prepare a Joint Permit Application (JPA) for submittal to the USACE and the NYS Department of Public Service (DPS) as part of the Article VII Application. In addition, National Grid will develop an Environmental Management and Construction Plan (EM&CP), which will describe measures implemented during and throughout construction and restoration phases of the Project to protect agricultural and environmental resources.

2.0 PROJECT SEGMENT DESCRIPTION

The Edic to Princetown Junction and Rotterdam segment bisects Oneida, Herkimer, Montgomery, and Schenectady Counties, New York (Figure 1, Project Location Map).

2.1 Physiographic and Landscape Setting

The area associated with the Edic to Princetown Junction and Rotterdam segment of the Project is located within the Lake State Fruit, Truck Crop, and Dairy Region (Land Resource Region L) of the Ontario-Erie Plain and Finger Lakes Major Land Resource Region (USDA-NRCS, 2006). The Project segment occupies a series of drumlins punctuated by nearly level to rolling plains. Elevation ranges from 347 to 1,361 feet (106 to 415 meters), increasing gradually from the eastern portion of the Project segment to the west. Local relief averages 10 feet (33 meters) with the larger drumlins and valley sides rising between 80 to 330 feet (25 to 100 meters) above the adjacent lowlands and valley floors.

2.2 Land Use

Much of the area is rural, which is used mainly for agricultural crop production, typically hay, corn, and small grains associated with dairy operations. Moderate tracts of hardwood forested communities, frequently utilized as farm woodlots, are dispersed throughout the region. Agricultural and forested lands are centered on widely dispersed urban and agricultural/rural residential communities.

2.3 Hydrography

Most of this Project segment is located south of, and roughly parallel to, the Mohawk River with the exception of the western portion which turns north and crosses the main branch of the Mohawk River just east of Utica, approximately 5.5 miles from the Edic Substation (Figure 2, Hydrography and Drainage Boundaries). This Project segment lies almost entirely within the Mohawk River Subbasin (Hydrologic Unit Code (HUC) 02020004) with a small portion crossing the Schoharie Creek Subbasin (HUC 02020005). All of the surface waters crossed by this Project segment are tributaries of the main branch of the Mohawk River. The Mohawk River Subbasin includes six watersheds that are intersected by this Project segment. These incude: Ninemile Creek (HUC 0202000403), Nowadaga Creek (HUC 0202000407), Canajoharie Creek (HUC 0202000409), Cayadutta Creek (HUC 0202000410), and Alplaus Kill (HUC 0202000411). The Schoharie Creek Subbasin includes one watershed that is intersected by this Project segment, which is Fly Creek (HUC 0202000507). From its head waters in the Tug Hill Plateau area (MLRA 141), the Mohawk River flows east between the southern Adirondack region and the northern Catskill Mountains to its confluence with the Hudson River at the town of Cohees, approximately 21 miles east of Princetown Junction. The Mohawk River watershed, encompassing approximately 3,460 square miles, is the largest tributary to the Hudson River and makes up roughly 25% of the entire Hudson River drainage area (NYSDEC, 2010).

The largest tributary of the Mohawk River is Schoharie Creek, which is crossed by the Project segment in the town of Florida, approximately 4.5 miles upstream of its confluence with the Mohawk River. Agricultural land use, primarily dairy and horse farms, is high in this area, resulting in increased sediment loads (and likely nutrients) to the creek. Stream flow is significantly affected by upstream damming operations at the Schoharie Reservoir, resulting in low flow conditions when the dam is not spilling. These fluctuating water

levels exacerbate sedimentation and stream bank erosion during high flow events such as spring runoff.

Other major surface waterbodies crossed by the Project include Canajoharie Creek, Moyer Creek, Plotter Kill, Budlong Creek, Reall Creek, South Chuctanunda Creek, Erie Canal, Day Creek, Yatesville Creek, Flat Creek, Ohisa Creek, Ferguson Creek, Steele Creek, and Otsquago Creek.

3.0 METHODS

3.1 Wetland Field Delineation Methods

Field delineations were conducted along the Edic to Princetown Junction and Rotterdam segment of the Project in 2013 from October through December and in 2014 from June through July. Although snow cover was present during a portion of the field delineation effort, parameters were still evident allowing for delineation to be completed. Information reviewed prior to field mobilization included USGS 7.5-minute topographic maps, NYSDEC Freshwater Wetland Maps, and United States Department of the Interior National Wetland Inventory (NWI) Maps. The reviewed area, hereafter referred to as the Survey Area, included a 150-foot to 400-foot wide corridor along the transmission line and the potential footprint of disturbance for the substation property surrounding the Edic and Rotterdam Substations. Approximately 81 miles of transmission line corridor and 140 acres of substation area were reviewed as part of the Edic to Princetown Junction and Rotterdam segment delineation effort.

Wetland boundaries were delineated in the field using the Routine Onsite Determination Method as described in the Corps of Engineers Wetlands Delineation Manual (USACE, Environmental Laboratory, 1987) for USACE jurisdictional wetlands and the Routine Delineation Procedure as described in the 1985 New York State Freshwater Wetlands Delineation Manual (Browne et al., 1995) for NYSDEC jurisdictional wetlands. The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0 (January 2012), was also employed.These methods incorporate a three-parameter approach using vegetation, soils, and hydrology to identify the presence of freshwater wetlands. Wetland boundaries were initially identified through visual assessment of vegetation and hydrology. This visual boundary was used to establish two sample locations (one wetland station and one upland station) to verify the boundary of the wetland by analyzing dominant vegetation, soil classification, and hydrology at each sample station. Wetland boundaries and sample stations were identified with pink and blue surveyor flagging, respectively, and corresponding Global Positioning System (GPS) waypoints were recorded using Trimble© Geo XH and XT handheld units. These units generally provide sub-meter accuracy; however, accuracy can range within three to five meters.

Dominant vegetation in each stratum (tree, shrub, herbaceous, and vine) was identified using appropriate regional field guides and assigned a wetland indicator status obtained from Reed, 1988. Cover classes for wetlands were based on the National Wetland

Inventory classification hierarchy (Cowardin et al., 1979). Cover classes were assigned by determining the most abundant cover class in the wetland. A wetland was assigned multiple cover classes if more than one class comprised at least 30 percent aerial coverage. The plant communities of each wetland sample and corresponding upland sample were also categorized according to a list of ecological communities known to occur in New York State as described in Edinger et al., 2014.

Soil profiles were examined using a hand auger or spade shovel at depths no less than 20 inches unless the auger or spade was refused, typically due to shallow bedrock. Soil characteristics were recorded in standard soil log format and soil colors were determined by using a Munsell Soil Color Chart (Kollmorgen Corporation, 2000). Primary (e.g. inundation, high water table, soil saturation, oxidized rhizospheres, water-stained leaves, etc.), and secondary wetland hydrology indicators (e.g. surface soil cracks, drainage patterns, etc.) were also visually assessed and recorded. Sketch maps and site photographs were recorded concurrent with sample station data. Sample station data sheets (including sketch maps), and wetland photographs recorded during the field efforts are provided in Appendices A and B, respectively.

Nomenclature for delineated wetlands consisted of an alphanumeric coding which identified the team that delineated the feature and the town that the feature was located. The wetland identifier started with the delineation team designation (i.e., A, B or C). This was followed by the suffix "W" to indicate wetland and a two letter town designation (i.e., "FR" for Frankfort and "RO" for Root). Sequential numbers followed that identified the individual wetlands within each town. For example, the first wetland that was delineated by team A in Frankfort would be identified as A-WFR-1.

3.2 Surface Waterbody Field Delineation Methods

Surface waterbodies including ponds and linear suface water conveyance systems with a discrete channel, identified within the Survey Area were flagged with orange or blue surveyor flagging and corresponding GPS waypoints were recorded. For streams greater than five feet in width both banks were delineated. For streams less than five feet in width only the centerline of the water course was delineated. Waterbodies were photo-documented and their characteristics, including width, depth, substrate, and bankside vegetation, were recorded on stream datasheets. Wetland drainage patterns were noted on sketch maps but not recorded on stream sheets unless a distinct bed and bank were observed. Surface waterbody nomenclature was similar to that established for wetlands with the addition of "S" suffix instead of "W" to indicate the presence of a stream versus a wetland. Copies of stream data sheets and stream photographs recorded during the field effort are provided in Appendices C and D, respectively.

3.3 Wetland and Surface Waterbody Desktop Delineation Methods

Four (4) wetlands and seven (7) surface waterbodies were desktop-delineated due to accessibility issues. These include the following features:

- B-WFR-20-DD
- B-WDE-16-DD

- B-WDE-17-DD
- B-WDE-18-DD
- A-SFR-21-DD
- A-SFR-22-DD
- B-SFR-17-DD
- B-SFR-18-DD
- B-SFR-19-DD
- B-SFR-20-DD
- B-SGF-21-DD

Desktop delineated features were identified with the suffix "DD." Wetland desktop delineation methods included the review of NYSDEC and NWI mapped wetland data (NYSDEC, 1999 and USFWS, 2014, respectively), New York State Digital Ortho-imagery Program aerial photography (NYSDOP, 2009 through 2010) and United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil data (USDA/NRCS, 2013) to determine the wetland boundary.

Surface waterbody desktop delineation methods included referring to NYSDEC Surface Water Quality Classifications (WQC) (NYSDEC, 2010) and the USGS National Hydrography Dataset (NHD) (USGS, 2010).

3.4 Functions and Values Assessment

A wetland functions and values assessment was conducted for the wetlands that were identified within the Survey Area using the USACE New England District Highway Methodology, Supplement Wetland Functions and Values Descriptive Approach (USACE, 1999). This method employs a descriptive approach to evaluate eight wetland functions (groundwater recharge/discharge, fish and shellfish habitat, flood flow alteration, sediment/toxicant/pathogen retention, nutrient removal, production export, sediment/shoreline stabilization, and wildlife habitat), and five wetland values (recreation, education/scientific value, uniqueness/heritage, visual quality/aesthetics, and threatened or endangered species habitat).

Each wetland was evaluated considering the presence or absence of the eight wetland functions and five wetland values previously described. Wetland functions and values data was collected during the wetland delineation field effort. A field assessment of upland habitats within the Study Area that could potentially be utilized by threatened and endangered species was not performed concurrent to this wetland delineation effort.

4.0 INFORMATION REVIEWED

4.1 Mapped Wetlands

Federal (NWI) and State (NYSDEC) data regarding mapped wetlands were reviewed for the Survey Area. In several locations, both NWI and NYSDEC freshwater mapped wetlands coincide. Maps of the NWI and NYSDEC mapped freshwater wetlands associated with the Edic to Princetown Junction and Rotterdam segment are provided as Figure 3 and Figure 4, respectively.

4.1.1 NWI Mapped Wetlands

The NWI maps wetlands by cover class. Based on NWI wetland mapping, 22.04 acres of NWI mapped wetlands, from 13 mapped wetland polygons, occur within the Edic to Princetown Junction and Rotterdam segment. Table 4.1 provides the number of polygons and acreage of the federally mapped wetlands identified within the Survey Area by cover class. NWI data is provided for comparison purposes only and associated features are not included in calculating delineated wetland area within the Survey Area.

4.1.2 NYSDEC Mapped Freshwater Wetlands

The NYSDEC Freshwater Wetlands Act (1975) ranks wetlands in one of four classes ranging from Class I, which provide the most benefits, to Class IV, which provide the fewest benefits. Benefits derived from wetlands may include flood and storm control, wildlife habitat, protection of subsurface water resources, recreation, pollution treatment, erosion control, education, open space, and sources of nutrients. Class I, II, and III wetlands were identified within the Survey Area. Class IV wetlands were not identified within the Survey Area. Based on the State wetland maps, 31.62 acres of NYSDEC mapped freshwater wetlands, from 11 separate NYSDEC mapped wetland polygons, occur within the Edic to Princetown Junction and Rotterdam segment. Table 4.2 provides the number of NYSDEC mapped wetlands polygons and associated acreage identified within the Survey Area by Class.

4.2 Soils

A review of the USDA NRCS Soil Survey Geographic Database for Oneida, Herkimer, Montgomery, and Schenectady Counties, New York was conducted to determine what soils were present within the Survey Area. One hundred and forty six (146) mapped soil units were identified within the Survey Area of the Edic to Princetown Junction and Rotterdam segment of the Project. Twenty four (24) of the 146 mapped soil units were identified as wetland soils (hydric soils and soils with hydric inclusions). A detailed description of each mapped soil unit within the Survey Area is presented in Appendix E.

5.0 RESULTS

Two hundred and sixty (260) wetlands (256 field delineated and 4 desktop-delineated) and 265 surface waterbodies (258 field delineated and 7 desktop-delineated) were identified within the Survey Area. The previously referenced desktop-delineated features were not field delineated due to accessibility issues. The locations of these delineated features are identified on Figure 5, Delineated Wetlands and Surface Waterbodies.

5.1 Delineated Wetlands

Two hundred and sixty (260) wetland polygons comprising 423.7 acres were field delineated or desktop delineated within the Edic to Princetown Junction and Rotterdam segment of the Project. Delineated wetlands identified within the Survey Area are provided in Table 5-1. Delineated wetland locations are depicted on Figure 5, Delineated Wetlands and Surface Waterbodies.

Predominant wetland cover types encountered were palustrine scrub shrub (PSS), and palustrine emergent (PEM) as defined by Cowardin and others (1979). Acreages of delineated wetland polygons by cover type are provided in Table 5-2. Specific community characteristics of all wetland cover types encountered during field efforts are summarized in Section 5.4.

5.2 Delineated NYSDEC Wetlands and Adjacent Areas

Delineated wetlands that were located within the boundaries of NYSDEC mapped freshwater wetland polygons were designated as NYSDEC wetlands. A 100-foot adjacent area was generated for each wetland identified as a NYSDEC wetland. Adjacent areas from more than one wetland were joined to prevent an over estimate of adjacent areas acreage.

Twenty-one (21) of the 260 wetlands that are intersected by the Survey Area were identified as NYSDEC wetlands (63.45 acres total). State regulated delineated wetlands and the associated acreages within the Survey Area are identified by an asterisk (*) and bold text in Table 5-1.

Thirty (30.12) acres of NYSDEC adjacent area also occurs within the Survey Area. The acreages of the state regulated adjacent areas that occur within the Survey Area, and their wetland associations, are provided in Table 5-3. It should be noted that the acres of NYSDEC adjacent area within the Survey Area may be under estimated as delineation efforts were limited to the right-of-way (ROW).

5.3 Delineated Surface Waterbodies

Two hundred and sixty-five (265) surface waterbodies, totaling 72,929 linear feet (13.8 miles), were identified within the Survey Area. The surface waterbodies consist of 240 streams (113 perennial, 101 intermittent, and 26 ephemeral); 12 ditches (2 intermittent and 10 ephemeral); nine agricultural ditches (4 intermittent and 5 ephemeral); and four roadside ditches (1 intermittent and 3 ephemeral). Table 5-4 lists each surface waterbody identified in the Survey Area for this segment, its NYSDEC classification, and location. Surface waterbodies are depicted on Figure 5, Delineated Wetlands and Surface Waterbodies.

Under the Environmental Conservation Law (Article 15), New York regulates surface freshwater resources by their best uses (fishing, source of drinking water, etc.) (6 NYCRR Part 701) or as Wild, Scenic and Recreation Rivers (6 NYCRR Part 666). No Wild, Scenic and Recreation Rivers were identified within the Edic to Princetown Junction and Rotterdam segment of the Project. State water quality classifications of watercourses within the Edic to Princetown Junction and Rotterdam segment Survey Area fall into three (3) categories: Class A, B, and C streams. The classification AA or A is assigned to waters used as a source of drinking water. Classification B indicates a best usage for swimming and other contact recreation, but not for drinking water. Classification C is for waters supporting fisheries and suitable for non-contact activities. The lowest classification and standard is D. Waters with classifications A, B, and C may also have a standard of (T), indicating that it may support a trout population, or (TS), indicating that it may support

trout spawning (TS). Special requirements apply to sustain these waters that support these valuable and sensitive fisheries resources.

Three of the surface waterbodies (1,177 linear feet, or 0.22 mile) delineated within the Survey Area are classified as Class A waters. One (1) of the surface waterbodies (265 linear feet, or 0.05 mile) delineated within the Survey Area is classified as a Class B water. Ninety-eight (98) of the surface waterbodies (31,699 linear feet, or 6.00 miles). delineated within the Survey Area are classified as Class C waters. Twenty-one (21) of the surface waterbodies identified above (6,992 linear feet, or 1.32 miles) are also classified as either trout supporting or trout spawning waters. The remaining 164 surface waterbodies (40,245 linear feet, or 7.62 miles) are not classified.

5.4 Ecological Communities and Vegetation

Vegetative communities identified in the Survey Area included riverine, palustrine, and terrestrial systems as described in Edinger et al. (2014). Riverine systems consist of non-tidal linear flowing aquatic communities with a discrete channel. These systems may include abundant submerged or floating-leaved aquatic vegetation. Palustrine systems consist of non-tidal, perennial wetlands characterized by emergent vegetation. Hydrologic regimes include permanently saturated, perminantly flooded, seasonally flooded and intermittently flooded. Wetland communities are further distinguished by their plant composition and substrate. Terrestrial systems consist of upland habitats. These habitats include dry to mesic well-drained soils and cover that is never dominated by hydrophytic vegetation (Edinger et al., 2014).

The most frequent land use encountered during field surveys was brushy cleared land within existing maintained electric transmission corridors, consisting of vegetative communities of various successional stages corresponding to the time since the most recent maintenance activities (e.g. clearing or mowing). As anticipated, agricultural land consisting of row/field crops and pastureland was also prevalent followed by successional old fields and successional shrublands located either in fallow or abandoned agriculture land, or along hedgerows within actively cultivated land. There were few forested communities within the Survey Area, given the historic clearing activities associated with maintaining the existing ROW. The area adjacent to the Survey Area consisted of upland forested communities were highly fragmented and often occurred as isolated stands, which is typical of the region. Some edge habitats with shrubby growth occupy the transition between agriculture fields and forested areas; however, an abrupt transition between cover types is more common.

Palustrine classes identified within the Survey Area were mainly non-forested wetlands consisting of scrub-shrub swamps and shallow emergent marshes generally located on mineral soils. Approximately 403 acres (95 percent) of the wetlands delineated within the Survey Area were identified as emergent or scrub shrub. The remaining delineated wetlands were identified as forested communities, due to the presence of greater than 30 percent tree canopy cover. These forested wetlands were encountered where adjacent forested vegetation partially encroached into the existing ROW corridor, at the bottoms of ravines spanned by the existing transmission line, and in the vicinity of Princetown

Junction. Acreages of delineated wetland polygons by cover type are provided in Table 5-2.

A large proportion of wetlands identified in the Survey Area, particularly scrub-shrub swamps, were associated with isolated geomorphic depressions within the maintained ROW fed by hillside seeps or defined stream drainages. Emergent marshes were commonly associated with NYSDEC mapped stream channels that serve to drain active agriculture fields as well as fragmented forested parcels. Fallow and abandoned agricultural fields and hedgerows separating actively cultivated areas supported both emergent and scrub-shrub wetlands.

Species common in emergent wetlands include reed-canary grass (*Phalaris arundinacea*), late goldenrod (*Solidago gigantea*), asters (*Symphyotrichum* spp.), soft rush (*Juncus effusus*), woolgrass (*Scirpus cyperinus*), fox sedge (*Carex vulpinoidea*), pointed broom sedge (*Carex scoparia*), dogwoods (*Cornus* spp.), and black bent grass (*Agrostis gigantea*). Less frequently encountered species include cattail (*Typha latifolia*), purple loosestrife (*Lythrum salicaria*), and greater bladder sedge (*Carex intumescens*).

Scrub-shrub wetlands are often vegetated with species similar to those found in successional old fields; however, wetlands also include willow species (*Salix* spp.), meadow sweet (*Spirea alba*), red osier dogwood (*Cornus alba*), and sensitive fern (*Onoclea sensibilis*). Dominant herbaceous species include late goldenrod, fox sedge, pointed broom sedge, black bent grass, and soft rush.

Successional fields are dominated by forbs, grasses, and shrubs including goldenrod species, spotted knapweed (*Centaurea stoebe*), Kentucky bluegrass (*Poa pratensis*), timothy (*Phleum pratense*), gray dogwood (*Cornus racemosa*), common buckthorn (*Rhamnus cathartica*), honeysuckles (*Lonicera* spp.), and arrowwood (*Viburnum recognitum*). Forested uplands are characterized by red maple (*Acer rubrum*), yellow birch (*Betula alleghaniensis*), beech (*Fagus grandifolia*), American elm (*Ulmus americana*), shagbark hickory, and American hornbeam (*Carpinus caroliniana*).

Five undesirable plant species were noted during the field survey, four of which occur on the *Interim List of Invasive Plant Species in New York State* (NYSDEC, 2012). Reed canary-grass is very abundant and widely distributed within the Survey Area. This species was often observed within the maintained ROW, in upland agriculture fields, drainage ditches bisecting active agricultural fields, and emergent wetlands. Purple loosestrife was also observed within the maintained ROW, as well as along roadsides and in disturbed wetland communities. Common reed grass (*Phragmites australis*) was observed less frequently in roadside ditches and on occasion, dense patches were noted in actively cultivated fields and emergent wetlands within the Survey Area. Japanese Knotweed (*Fallopia japonica*) was observed in several locations as dense stands bordering stream banks within riparian wetlands.

5.5 Soils

One hundred forty-six (146) soil units mapped by the NRCS occur within the Survey Area. According to the National List of Hydric Soils, twenty-four soil units (Aa – Allis silt loam; Ad – Alluvial land; Co – Cohoctah mucky very fine sandy loam; Fluvaquents – loamy; Fo - Fonda mucky silty clay loam; Fr – Fredon fine sandy loam; Fr – Fredon silt loam; Ha – Halsey soils; In – Ilion silt loam; IlA – Ilion silt loam, 0 to 3 percent slopes; IlB – Ilion silt loam, 3 to 8 percent slopes; InB – Ilion very stony silt loam, 0 to 8 percent slopes; Ly – Lyons mucky silt loam; Ma – Madalin silty clay loam; RaB – Raynham silt loam, 0 to 4 percent slopes; SA – Saprists and Aquents (Saprists); SA – Saprists and Aquents (Aquents); Tu – Tuller channery silt loam; TvA – Tuller-Brockport complex, 0 to 3 percent slopes; TvB – Tuller-Brockport, 3 to 8 percent slopes; 1 – Udifluvents-Fluvaquents complex, frequently flooded; VaA – Varick silt loam, 0 to 3 percent slopes; VaB – Varick silt loam, 3 to 8 percent slopes; Wd – Wayland silt loam) are designated by the NRCS as hydric (NRCS, 2014). The hydric criteria for soils in the Northeast Region have been updated in the Northcentral and Northeast Supplement (USACE, 2012). A detailed description of each mapped soil unit along the Project segment is presented in Appendix E.

Glacial activity has been the driving mechanism in the development of the existing soil structures throughout the Survey Area. Repeated advance and retreat of glacial ice resulted in large scale erosion and re-deposition throughout the Mohawk River valley which acted as the primary drainage of sediment-laden glacial melt water between the Adirondack Mountains to the north and the Catskill Mountains to the south. In general, the Survey Area is located in an area dominated by deep soils that formed in glacial till with a makeup influenced by the composition of the local bedrock over which glaciation moved and picked up rock material (USDA/SCS, 1975). The Survey Area is underlain primarily by sedimentary rock composed of shale, sandstone, and limestone, with most of the soils consisting of a mixture of several of these rock types, none of which are dominant. In areas along the flood plains of streams, soils formed mainly in alluvial and outwash deposits with fine-grained material being deposited by overbank flow, away from the main channel, during periods of flooding (USDA/NRCS, 2008, USDA/SCS, 1978).

Soils within the Survey Area matched the clay loam, loam, and less frequently sandy soils mapped by the NRCS for the area. Soils documented in wetlands are generally very dark brown (10YR 2/2) to black (10YR 2/1) over dark gray (10YR 4/1) to gray (10YR 6/1) horizons and frequently met the criteria for hydric soil indicators A11: Depleted Below Dark Surface, A12: Thick Dark Surface, F3: Depleted Matrix, and F7: Depleted Dark Surface. A depleted matrix is one of the most commonly observed hydric soil indicators. Matrix values of 4 through 6 with a chroma of 1, 2, and 3 were common including the required redox concentration of iron. Soils documented in uplands had typically higher chroma (3 or 4) and a hue of 10YR and lacked hydric indicators within the upper 12 inches. A restrictive layer was infrequently encountered in wetlands; however, gravel, rock, and

bedrock were occasionally encountered between 2 and 16 inches of the soil surface. Soils located in upland areas developed concretions common to poorly drained soils; however, these soils did not exhibit the required combination of matrix value and chroma, redox features, and thickness for hydric soil classification.

5.6 Hydrology

Wetland hydrology largely results from a seasonally high water table and seasonal inundation due to clayey soils with slow surface drainage and very slow water movement through the subsoil and substratum. Primary indicators of hydrology were present in all NYSDEC and NWI mapped wetlands. The most prevalent indicators recorded for delineated wetlands include A1: Surface Water, A2: High Water table, A3: Saturation, and C4: Presence of Reduced Iron.

5.7 Functions and Values

Groundwater Recharge/Discharge, Floodflow Alteration, and Wildlife Habitat were the most prevalent wetland functions associated with the delineated wetlands within the Edic to Princetown and Rotterdam segment of the Project. Visual Quality/Aesthetics was the predominant wetland value. Wetlands of Uniqueness/Heritage, including Threatened or Endangered Species Habitat or providing Educational/Scientific Value, were not identified. Groundwater Recharge/Discharge, Floodflow Alteration, and Wildlife Habitat were also identified to be the dominant primary indicators, while Groundwater Recharge/Discharge, Sediment/Toxicant/Pathogen Retention, and Wildlife Habitat were the foremost secondary indicators.

6.0 Summary

This Wetland Delineation Report documents the wetlands and surface waterbodies that were delineated within the Edic to Princetown Junction and Rotterdam segment of the proposed Project. The Survey Area included a 150 to 400-foot wide corridor along the transmission line and the footprint of disturbance for the proposed substations and substation upgrades. Two hundred and sixty (260) wetlands, comprising 423.7 acres, and 265 surface waterbodies, totaling 72,929 linear feet (13.8 miles), were identified within the Survey Area of the referenced segment. Predominant wetland cover types encountered included PSS and PEM. Twenty-one (21) of the 260 wetlands (63.45 acres) were identified as NYSDEC wetlands. Thirty (30.12) acres of NYSDEC adjacent area was also identified within the Survey Area.

Three of the delineated surface waterbodies (1,177 linear feet, or 0.22 mile) were identified as Class A waters; one (265 linear feet, or 0.05 mile) was identified as a Class B water; and 98 (31,699 linear feet, or 6.00 miles) were identified as Class C waters. Twenty-one (21) of these surface waterbodies (6,992 linear feet, or 1.32 miles) were also identified as either trout supporting or spawning waters. The remaining 163 surface waterbodies (40,245 linear feet, or 7.62 miles) are not classified.

The most prevalent wetland functions associated with the delineated wetlands were Groundwater Recharge/Discharge, Floodflow Alteration, and Wildlife Habitat. The predominant value was Visual Quality/Aesthetics. Wetlands of Uniqueness/Heritage, including T&E Species Habitat or providing Educational/Scientific Value, were not identified. Further evaluation, beyond this functions and values assessment, may be required to determine the presence or absence of threatened and endangered plant and animal species habitat occurring within the Study Area.

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Figures

Tables