Wetland Delineation Report

Mohawk Solar

Towns of Canajoharie and Minden
Montgomery County, New York

Prepared for:

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Mohawk Solar LLC ("Mohawk Solar" or the "Applicant"), a wholly owned subsidiary of Avangrid Renewables, LLC ("Avangrid"), is proposing to construct a solar energy generation facility and associated necessary infrastructure (the "Facility") in the Towns of Canajoharie and Minden in Montgomery County, New York (see Figure 1). The Facility is roughly bounded by New York State Route 10 to the east, Montgomery County Route 163 to the west, Seebers Lane to the north, and Dygert Road to the south (see Figure 2). The Facility will consist of single access-tracker photovoltaic (PV) panels and associated support structures with a total generating capacity of up to 90 MW. Other proposed components will include: access roads, pad-mounted transformers, buried collection lines, an operations and maintenance (O&M) building, a collection substation, and a point of interconnect (POI) switchyard (see Figure 2).

Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) was retained to identify all wetlands and streams within and adjacent to the potential footprint of Facility components described above (hereafter referred to as the "Study Area" - see Figure 2). The Study Area generally consists of parcels that will host Facility components. However, for linear features, such as buried collection lines, a 1,000 foot corridor centered on the feature was investigated. Wetland and stream delineations took place within the Study Area during various stages of the growing season in the months of October and November 2017 and May, June, August and November 2018.

1.2 PURPOSE

The purpose of this effort was to delineate and describe all wetlands and streams that may fall under state or federal jurisdiction, and to identify the potential location of vernal pools, that could possibly be impacted by construction of the proposed Facility. Specific tasks performed included 1) review of background resource data and mapping, 2) field delineation and flagging of all potential state and federal jurisdictional wetlands, streams, and vernal pools, 3) Global Positioning System (GPS) survey of on-site delineated wetland and stream boundaries, 4) quantification of the area of on-site jurisdictional wetlands and streams within the Study Area, and 5) a description of potentially jurisdictional areas based on hydrology, vegetation, and soils data collected in the field.

This document is intended to provide the information necessary to identify and document on-site delineations, facilitate jurisdictional determinations, and support state and federal permit applications.

1.3 RESOURCES

Data supporting this investigation have been derived from a number of sources including USGS topographic mapping (Canajoharie, Fort Plain, Sharon Springs, and Sprout Brook NY 7.5 minute quadrangles), United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping, NYSDEC Freshwater Wetlands mapping, Natural Resources Conservation Service (NRCS) Web Soil Survey (Soil Survey Staff, 2018), the NRCS List of Hydric Soils of the State of New York (NRCS, 2017), and recent aerial photography.

Vascular plant names follow nomenclature found in the New York Flora Atlas (Weldy et al., 2018), and wetland indicator status for plant species, was determined by reference to the National Wetland Plant List (Lichvar et al., 2016). Jurisdictional areas were characterized in accordance with the wetlands and deepwater habitats classification system used in NWI mapping (Cowardin, 1979).

1.4 QUALIFICATIONS

Wetland and stream delineations were conducted by EDR field ecologists John Wojcikiewicz, Samouel Beguin, and Shelby Zemken.

Mr. Wojcikiewicz is a Project Manager/Field Biologist with more than five years of experience in the natural resources field. He received a Bachelor of Science in Biology from Clarkson University and a Master's Degree in Biology from Virginia Commonwealth University. Mr. Wojcikiewicz's experience includes wetland and stream delineations, wetland permitting, ecological surveys, ecological research, invasive species management, environmental impact analysis, and geographical information systems (GIS) data analysis.

Mr. Beguin is a Senior Environmental Analyst with more than 4 years of experience in the environmental field. He received a Master of Science in Environmental and Forest Biology from SUNY ESF and a Bachelor of Arts in Biology and Environmental Studies from Middlebury College. Mr. Beguin's experience includes wetland and stream delineations, wetland permitting, ecological surveys, GIS mapping and data analysis, and scientific research. At EDR, Mr. Beguin has conducted field delineations and ecological surveys for several energy, municipal, and private development projects.

Mr. Zemken is an Environmental Analyst with more than four years of experience in the natural resources field. He received a Bachelor of Science in Environmental Science from SUNY Oneonta, and a Master's Degree in Environmental Science from the University of Cologne, Germany. Mr. Zemken's experience includes wetland and stream delineations, ecological resource investigations, and GIS data analysis.

2.0 REGULATORY AUTHORITIES AND PERMITS

2.1 WATERS OF THE UNITED STATES

In accordance with Section 404 of the Clean Water Act, the USACE has regulatory jurisdiction over Waters of the United States (WOTUS). As defined by the USACE, and as it currently applies in New York, WOTUS includes all lakes, ponds, streams (intermittent and perennial), and wetlands. Wetlands are defined as "*those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions*" (EPA, 2001). Such areas are indicated by the presence of three criteria: a dominance of hydrophytic vegetation, hydric soils, and evidence of wetland hydrology during the growing season (Environmental Laboratory, 1987).

In August 2015, the United States Environmental Protection Agency (USEPA) released the *Clean Water Rule* (the "2015 Rule"; 33 CFR Part 328) which provides a clearer and more consistent approach to defining the scope of the CWA and WOTUS. In February 2017, an Executive Order was issued directing the USEPA and the USACE to review and rescind or revise the 2015 Rule. However, as of August 2018, the 2015 Rule remains in effect for 22 states, including New York.

Three major elements of the 2015 Rule that define jurisdictional waters are summarized below:

Traditional navigable waters, interstate waters, territorial seas, and impoundments of jurisdictional waters:

- Consistent with the existing regulations.
- The agencies will assert jurisdiction over these waters.

Tributaries:

- Specifically defines tributaries as "*waters that are characterized by the presence of physical indicators of flow – bed and banks and ordinary high water mark – and that contribute flow directly or indirectly to a traditional navigable water".*
- The agencies will assert jurisdiction over these waters.

Adjacent Waters:

- Defined as "*bordering, contiguous, or neighboring, including waters separated from other "waters of the United States" by constructed dikes or barriers, natural river berms, beach dunes and the like".*
- The agencies will assert jurisdiction over these waters if any of these settings occur:
    - *"Waters located in whole or in part within 100 feet of the ordinary high water mark of a traditional navigable waters, interstate waters, territorial seas, and impoundments"*;

- *"Waters located in whole or in part in the 100-year floodplain and that are within 1,500 feet of the ordinary high-water mark of a traditional navigable water, interstate waters, territorial seas, an impoundment, or a tributary"*; and
- *"Waters located in whole or in a part within 1,500 feet of the tide line of a traditional navigable water or the territorial seas and waters located within 1,500 feet of the ordinary high-water mark of the Great Lakes".*

A Section 404 permit from the USACE is required for activities that result in the placement of dredged or fill materials in WOTUS.

In addition to Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbor Act (33 U.S.C. 401 et seq.) requires a permit from the USACE to construct any structure in or over any navigable water of the United States, as well as any proposed action that would alter or disturb (such as excavation/dredging or deposition of materials in) these waters. There are no navigable waters mapped within the Study Area.

2.2 NEW YORK STATE FRESHWATER WETLANDS AND PROTECTED STREAMS

The Freshwater Wetlands Act (Article 24 and Title 23 of Article 71 of the Environmental Conservation Law) gives the NYSDEC jurisdiction over state-protected wetlands and adjacent areas (100-foot upland buffer). The Freshwater Wetlands Act requires the NYSDEC to map all state-protected wetlands to allow landowners and other interested parties a means of determining where state jurisdictional wetlands exist. To implement the policy established by this Act, regulations were promulgated by the state under 6 NYCRR Parts 663 and 664. Part 664 of the regulations designates wetlands into four class ratings, with Class I being the highest or best quality wetland and Class IV being the lowest. In general, wetlands regulated by the state are those 12.4 acres in size or larger. Smaller wetlands can also be regulated if they are considered of unusual local importance. A 100-foot adjacent area around the delineated boundary of any state-regulated wetland is also under NYSDEC jurisdiction. The location and approximate boundaries of wetlands regulated by the State of New York under Article 24 are indicated on NYS Freshwater Wetland Maps. An Article 24 permit is required from the NYSDEC for any disturbance to a state-protected wetland or 100-foot adjacent area, including removing vegetation. However, under Article 10 of the Public Service Law, this permitting authority has been delegated to the New York State Board on Electric Generation Siting and the Environment (Siting Board).

Under Article 15 of the Environmental Conservation Law (Protection of Waters), the NYSDEC has regulatory jurisdiction over any activity that disturbs the bed or banks of protected streams. In addition, small lakes and ponds with a surface area of 10 acres or less, located within the course of a protected stream, are considered to be part of a stream and are subject to regulation under the stream protection category of Article 15. The term "protected stream" means any stream, or particular portion of a stream, that has been assigned by the NYSDEC any of the following classifications or

standards: AA, A, B, or C(T) or C(TS) (6 NYCRR Part 701). A classification of AA or A indicates that the best use of the stream is as a source of water supply for drinking, culinary or food processing purposes, primary and secondary contact recreation, and fishing. The best usages of Class B waters are primary and secondary contact recreation and fishing. The best usage of Class C waters is fishing. Streams designated (T) indicate that they support trout, while those designated (TS) support trout spawning. State water quality classifications of unprotected watercourses include Class C and Class D streams. Waters with a classification of D are suitable for fishing and non-contact recreation. An Article 15 permit is required from the NYSDEC for any disturbance to a stream classified C(T) or higher. However, under Article 10, this permitting authority has been delegated to the New York State Department of Public Service (DPS).

3.0 PHYSICAL CHARACTERISTICS AND RESOURCES

3.1 PHYSIOGRAPHY AND SOILS

The Study Area is located in the Mohawk Valley Physiographic Province of New York State. The geography in this province has significant relief as a result of a valley entrenchment from the nearby Mohawk River. Further away from the river valley, the topography becomes somewhat rolling (USDA, 1978). The bedrock in the Study Area is mainly of the Ordovician age consisting of the Schenectady Formation of shale and interbedded sandstone and the Franklin Formation of shale. Elevations within the Study Area range from approximately 600 feet above mean sea level (amsl) to approximately 1,000 amsl (Figure 3).

The Montgomery County Soil Survey has mapped general soil associations and soil types within the county (Soil Survey Staff, 2018). The soil survey indicates that 33 soil series are present within the Study Area (Figure 4 and Table 1). Of these, Darien silt loam is the most dominant soil series, covering approximately 450 acres (21 percent) of the Study Area. Other prominent soil series include Appleton silt loam, and Lansing silt loam. Table 1 lists the soil map units within the Study Area and their characteristics. “Soil drainage in the Study Area is variable, with approximately 55 percent of the mapped soils classified as somewhat poorly drained, 20 percent classified as well drained, 3 percent classified as very poorly drained, and the remaining 1 percent classified as moderately well drained. Hydric” and “Potentially Hydric” designations are based on information obtained from the USDA Web Soil Survey (Soil Survey Staff, 2018). Although soil series may be generally classified as hydric or potentially hydric in the online databases, this is for general use and does not supersede specific conditions documented in the field.

Table 1. Study Area Soils

Mapping Unit	Series	Slope (%)	Drainage[1]	Hydric[2]	Potentially Hydric[3]	Acres Within Study Area
AnB	Angola silt loam, 3 to 8 percent slopes	3-8	SPD	No	Yes	65.8
ApA	Appleton silt loam, 0 to 3 percent slopes	0-3	SPD	No	Yes	9.4
ApB	Appleton silt loam, 3 to 8 percent slopes	3-8	SPD	No	Yes	320.5
Br	Brockport silt loam	0-3	SPD	No	Yes	3.6
BuA	Burdett channery silt loam, 0 to 3 percent slopes	0-3	SPD	No	Yes	2.2
BuB	Burdett channery silt loam, 3 to 8 percent slopes	3-8	SPD	No	Yes	41.0
BuC	Burdett channery silt loam, 8 to 15 percent slopes	8-15	SPD	No	Yes	4.0
ChA	Churchville silty clay loam, 0 to 3 percent slopes	0-3	SPD	No	Yes	16.4
ChB	Churchville silty clay loam, 3 to 8 percent slopes	3-8	SPD	No	Yes	86.7
DaA	Darien silt loam, 0 to 3 percent slopes	0-3	SPD	No	Yes	10.1
DaB	Darien silt loam, 3 to 8 percent slopes	3-8	SPD	No	Yes	437.2
DaC	Darien silt loam, 8 to 15 percent slopes	8-15	SPD	No	Yes	2.9
FL	Fluvaquents, loamy	0-2	PD	Yes	No	45.6
Fo	Fonda mucky silty clay loam	0-3	VPD	Yes	No	65.8
Fr	Fredon silt loam	0-3	SPD	No	Yes	0.27
HoB	Hornell silt loam, 3 to 8 percent slopes	3-8	SPD	No	Yes	49.9
IlA	Ilion silt loam, 0 to 3 percent slopes	0-3	PD	No	Yes	97.0
IlB	Ilion silt loam, 3 to 8 percent slopes	3-8	PD	No	Yes	112.7
LaB	Lansing silt loam, 3 to 8 percent slopes	3-8	WD	No	No	111.1
LaC	Lansing silt loam, 8 to 15 percent slopes	8-15	WD	No	No	150.5
LaD	Lansing silt loam, 15 to 25 percent slopes	15-25	WD	No	No	42.0
LMF	Lansing and Mohawk soils, 25 to 60 percent slopes	25-60	WD	No	No	2.0
Ma	Madalin silty clay loam, 0 to 3 percent slopes	0-3	PD	Yes	No	186.7
MnB	Manlius silt loam, 3 to 8 percent slopes	3-8	WD	No	No	2.9
MoC	Manlius shaly silt loam, 8 to 15 percent slopes	8-15	WD	No	No	0.01
MsD	Mohawk silt loam, 15 to 25 percent slopes	15-25	WD	No	No	15.7

Mapping Unit	Series	Slope (%)	Drainage[1]	Hydric[2]	Potentially Hydric[3]	Acres Within Study Area
PaB	Palatine silt loam, 3 to 8 percent slopes	3-8	WD	No	No	38.1
PaC	Palatine silt loam, 8 to 15 percent slopes	8-15	WD	No	No	50.3
PaD	Palatine silt loam, 15 to 25 percent slopes	15-25	WD	No	No	3.2
PpB	Phelps gravelly loam, 3 to 8 percent slopes	3-8	MWD	No	No	15.5
Pr	Phelps gravelly loam, fan	0-8	MWD	No	No	3.7
RhA	Rhinebeck silty clay loam, 0 to 3 percent slopes	0-3	SPD	No	Yes	72.0
RhB	Rhinebeck silty clay loam, 3 to 8 percent slopes	3-8	SPD	No	Yes	36.0
UnD	Unailla silt loam, 15 to 25 percent slopes	15-25	WD	No	No	0.6
W	Water	--[4]	--	Yes	No	2.6

[1] Soil drainage is represented by the following abbreviations: "WD" = well drained, "MWD" = moderately well drained, "SPD" = somewhat poorly drained, "SPD" = somewhat poorly drained, "PD" = poorly drained, and "VPD" = very poorly drained.
[2] "Yes" indicates this soil is listed as containing 66% or more hydric components within the map unit as listed on the USDA Web Soil Survey.
[3] "Yes" indicates this soil is listed as containing 1% to 65% hydric components within the map unit as listed on the USDA Web Soil Survey.
[4] "--" indicate no slope data is available on the USDA Web Soil Survey for the respective map unit.

3.2 HYDROLOGY

The entire Study Area is located in the Mohawk watershed (USGS Hydrologic Unit 02050105). Most of the surface hydrology in the Study Area is generated by precipitation and surface water run-off from adjacent land. Total annual precipitation averages 40.78 inches in nearby Fort Plain, New York (NOAA, 2018).

Based on review of mapped wetlands and streams, aerial imagery, and site-specific field investigations, the largest surface water body within the Study Area is an unnamed tributary of Canajoharie Creek, a Class C unprotected stream, which flows east through the Study Area. The stream continues out of the Study Area until its confluence with Canajoharie Creek, approximately 0.5 miles east. Canajoharie Creek flows north into the Mohawk River. Surface water in some northern and western portions of the Study Area flow to Otsquago Creek (a tributary of the Mohawk River) and other unnamed tributaries of the Mohawk River. The Mohawk River drains into the Hudson River, approximately 48 miles east of the Study Area. The Hudson River then flows south until It's confluence with the New York Bay and, ultimately, the Atlantic Ocean (NYSDEC, 2017).

3.3 FEDERAL AND STATE MAPPED WETLANDS AND STREAMS

National Wetland Inventory (NWI) mapping indicates the presence of 33 wetland communities, totaling 102 acres, within the Study Area (Figure 5). NWI mapping categorizes wetlands based on their vegetative community. For NWI purposes, a single wetland with two community types is mapped as two different wetlands (USFWS, 2016). NWI

mapping indicates that emergent wetlands are the dominant wetland community type in the Study Area, totaling 66.48 acres. Other NWI-mapped wetland communities include forested scrub-shrub wetlands (20.41 acres), riverine wetlands (12.36 acres), and freshwater ponds (2.88 acres).

Review of NYSDEC Freshwater Wetlands mapping indicates that there is one Class 1 and one Class II state-regulated wetland that overlap the Study Area (Figure 5). Table 2 provides a summary of mapped State-regulated wetlands that occur within the Study Area.

Table 2. State-Regulated Wetlands Within the Study Area

Wetland	Class[1]	Total Size (Acres)	Size Within Study Area (Acres)[2]
C-18	I	217.34	66.88
SS-1	II	54.98	30.10

[1] NYS classification system provides four separate classes that rank wetlands according to their ability to provide functions and values (Class I having the highest rank, descending through Class IV).
[2] Represents portion of wetland within the study area according to mapped boundaries from existing database.

NYSDEC stream mapping indicates that there are ten NYSDEC unprotected Class C streams that flow through the Study Area. These streams include unnamed tributaries of Canajoharie Creek, the Mohawk River, and Otsquago Creek (see Table 3 and Figure 5).

Table 3. State-Mapped Streams Within the Study Area

Stream Name	NYSDEC Class	Linear Feet Within Study Area
Unnamed tributary of Canajoharie Creek	C	4,885
Unnamed tributary of Canajoharie Creek	C	3,382
Unnamed tributary of Canajoharie Creek	C	332
Unnamed tributary of Canajoharie Creek	C	1,326
Unnamed tributary of Canajoharie Creek	C	1,784
Unnamed tributary of Canajoharie Creek	C	1,459
Unnamed tributary of Mohawk River	C	2,923
Unnamed tributary of Otsquago Creek	C	770
Unnamed tributary of Otsquago Creek	C	1,802
Unnamed tributary of Otsquago Creek	C	1,727

4.0 WETLAND AND STREAM IDENTIFICATION

4.1 METHODOLOGY

An initial desktop analysis of the Study Area was conducted by EDR prior to performing on-site wetland delineations. The desktop analysis was performed using NYSDEC Freshwater Wetland mapping, NWI maps, USGS topographic mapping, and recent aerial photography. From these data sources, EDR identified areas likely to contain wetland and stream resources within the Study Area.

Following the desktop analysis, a reconnaissance level investigation of the preliminary Facility layout was conducted in November 2016. The approximate locations of wetlands and potential wetland areas were identified and used for planning/routing purposes. The Facility Site was revisited during various stages of the growing season in the months of October and November 2017 and May, June, August and November 2018 to conduct formal wetland and stream delineations within the entire Study Area.

The determination of wetland boundaries was made by EDR personnel in accordance with the three-parameter methodology described in the *USACE Wetland Delineation Manual* (hereafter referred to as the 1987 Manual) (Environmental Laboratory, 1987). Determination of wetland boundaries was also guided by the *Interim Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Northcentral and Northeastern Region* (hereafter referred to as the Regional Supplement) (USACE, 2012). In addition, boundaries of freshwater wetlands regulated under Article 24 of the New York Environmental Conservation Law (ECL) will be delineated according to methods described in the New York State Freshwater Wetlands Delineation Manual (1995).

Attention was also given to the identification of potential hydrologic connections between wetland areas that could influence their jurisdictional status. Delineated wetland boundaries were marked in the field with sequentially numbered pink surveyor's flagging and subsequently recorded using a GPS unit, with reported sub-meter accuracy.

Data were collected from one or more sample plots in each delineated wetland and adjacent upland area (depending on the size and diversity of ecological communities of the delineated area), and recorded on USACE Routine Wetland Determination forms (Appendix B). Data collected for each of the wetlands included dominant vegetation, hydrology indicators, and soil characteristics. Data collected for streams included information on channel width (mean high water mark), water depth, substrate material, bank condition and gradient.

The vegetative data collection process focused on dominant plant species in four categories: trees (>3" diameter at breast height), saplings/shrubs (<3.0" diameter at breast height and >3.2' tall), herbs (<3.2' tall), and woody vines.

Dominance was measured by visually estimating those species having the largest relative basal area (trees), greatest height (saplings/shrubs), greatest number of stems (woody vines), and greatest percentage of aerial coverage (herbaceous) by species. Dominant species for each stratum in the plant community were identified for all delineated wetlands on the site. The dominant species from each category are defined as those plants with the highest ranking which, when cumulatively totaled, exceeds 50 percent of the total dominance measure for that category, plus any additional plant species comprising 20 percent or more of the total dominance measure for the category. The species were rank ordered for each category by decreasing value of dominance.

Soils data at each sampling location were collected from a soil pit dug with a tiling spade. Information concerning soil name, drainage classification, texture, matrix and redoximorphic feature color was obtained for each delineated wetland by reviewing the Montgomery County Soil Survey and through field sampling. Soil colors were determined using Munsell Soil Charts (Munsell Color, 2009). These data were used to determine whether the soils displayed hydric characteristics. Hydric soils are those that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil layer. Hydric soils are poorly drained, and their presence is indicative of the likely occurrence of wetlands (Environmental Laboratory, 1987).

The Regional Supplement lists the following indicators as evidence of wetland hydrology (in order of decreasing reliability): (A1) surface water, (A2) high water table, (A3) saturation, (B1) water marks, (B2) sediment deposits, (B3) drift deposits, (B4) algal mat or crust, (B5) iron deposits, (B7) inundation visible on aerial imagery, (B8) sparsely vegetated concave surface, (B9) water-stained leaves, (B13) aquatic fauna, (B15) marl deposits, (C1) hydrogen sulfide odor, (C3) oxidized rhizospheres on living roots, (C4) presence of reduced iron, (C6) recent iron reduction in tilled soils, and (C7) thick muck surface. Hydrologic characteristics (inundation and soil saturation) were visually assessed to a depth of 12 inches. The hydrology indicators described above are considered "primary indicators," and any one of these indicators is sufficient evidence that wetland hydrology is present. In addition, “secondary indicators” used by EDR personnel included: (B6) surface soil cracks, (B10) drainage patterns, (B16) moss trim lines, (C2) dry-season water table, (C8) crayfish burrows, (C9) saturation visible on aerial imagery, (D1) saturation visible on aerial imagery, (D2) geomorphic position, (D3) shallow aquitard, (D4) microtopographic relief, and (D5) fac-neutral test. Any two of these also indicate the presence of wetland hydrology. Wetland hydrology, when combined with a dominant hydrophytic plant community and hydric soils, indicate the presence of a wetland.

Streams were identified according to the Cowardin Classification System (1979) and stream boundaries were determined based on the presence of ordinary high water line characteristics. Typical ordinary high water mark characteristics include a "clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the

characteristics of the surrounding areas"(CFR, 1986). Stream boundaries were defined and mapped in the field using the same method as described above for wetlands. Data regarding stream gradient (gentle, moderate, or steep), stream bank and channel width, water depth, stream bed substrate, in-stream cover, and flow regime (perennial, intermittent, or ephemeral) were collected and recorded on a stream inventory form.

Photographs were taken of all wetlands delineated within the Study Area. Photographs representative of the delineated wetlands are included in Appendix C.

4.2 RESULTS

EDR delineated 63 wetlands within the Study Area, totaling approximately 165.1 acres. In addition, EDR delineated 16 streams, totaling approximately 21,518 linear feet (4.07 miles). Please note that in some cases delineated wetlands and streams extend beyond the boundaries of the Study Area, and are thus larger than the acreage documented within the Study Area. Information pertaining to individual delineated wetlands and streams is summarized in Table 4 below. Wetlands and streams were categorized as one or more of the following community types: emergent wetland (PEM), scrub-shrub wetland (PSS), forested wetland (PFO), open water (POW), riverine upper perennial (R3), riverine intermittent (R4) and riverine ephemeral (R6). Table 4 also includes presumed federal and state jurisdiction of wetlands and streams in the Study Area. All delineated wetlands and streams within the Study Area are depicted in Figure 6, and described in Section 4.2.1, below.

A site visit with NYSDEC Region 4 Biologist Georgette Walters was conducted on November 6, 2018 to review delineated wetland and stream boundaries and determine the extent of state jurisdiction pursuant to Article 15 and Article 24 of the ECL. During the site visit, it was requested that additional data be collected and evaluated at two locations. The first was an active hay field south of Dygert Road, and the second was adjacent to previously delineated Wetland R in a hayfield south of Marshville Road. Based on the data collected at these locations, it was determined that wetland conditions were not present at first location. At the second location, wetland conditions were observed, and the boundary of Wetland R has been revised to incorporate the additional wetland area. Data forms collected at these locations are included in Appendix B. Based on the on-site jurisdictional determination and consultation, NYSDEC subsequently issued their Freshwater Wetlands Determination, which identifies NYSDEC jurisdiction of 11 wetlands (see Appendix E). The NYSDEC jurisdictional wetlands are listed in Table 4 below and shown in Figure 7. In addition, on May 2, 2019, NYSDEC provided a letter stating that there are no delineated resources subject to Article 15 jurisdiction within the Study Area (see Appendix E).

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Table 4. Delineated Wetlands and Streams

Delineation ID[1]	Latitude of Centroid	Longitude of Centroid	Wetland Present	Wetland Type Acreage Within Wetland Study Area[2]				Total Wetland Acreage Within Wetland Study Area	Stream Present	Stream Type[3]	Linear Feet of Stream Within Study Area[4]	NYSDEC Stream Class[5]	Stream Name	Federal Jurisdiction[5]	State Jurisdiction[6]	Appendix A: Figure 6 - Sheet #
				PFO	PSS	PEM	POW									
A	42.89	-74.5986	Yes	--	--	--	0.69	0.69	--	--	--	--	--	Yes	--	1
B	42.8882	-74.6037	Yes	--	--	0.08	--	0.08	--	--	--	--	--	Yes	--	2
C	42.8868	-74.6033	Yes	--	--	0.14	--	0.14	--	--	--	--	--	Yes	--	2
D	42.8872	-74.6038	Yes	--	--	0.07	--	0.07	--	--	--	--	--	Yes	--	2
E	42.888	-74.6041	Yes	--	--	0.10	--	0.10	--	--	--	--	--	Yes	--	2
F	42.8932	-74.6123	--	--	--	--	--	--	Yes	R6	827	--	--	Yes	--	4
G	42.8913	-74.6246	Yes	--	--	1.12	--	1.12	--	--	--	--	--	Yes	--	8
H	42.8922	-74.6214	Yes	--	--	0.77	--	0.77	--	--	--	--	--	Yes	Yes	7, 8
I	42.8936	-74.62	Yes	--	--	0.26	--	0.26	Yes	R6	576	--	--	Yes	Yes	5, 7
J	42.8955	-74.6346	Yes	--	--	0.13	--	0.13	--	--	--	--	--	Yes	--	10
K	42.9014	-74.6379	Yes	--	--	0.03	--	0.03	--	--	--	--	--	Yes	--	12
L	42.8995	-74.6494	Yes	--	--	0.31	--	0.31	--	--	--	--	--	Yes	--	17
M	42.8937	-74.6461	Yes	--	--	3.31	--	3.31	--	--	--	--	--	Yes	--	20
N	42.8999	-74.6585	Yes	--	--	0.14	--	0.14	--	--	--	--		Yes	--	18
O	42.8876	-74.653	Yes	2.84	--	3.36	--	6.20	--	--	--	--	--	Yes	--	22, 23, 24, 25
P	42.8832	-74.6596	Yes	--	--	1.10	--	1.10	Yes	R4	595	C	Unnamed tributary of Otsquago Creek	Yes	--	26, 27
Q	42.8815	-74.6601	Yes	--	--	1.90	--	1.90	--	--	--	--	--	Yes	--	28
R	42.8739	-74.627	Yes	--	9.00	0.27	--	9.27	Yes	R4	3604	C	Unnamed tributary of Canajoharie Creek	Yes	Yes	35, 36, 37, 38
S	42.8653	-74.644	Yes	--	--	0.39	--	0.39	No	--	--	--	--	Yes	--	30
T	42.8802	-74.6143	Yes	25.05	20.58	14.83	0.62	61.09	--	--	--	--	--	Yes	Yes	42, 43, 44, 45, 46, 47
U	42.8798	-74.6067	Yes	--	0.94	--	--	0.94	--	--	--	--	--	Yes	--	43

Delineation ID[1]	Latitude of Centroid	Longitude of Centroid	Wetland Present	Wetland Type Acreage Within Wetland Study Area[2]				Total Wetland Acreage Within Wetland Study Area	Stream Present	Stream Type[3]	Linear Feet of Stream Within Study Area[4]	NYSDEC Stream Class[5]	Stream Name	Federal Jurisdiction[5]	State Jurisdiction[6]	Appendix A: Figure 6 - Sheet #
				PFO	PSS	PEM	POW									
V	42.8794	-74.6078	Yes	--	--	0.06	--	0.06	--	--	--	--	--	Yes	--	43
W	42.8796	-74.6082	Yes	--	--	0.20	--	0.20	--	--	--	--	--	Yes	--	43
X	42.8803	-74.6086	Yes	--	--	0.23	--	0.23	--	--	--	--	--	Yes	--	43
Y	42.881	-74.6093	Yes	--	--	0.11	--	0.11	--	--	--	--	--	Yes	Yes	43, 46
Z	42.8781	-74.6076	Yes	--	--	0.12	--	0.12	--	--	--	--	--	Yes	--	43
AA	42.8757	-74.6152	Yes	--	--	2.10	--	2.10	--	--	--	--	--	Yes	--	41
BB	42.8938	-74.6173	Yes	--	0.79	--	--	0.79	--	--	--	--	--	Yes	Yes	5, 6
DD	42.8847	-74.6083	Yes	--	--	1.03	--	1.03	--	--	--	--	--	Yes	Yes	47
EE	42.8862	-74.6123	Yes	--	--	0.46	--	0.46	--	--	--	--	--	Yes	Yes	48
FF	42.8724	-74.6404	--	--	--	--	--	--	Yes	R4/R6	2542/ 800	--	--	Yes	--	32, 33
GG	42.8646	-74.6527	Yes	--	--	0.12	--	0.12	--	--	--	--	--	Yes	--	29
HH	42.8891	-74.6528	Yes	--	--	--	0.22	0.22	--	--	--	--	--	Yes	--	24
II	42.8892	-74.6541	Yes	--	--	0.87	--	0.87	--	--	--	--		Yes	--	24, 25
JJ	42.8839	-74.6574	Yes	--	--	0.34	--	0.34	--	--	--	--	--	Yes	--	26
KK	42.8851	-74.6587	Yes	--	--	0.20	--	0.20	--	--	--	--	--	Yes	--	26
LL	42.8817	-74.6636	--	--	--	--	--	--	Yes	R4	1097	--	--	Yes	--	27, 28
MM	42.8872	-74.6104	Yes	--	--	0.14	--	0.14	--	--	--	--	--	Yes	--	3, 46
NN	42.8887	-74.6075	Yes	--	--	1.28	--	1.28	--	--	--	--	--	Yes	--	2, 3
OO	42.8919	-74.61412	Yes	7.15	10.5 0	--	--	17.65	Yes	R4/R6	1253/ 129	--	--	Yes	Yes	3, 4, 5, 7
PP	42.9098	-74.6396	Yes	1.49	--	--	0.34	1.82	Yes	R4/R6	2716/ 86	C	Unnamed tributary of Mohawk River	Yes	--	14, 15
QQ	42.9083	-74.6381	Yes	--	4.65	--	--	4.65	--	--	--	--	--	Yes	--	14
RR	42.9124	-74.6367	Yes	--	0.05		--	0.05	--	--	--	--	--	Yes	--	15
SS	42.9089	-74.651	Yes	--	--	2.16	--	2.16	--	--	--	--	--	Yes	--	16
TT	42.8939	-74.6346	Yes	--	--	0.75	--	0.75	--	--	--	--	--	Yes	Yes	10

Delineation ID[1]	Latitude of Centroid	Longitude of Centroid	Wetland Present	Wetland Type Acreage Within Wetland Study Area[2]				Total Wetland Acreage Within Wetland Study Area	Stream Present	Stream Type[3]	Linear Feet of Stream Within Study Area[4]	NYSDEC Stream Class[5]	Stream Name	Federal Jurisdiction[5]	State Jurisdiction[6]	Appendix A: Figure 6 - Sheet #
				PFO	PSS	PEM	POW									
ZZ	42.88004	-74.60764	Yes	--	--	0.16	--	0.16	--	--	--	--	--	Yes	--	41
3A	42.8982	-74.649	Yes	--	--	1.84	--	1.84	--	--	--	--	--	Yes	--	17
3B	42.8931	-74.6527	Yes	--	--	--	0.21	0.21	--	--	--	--	--	Yes	--	21
3C	42.8903	-74.6499	Yes	--	--	0.79	--	0.79	Yes	R4/R6	467/1376	--	--	Yes	--	21, 22
3D	42.8916	-74.6539	Yes	--	--	0.06	--	0.06	--	--	--	--	--	Yes	--	21
3E	42.897	-74.6389	Yes	--	--	1.28	--	1.28	Yes	R6	630	C	Unnamed tributary to Otsquago Creek	Yes	--	11, 12, 13, 28
3F	42.8957	-74.6423	Yes	--	--	0.26	--	0.26	--	--	--	--	--	Yes	--	19
3G	42.8955	-74.6158	Yes	--	--	--	0.61	0.61	--	--	--	--	--	Yes	--	6
3H	42.8968	-74.6175	Yes	--	--	0.13	--	0.13	Yes	R6	292	--	--	Yes	--	6
3I	42.8885	-74.6128	Yes	--	--	0.12	--	0.12	--	--	--	-	--	Yes	--	48
3J	42.8748	-74.6415	Yes	--	--	0.13	0.06	0.19	Yes	R4	1600	C	Unnamed tributary to Canajoharie Creek	Yes	--	33, 34
3K	42.8775	-74.6378	--	--	--	--	--	--	Yes	R3	1068	C	Unnamed tributary to Canajoharie Creek	Yes	--	34, 35
3L	42.8768	-74.6371	Yes	--	0.97	--	--	0.97	--	--	--	--	--	Yes	Yes	34, 35
3M	42.8783	-74.6359	--	--	--	--	--	--	Yes	R4	920	--	--	Yes	--	35
3N	42.8978	-74.6578	Yes	--	--	0.13	--	0.13	--	--	--	--	--	Yes	--	18
3O	42.9001	-74.6414	Yes	--	--	0.99	--	0.99	--	--	--	--	--	Yes	--	11, 12, 13
3P	42.8858	-74.6584	Yes	1.59	--	--	--	1.59	--	--	--	--	--	Yes	--	25, 26
3Q	42.8951	-74.6228	Yes	--	--	0.50	--	0.50	--	--	--	--	--	Yes	--	7
3R	42.8694	-74.6487	Yes	--	--	--	0.56	0.56	--	--	--	--	--	Yes	--	31
3S	42.8959	-74.6293	Yes	--	--	0.10	0.29	0.39	--	--	--	--	--	Yes	--	9
BF-AA	42.8776	-74.6225	Yes	3.43	--	--	--	3.43	Yes	R4	725	--	--	Yes	--	39,40

Delineation ID[1]	Latitude of Centroid	Longitude of Centroid	Wetland Present	Wetland Type Acreage Within Wetland Study Area[2]				Total Wetland Acreage Within Wetland Study Area	Stream Present	Stream Type[3]	Linear Feet of Stream Within Study Area[4]	NYSDEC Stream Class[5]	Stream Name	Federal Jurisdiction[5]	State Jurisdiction[6]	Appendix A: Figure 6 - Sheet #
				PFO	PSS	PEM	POW									
BF-AB	42.8774	-74.6231	--	--	--	--	--	--	Yes	R4	215	--	--	Yes	--	39,40
BF-A	42.8799	-74.621	Yes	--	0.79	--	--	0.79	--	--	--	--	--	Yes	--	40
BF-B	42.8766	-74.6233	Yes	0.81	--	--	--	0.81	--	--	--	--	--	Yes	--	39
Total Wetlands: 63									Total Streams: 16							

[1]Field ID assigned by EDR.
[2]Wetland community types are based upon the Cowardin et al. (1979) classification system: PSS = Palustrine Scrub-Shrub, PEM = Palustrine Emergent, PWO = Palustrine Open Water, and PFO = Palustrine Forested.
[3] Stream types are based upon the Cowardin et al. (1979) classification system: R3 = Riverine Upper Perennial, R4 = Riverine Intermittent, R6 = Riverine Ephemeral.
[4]Based on visual observation of hydrologic connectivity in the field and review of available spatial data. Final jurisdictional determination to be made by USACE.
[5]Based on visual observation of hydrologic connectivity in the field and review of available spatial data. Final jurisdictional determination to be made by USACE.
[6]Based on Freshwater Wetlands Determination issued by NYSDEC Region 4 staff (see Appendix E).

4.2.1 Wetlands

Descriptions of each wetland community type delineated within the Study Area are presented below. Many wetlands identified contained more than one community type. A complete list of the community types for each wetland is provided in Table 4 above.

Forested wetland (PFO) – Of the delineated wetlands within the Study Area, seven contained forested wetland communities for a total of 42.66 acres. These communities were dominated by trees that are 20 feet or taller, but also include an understory of shrubs and herbaceous species. Forest wetlands in the Study Area were dominated by American elm (*Ulmus americana*) and green ash (*Fraxinus pennsylvanica*) in the overstory, with the occasional red maple (*Acer rubrum*). Understory vegetation included saplings of the above-mentioned species and shrub species such as silky dogwood (*Cornus amomum*) and Morrow's honeysuckle (*Lonicera morrowii*). Herbaceous species in the forested wetlands included sedges (*Carex* spp.), sensitive fern (*Onoclea sensibilis*), reed canary grass (*Phalaris arundinaceae*), and common rush (*Juncus effusus*). Evidence of wetland hydrology observed in these wetlands at the time of delineation included surface water, a high water table, saturated soils, drainage patterns, and microtopographic relief (See Photos 1 to 4 in Appendix C).

Scrub-shrub wetlands (PSS) – 7 wetland features delineated within the Study Area contained scrub-shrub vegetation, totaling 48.28 acres. The scrub-shrub wetlands were characterized by dense stands of shrub species and small trees less than 20 feet tall. Common shrub species within these wetlands included willows (*Salix spp*.), honeysuckle species (*Lonicera spp.*), silky dogwood (*Cornus amomum*), and gray dogwood (*Cornus racemosa*). Herbaceous vegetation in these areas include spotted joe pye weed (*Eutrochium maculatum*), common boneset (*Eupatorium perfoliatum*), various sedges, and sensitive fern. Wetland hydrology indicators observed in scrub-shrub wetlands at the time of delineation included surface water, a high-water table, saturated soils, and geomorphic position. Hydric soil indicators included very dark gray (10YR 3/1) soils with a dark surface and prominent redox concentrations (7.5YR 5/6). (see Photos 5 to 8 in Appendix C).

Emergent wetlands (PEM) – Emergent Wetlands were the dominate community type found within the Study Area. 47 delineated wetlands contained emergent communities, totaling 45.19 acres. These wetland areas were dominated by herbaceous vegetation, including common rush, goldenrod species (*Solidago spp.*), reed canary grass, sensitive fern, and numerous sedge species. Evidence of hydric soil included a dark brown (10YR 3/3) to black (10YR 2/2) matrix with high chroma mottles (7.5YR 5/6). Wetland hydrology areas at the time of delineation included standing surface water, a high water table, saturated soils, drainage patterns, and geomorphic position (see Photos 9 to 12 in Appendix C).

Open Water (OW) – 9 open water wetlands were delineated in the Study Area, totaling 3.61 acres. Most of these open water features were either small farm ponds or man-made impoundments typically found in farm settings, adjacent to houses and barns or within wetlands. These ponds occurred in a variety of settings, including open fields, scrub-shrub, and forested environments, and typically have well-defined banks and a fringe of emergent wetland vegetation. Although not verified, water depths of such ponds are typically in excess of 3 feet deep (see Photos 13 and 14 in Appendix C).

Streams – A total of 16 streams were delineated within the Study Area. These streams were mostly located within agricultural fields and hedgerows, and generally have a gentle to moderate gradient (0-5%). The majority of the delineated streams appeared to be intermittent or ephemeral channels. Most of the streams are less than 5 feet wide with shrub/scrub and pasture buffers. The delineated stream channels are generally characterized by rocky substrate abrupt well-defined steep banks, and flow during the wet season (winter to spring). Water depths within channels with stream flow averaged 2-5 inches (see Photos 14 to 18 Appendix C).

4.2.2 Wetland Functions and Values

A functions and values assessment was conducted following the general methodology described in the *Wetlands Functions and Values: Descriptive Approach* described in the September 1999 supplement to *The Highway Methodology Workbook* (Supplement) by the New England Division of the USACE (USACE, 1995).

Wetland functions are ecosystem properties that result from the biologic, geologic, hydrologic, chemical and/or physical processes that take place within a wetland. These functions include:

1. Groundwater Recharge/Discharge
2. Floodflow Alteration
3. Fish and Shellfish Habitat
4. Sediment/Pollutant Retention
5. Nutrient Removal/Retention/Transformation
6. Production (Nutrient) Export
7. Sediment/Shoreline Stabilization
8. Wildlife Habitat

Wetland values are the perceived benefits for society that can be derived from the ecosystem functions and/or other characteristics of a wetland. Values attributed to wetlands in the Supplement include the following:

1. Recreation

2. Education/Scientific Value
3. Uniqueness/Heritage
4. Visual Quality/Aesthetics
5. Threatened or Endangered Species Habitat

Wetlands functions and values recognized under Article 24 of the Environmental Conservation Law and Regulations are similar to those described in the Supplement, and include:

1. Flood and storm control by the hydrologic absorption and storage capacity of wetlands;
2. Breeding, nesting and feeding habitat for many forms of wildlife, including migratory wildfowl and rare species such as the bald eagle and osprey;
3. Protection of subsurface water resources and recharge of ground water supplies;
4. Recreation by providing areas for hunting, fishing, boating, hiking, bird watching, photography, camping and other uses;
5. Pollution treatment by serving as biological and chemical oxidation basins;
6. Erosion control by serving as filtering basins, absorbing silt and organic matter and protecting channels and harbors;
7. Education and scientific research by providing outdoor bio-physical laboratories, living classrooms and training/education resources;
8. Open space and aesthetic appreciation by providing often the only remaining open areas along crowded river fronts and coastal regions;
9. Sources of nutrients in freshwater food cycles and nursery grounds and sanctuaries for fish.

Based on the "Considerations/Qualifiers" outlined in the Supplement, EDR developed a spreadsheet that includes several basic considerations that help identify the primary functions and values provided by wetlands. These considerations include observed vegetation conditions, hydrologic conditions, size, adjacent area conditions, and the availability of public access. Specific conditions within each of these consideration areas were also defined to allow each wetland's functions and values to be evaluated based on data collected during field delineation. A total of 60 wetlands delineated within the Study Area were entered into the spreadsheet and wetland characteristics were identified for each. Data regarding these wetland characteristics and associated functions and values were collected during the months of October and November 2017 and May, June, August, and November 2018. Based on the entered data, the primary functions and values provided by each wetland were determined. Results of this evaluation are presented in Appendix D.

Due to the private ownership of all properties within the Study Area, none of the delineated wetlands provide any substantial social values such as recreation, education/scientific value, or visual/aesthetic value for the general public. Uniqueness/heritage value is usually applied to wetlands which provide a special value in the context of the overall landscape, contain cultural features, or represent a rare wetland or habitat type within the local area. None of the delineated wetlands within the Study Area were noted as having any unique or rare characteristics that might be considered for this value.

Habitat for known endangered or threatened species is generally not present within the delineated wetland features. However, potential summer roosting habitat for northern long-eared bat (*Myotis septentrionalis*), potential nesting habitat for the bald eagle (*Haliaeetus leucocephalus*), and potential foraging habitat for northern harrier (*Circus hudsonius*) may occur in some delineated wetlands. The Facility has been designed to avoid impacts to wetlands to the greatest extent possible, and the Facility will address any potential impacts to these species in subsequent permitting submittals.

5.0 CONCLUSIONS

EDR delineated a total of 63 wetlands within the Study Area. These wetlands were identified based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology, and total approximately 140.49 acres. The delineated areas include ponds, emergent, scrub-shrub, and forested wetland communities. EDR also delineated 16 streams within the Study Area. The delineated streams include intermittent, perennial and ephemeral channels. A total of approximately 21,518 linear feet (4.07 miles) of stream channels were delineated within the Study Area. The primary functions provided by wetlands and streams within the Study Area include water quality improvement, wildlife habitat, ground water recharge/discharge, and floodflow alteration.

EDR analysis suggests that all delineated wetlands and 16 delineated streams are likely to be considered jurisdictional by the USACE under Section 404 of the Clean Water Act due to hydrological connections with WOTUS. However, final determination of jurisdictional status must be made by the USACE. As described in Section 4 (above), a site visit with a NYSDEC Regional Biologist was conducted during November 2018 to review wetland boundaries and assess possible NYSDEC-jurisdictional wetlands and streams. None of the streams in the Study Area are regulated under Article 15 of the ECL. However, the NYSDEC Freshwater Determination (see Appendix E) states there are 11 wetlands within the Study Area that will be regulated under Article 24 of the ECL.

6.0 REFERENCES

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