Wetland Delineation Report

Cassadaga Wind Project

Towns of Charlotte, Cherry Creek, Arkwright, and Stockton
Chautauqua County, New York

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Cassadaga Wind, LLC (the Applicant), a wholly owned subsidiary of EverPower Wind Holdings, Inc., is proposing to construct a wind energy generation facility and associated necessary infrastructure (the Facility) in the Towns of Charlotte, Cherry Creek, Arkwright and Stockton in Chautauqua County, New York (see Figure 1). The Facility will consist of up to 58 turbines, with a maximum generating capacity of 126 Megawatts. Wind turbines will only be located in the Towns of Cherry Creek, Charlotte and Arkwright. Other proposed components will include: access roads, above and underground 34.5 kilovolt (kV) collection lines, an above ground 115 kV generator lead line, a collection substation, a point of interconnection (POI) substation, two permanent meteorological (met) towers, two temporary staging/laydown yards, and an Operations and Maintenance (O&M) building (see Figure 2). The only proposed Facility components in the Town of Stockton are a short section of the generator lead line and the POI substation.

At the request of the Applicant, EDR investigated approximately 1,032 acres of leased private land, or land that is currently under negotiation to lease, that makes up the Facility site. The Facility site is roughly bound by Bard Road and State Route 83 to the north, State Route 83 to the east, State Route 64 to the south, and State Route 60 to the west (See Figure 2).

EDR was retained to identify all wetlands and streams within the anticipated limit of disturbance associated with the Facility components described above (hereafter referred to as the "Study Area") (See Figure 4). Specifically, the Study Area includes a 200-foot corridor for proposed access roads, generator lead line and collection lines, a 200-foot radius around each turbine, meteorological towers, and the specific areas where the substations, laydown yards, and O&M building are proposed. All wetland and stream delineations took place during the months of October to November of 2015, with "wetland and stream approximations" taking place during the months of January and February of 2016.

1.2 PURPOSE

The purpose of this study was to delineate and describe all wetlands and streams that may fall under state or federal jurisdiction and could possibly be impacted by construction of the proposed Facility. Specific tasks performed for this study included 1) review of background resource data/mapping, 2) field delineation and flagging of all potential state and federal jurisdictional wetlands and streams, 3) subsequent 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, and 5) a detailed description of potentially jurisdictional areas based on hydrology, vegetation, and soils data collected in the field.

This report describes the results of the on-site wetland and stream delineations conducted by EDR. This document is intended to provide all of the information necessary to identify on-site jurisdictional areas and support a permit application to the United States Army Corps of Engineers (USACE) and the New York State Department of Environmental Conservation (NYSDEC), and other impact evaluations conducted in support of the Article 10 review process.

1.3 RESOURCES

Materials and literature supporting this investigation have been derived from a number of sources including USGS topographic mapping (Cassadaga, Hamlet, and Cherry Creek, 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, 2015), the NRCS List of Hydric Soils of the State of New York (NRCS, 2014), and recent aerial photography.

Vascular plant names follow nomenclature found in the New York Flora Atlas (Weldy et al., 2015), and wetland indicator status for plant species was determined by reference to the National Wetland Plant List (Lichvar et al., 2014). Jurisdictional areas were characterized according to 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 Connor Liddell, Emma Freeland, John Wojcikiewicz and Russell Farchione.

Mr. Liddell is an Environmental Analyst/Field Biologist with over five years' experience in the environmental field. He received a Bachelor of Science and Graduate Certificate in Natural Resource Management from James Cook University, Townsville, Australia through direct program affiliations with the University at Buffalo Honors College. Mr. Liddell's experience includes wetland and stream delineation, wetland permitting, wetland/coastal mitigation design and monitoring, conservation and environmental research, endangered species and wildlife management, habitat restoration, ecological surveys, invasive species management, environmental impact analysis, and geographic information system (GIS) data analysis.

Ms. Freeland is an Ecological Resources Specialist with over six years of experience. She holds a Bachelor's degree in Biology from Hamilton College and a Master's degree in Botany from University of Wyoming. Ms. Freeland's experience includes wetland and stream delineation, botanical and ecological surveys, rare species investigations, environmental impact analysis, and GIS data analysis. Prior to joining EDR, she provided botanical surveys and upland vegetation assessments for federal agencies in Colorado, Montana, Nevada, and Wyoming. Other experience includes floristic inventories, GPS survey and mapping, GIS mapping, and a variety of wildlife surveys.

Mr. Wojcikiewicz is an Environmental Analyst/Field Biologist with more than three 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 GIS data analysis.

Mr. Farchione is an Environmental Analyst/Field Biologist with over one year of experience in the environmental field. He received a Bachelor of Science in Biology from State University of New York at Geneseo. Mr. Farchione's experience includes wetland and stream delineation, ecological surveys, conservation and environmental research, and GIS data analysis.

2.0 REGULATORY AUTHORITIES AND PERMITS

2.1 WATERS OF THE UNITED STATES

In accordance with the Section 404 of the Clean Water Act, the USACE has regulatory jurisdiction over Waters of the Unites States. As defined by the USACE, Waters of the United States include all lakes, ponds, streams (intermittent and perennial), and wetlands. Jurisdictional 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*" (USEPA, 2001). Such areas are indicated by the presence of three criteria: hydrophytic vegetation, hydric soils, and evidence of wetland hydrology during the growing season (Environmental Laboratory, 1987).

On August 28, 2015, the United States Environmental Protection Agency (USEPA) released the *Clean Water Rule* (33 CFR Part 328) which provides a clearer and more consistent approach to defining the scope of the Clean Water Act

and "waters of the United States". Three major elements of the Clean Water 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";*
    - *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".*

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) these waters. If the proposed structure or activity affects the course, location, condition, or capacity of the navigable water, even if the proposed activity is outside the boundaries of the water body, a permit from the USACE is required.

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. An Article 24 permit is required from the NYSDEC for any disturbance to a state-protected wetland or an adjacent area, including removing vegetation.

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. 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.

3.0 PHYSICAL CHARACTERISTICS AND RESOURCES

3.1 PHYSIOGRAPHY AND SOILS

The Study Area is in the Cattaraugaus Hills sub-region within the northwestern edge of the glaciated Allegheny Plateau. This area can be described as flat-topped divides separated by broad glacial valleys and underlain by interbedded shales, siltstones and soft sandstones. Fine-grained glacial till deposits cover most of the bedrock controlled uplands, while lesser amounts of granular materials are found in the valleys that are entrenched into the rock. Shallow concave depressions scattered throughout the region carry and direct most of the hydrological flows to major streams or rivers. Elevations within the Study Area range from approximately 12,095 feet to approximately 20,100 feet above mean sea level (Figure 3).

The Chautauqua County Soil Survey has mapped general soil associations and soil types within the Study Area. The soil survey indicates that 51 soil map units from 29 different soil series are present within the Study Area (Figure 5). Of these, Busti is the most dominant soil series, covering over 416 acres, or 40.5 percent, of the Study Area. Other prominent soil series include Chautauqua and Fremont soil series. Soil drainage in the Study Area is variable, with approximately 31 percent of the mapped soils classified as somewhat poorly drained, 29 percent classified as well drained, 24 percent classified as moderately well drained, eight percent classified as poorly drained and six percent classified as very poorly drained. Table 1 lists the soil map units within the Study Area and their characteristics. “Hydric” and “Potentially Hydric” designations are based on information obtained from the USDA Web Soil Survey (Soil Survey Staff, 2015). Although soil series may be generally classified as hydric or potentially hydric on 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]
Ad	Alden mucky silt loam	--	VPD	Yes	No
As	Ashville silt loam	--	PD	Yes	No
BsA	Busti silt loam	0-3	SPD	No	Yes
BsB	Busti silt loam	3-8	SPD	No	Yes
BsC	Busti silt loam	8-15	SPD	No	Yes
Cb	Canandaigua silt loam, loamy substratum	--	PD	Yes	No
Cc	Canandaigua mucky silt loam	--	VPD	Yes	No
ChB	Chadakoin silt loam	3-8	WD	No	No
ChC	Chadakoin silt loam	8-15	WD	No	No
ChD	Chadakoin silt loam	15-25	WD	No	No
ChE	Chadakoin silt loam	25-35	WD	No	Yes
ChF	Chadakoin silt loam	35-50	WD	No	Yes
CkB	Chautauqua silt loam	3-8	MWD	No	No
CkC	Chautauqua silt loam	8-15	MWD	No	No

Mapping Unit	Series	Slope (%)	Drainage[1]	Hydric[2]	Potentially Hydric[3]
CkD	Chautauqua silt loam	15-25	MWD	No	No
ClA	Chenango silt loam	0-3	MWD	No	No
CnB	Chenango gravelly loam	3-8	WD	No	No
CoA	Chenango channery loam, fan	0-3	WD	No	No
CoB	Chenango channery loam, fan	3-8	WD	No	No
DaA	Dalton silt loam	0-3	SPD	No	Yes
ErB	Erie silt loam	3-8	SPD	No	Yes
Fe	Fluvaquents-Udifluvents complex, frequently flooded	--	PD	No	Yes
FmA	Fremont silt loam	0-3	SPD	No	Yes
FmB	Fremont silt loam	3-8	SPD	No	Yes
FmC	Fremont silt loam	8-15	SPD	No	Yes
Ge	Getzville silt loam	--	PD	Yes	No
Ho	Holderton silt loam, occasionally flooded 140	0-3	SPD	No	Yes
La	Lamson silt loam	--	VPD	Yes	No
LnB	Langford silt loam	3-8	WD	No	No
LnC	Langford silt loam	8-15	WD	No	No
MdB	Mardin channery silt loam	3-8	MWD	No	No
Me	Middlebury silt loam	--	MWD	No	Yes
Mn	Minoa fine sandy loam	--	SPD	No	Yes
OrA	Orpark silt loam	0-3	SPD	No	Yes
OrB	Orpark silt loam	3-8	SPD	No	Yes
Po	Pompton silt loam	--	MWD	No	No
Rf	Raynham silt loam, flooded	--	SPD	No	Yes
Rh	Red Hook silt loam	--	SPD	No	Yes
ShB	Schuyler silt loam	3-8	MWD	No	No
ShC	Schuyler silt loam	8-15	MWD	No	No
ShD	Schuyler silt loam	15-25	MWD	No	No
ToC	Towerville silt loam	8-15	MWD	No	No
ToF	Towerville silt loam	35-50	MWD	No	No
VaC	Valois gravelly silt loam	8-15	WD	No	No
VaD	Valois gravelly silt loam	15-25	WD	No	No
VaE	Valois gravelly silt loam	25-35	WD	No	Yes
VaF	Valois gravelly silt loam	35-50	WD	No	Yes
VcC	Valois gravelly silt loam, rolling	--	WD	No	No
VoA	Volusia channery silt loam	0-3	SPD	No	Yes
VoB	Volusia channery silt loam	3-8	SPD	No	Yes
W	Water	--	--	--	--

[1] Soil drainage is represented by the following abbreviations: “ED” = excessively drained, “SED” = somewhat excessively drained, "WD" = well drained, "MWD" = moderately well 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.

3.2 HYDROLOGY

The Facility site is located in the Conewango and the Chautauqua-Conneaut drainage basins (USGS Hydrologic Units 05010002 and 04120101) of the Allegheny River and Niagara River-Lake Erie watersheds (USGS, 2014). The divide between these two watersheds goes through a portion of the northwest section of the Facility site. Portions of the Facility site located in the Niagara River-Lake Erie watershed are between Tarbox Road and Overland Trail and north of Housington Road. The majority of surface hydrology on the Facility site is generated by precipitation and surface water run-off from adjacent land. Total annual precipitation average is 37.91 inches in nearby Dunkirk, New York (U.S. Climate Data, 2016). Mapped surface water resources within the Study Area are described below and are illustrated in Figure 7.

The largest surface water body within the Study Area is Mill Creek, a perennial stream about 20-30 feet wide, in the center of the Study Area. It flows southwest, draining into the Cassadaga Creek approximately 4 miles outside of the Study Area. There are several streams that occur outside of the Study Area and have tributaries that extend into the Study Area (See Figure 6). These include Cherry Creek, West Branch Conewango Creek, Clear Creek, Cassadaga Creek, and Canadaway Creek.

Most of the other streams in the Study Area are low-gradient drainage features that meander through wetlands, forests, agricultural fields, hedgerows, and pastures. Most of these streams are less than 10 feet wide with variable substrates, and vegetative cover characteristics. Some of these streams have well-defined and abrupt banks, while the banks of others transition gradually into adjacent wetland vegetation. There are also a few small farm ponds/open water areas interspersed throughout the area. Generally, these ponds are found in farm settings, adjacent to houses and barns, or within wetlands. Water depths in these ponds, although not verified, are anticipated to be four feet or more.

3.3 FEDERAL AND STATE MAPPED WETLANDS AND STREAMS

NWI mapping covers the entire Study Area, and indicates the presence of 10 wetlands, totaling 2.61 acres within the Study Area (See Figure 7). NWI mapping separates wetlands based on their vegetative community, so for NWI purposes, a single wetland with two community types is mapped as two different wetlands. Field investigations indicate that a number of additional wetlands that are likely to be under federal jurisdiction also occur in the Study Area. NWI data indicate that forested/shrub wetlands are the dominant wetland community in the area, totaling approximately 1.68 acres. Other NWI-mapped wetland communities include emergent wetlands (0.47 acre) and freshwater ponds (0.46 acre).

Review of NYSDEC Freshwater Wetlands mapping indicates that there are four freshwater wetlands that overlap the Study Area and are regulated under Article 24 of the Environmental Conservation Law (Figure 7). A total of three of these wetlands are designated Class II, while the remaining one is a Class III wetland. Table 2 provides a summary of 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)
HA-4	II	10.82	0.91
HA-3	III	18.73	4.89*
HA-7	II	14.57	0.20
HA-8	II	24.63	--

Wetland	Class[1]	Total Size (Acres)	Size Within Study Area (Acres)
CS-9	II	17.86	2.28

[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).
*Based on field investigations the actual acreage of HA-3 within the Study Area is significantly less than NYSDEC mapping. Extent of Article 24 jurisdiction to be determine based on site visits with the NYSDEC to be scheduled during the growing season of 2016.

Three streams that flow through the Study Area are protected by the NYSDEC under the Protection of Waters Act, all of which are classified as C(T). These include Mill Creek, an unnamed tributary of Mill Creek, and an unnamed tributary of Cherry Creek. All other NYSDEC mapped streams within the Study Area are classified by the NYSDEC as Class C streams and are therefore not subject to Protection of Waters regulations. Table 3 provides a summary of all State-mapped streams (protected and unprotected), and their linear distances, within the Study Area

Table 3. State-Mapped Streams Within the Study Area

Stream Name	NYSDEC Class	Linear Feet Within Study Area
Mill Creek	C(T)	194
Mill Creek (trib)	C(T)	434
Cherry Creek (trib)	C(T)	244
Cherry Creek (trib)	C	277
Cherry Creek (trib)	C	505
Cherry Creek (trib)	C	37
Cherry Creek (trib)	C	347
Branch Conewango Creek (trib)	C	888
Mill Creek	C	195
Mill Creek (trib)	C	1,536
Mill Creek (trib)	C	296
Mill Creek (trib)	C	272
Mill Creek (trib)	C	57
Wheeler Brook	C	368
Canadaway Creek (trib)	C	231
Cassadaga Creek (trib)	C	210

All perennial and intermittent streams in the Study Area will likely be considered jurisdictional by the USACE under Section 404 of the Clean Water Act. There are no streams regulated by Section 10 of the Rivers and Harbors Act of 1899 (navigable waters) within the Study Area. In addition, based on the definition set forth at 6 NYCRR 608.1(u) of the Environmental Conservation Law, and site-specific investigations, it is not anticipated that any waters identified within the Facility site would meet the New York State definition of “navigable”.

4.0 WETLAND AND STREAM IDENTIFICATION

4.1 METHODOLOGY

A preliminary desktop analysis of the Facility site 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.

The majority of the Study Area was investigated in the field, and most of the wetlands and streams were delineated during the months of October and November of 2015. A corridor 200-feet wide was examined along all proposed access road, collection line and generator line routes and a radius of 200-feet was examined around all proposed turbine sites, meteorological towers, and the specific areas where the substations, laydown yards, and O&M building are proposed. However, due to landowner access issues and project rerouting, several parcels of land within the Study Area did not receive a full wetland delineation during the fall of 2015. Most of these areas were visited during the months of January and February 2016 to determine the likely presence of wetlands and streams. A desktop analysis was performed using NYSDEC Freshwater Wetland mapping, NWI maps, USGS topographic mapping, recent aerial photography and previous knowledge of the site for areas that were not formally delineated. Wetlands and streams that were mapped during the months of January and February are considered approximations, and will be revisited during the growing season of 2016.

The determination of wetland boundaries was made by EDR personnel according to 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 Corps of Engineers Wetland Delineation Manual: Northcentral and Northeastern Region* (hereafter referred to as the Regional Supplement) (USACE, 2012). Attention was also given to the identification of potential hydrologic connections between wetland areas that could influence their jurisdictional status. Delineated wetland boundaries were defined in the field with sequentially numbered pink surveyor's flagging and subsequently recorded using a Trimble Geo Explorer 6000 Series GPS unit, with reported sub-meter accuracy.

Data were collected from one or more sample plots in each delineated wetland (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 Chautauqua County Soil Survey and through field sampling. Soil colors were determined using Munsell Soil Charts (K. I. Corporations, 2000). 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.

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

4.2 RESULTS

EDR delineated 76 wetlands and approximated the location of 22 additional wetlands within the Study Area, totaling approximately 50.68 acres. In addition, EDR delineated 40 streams and approximated the location of an additional 20 streams within the Study Area, totaling approximately 18,519 linear feet. 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 (OW), riverine upper perennial (RUP), riverine intermittent (RI) and riverine ephemeral (REPH). All delineated wetlands and streams within the Study Area are depicted in Figure 8.

Table 4. Delineated Wetlands and Streams

Delineation ID[7]	Wetland Present	Wetland Type[1]	Wetland Acreage Within Study Area	Stream Present	Stream Type[2]	Linear Feet of Stream Within Study Area[3]	NYSDEC Stream Class	Stream Name	Federal Jurisdiction[4]	State Jurisdiction[5]	Attach. A, Figure 8, Sheet #
A[6]	Yes	PFO/PSS	2.89	--	--	--	--	--	Yes	--	2,3,4,5,6
B	Yes	PEM/Wet Meadow	0.79	--	--	--	--	--	Yes	--	1,2,3
C	Yes	PSS	0.07	--	--	--	--	--	Yes	--	5,6
D	Yes	PEM	0.02	--	--	--	--	--	Yes	--	6
E	--	--	--	Yes	RIN	217	--	--	Yes	--	7
G	Yes	PSS/PEM	0.12	--	--	--	--	--	Yes	--	8
H	Yes	PEM	0.05	Yes	RIN	58	--	--	Yes	--	8
J	Yes	PSS/PEM	0.26	Yes	RIN	57	C	Unnamed Tributary of Mill Creek	Yes	--	24
K	Yes	PFO	0.11	--	--	--	--	--	Yes	--	138
L	--	--	--	Yes	RIN	321	--	--	Yes	--	33
M	Yes	PFO/PSS	0.61	--	--	--	--	--	Yes	--	17,18
N	Yes	PFO/PSS	0.51	--	--	--	--	--	Yes	--	16
O	Yes	PFO/PSS	1.36	--	--	--	--	--	Yes	--	26,27
P	Yes	PSS	0.89	--	--	--	--	--	Yes	--	25,28
Q	Yes	PSS	0.20	--	--	--	--	--	Yes	--	25,29
R	Yes	PEM	0.32	--	--	--	--	--	Yes	--	28,29
T	--	--	--	Yes	RIN	231	C	Unnamed Tributary of Canadaway Creek	Yes	--	19,20
U	Yes	PEM	2.11	--	--	--	--	--	Yes	--	20,21
V	Yes	PFO	0.02	--	--	--	--	--	Yes	--	137
W	Yes	PEM	0.23	--	--	--	--	--	Yes	--	137,138
X	Yes	PEM	0.04	--	--	--	--	--	Yes	--	137
Y	Yes	PFO	0.13	--	--	--	--	--	Yes	--	134
Z	Yes	PFO	0.18	--	--	--	--	--	Yes	--	134
BB	Yes	PFO	0.04	--	--	--	--	--	Yes	--	133
CC	Yes	PFO	0.04	--	--	--	--	--	Yes	--	133
DD	Yes	PEM	0.003	--	--	--	--	--	Yes	--	133
EE	Yes	PFO	0.14	--	--	--	--	--	Yes	--	133
FF	Yes	PFO	0.10	--	--	--	--	--	Yes	--	133

Delineation ID[7]	Wetland Present	Wetland Type[1]	Wetland Acreage Within Study Area	Stream Present	Stream Type[2]	Linear Feet of Stream Within Study Area[3]	NYSDEC Stream Class	Stream Name	Federal Jurisdiction[4]	State Jurisdiction[5]	Attach. A, Figure 8, Sheet #
HH	Yes	PEM	0.06	--	--	--	--	--	Yes	--	128
II	--	--	--	Yes	RUP	337	--	--	Yes	--	135,136
JJ	Yes	PFO	0.03	Yes	RIN	137	--	--	Yes	--	136
KK[8]	Yes	PEM/PSS	--	Yes	RIN	188	--	--	Yes	--	130,131
NN	Yes	PEM/Wet Meadow	1.14	--	--	--	--	--	Yes	--	127
OO[6,8]	Yes	PSS/PEM	0.41	Yes	RIN	269	--	--	Yes	--	129
PP	Yes	PSS/OW	0.27	--	--	--	--	--	Yes	--	74
QQ	Yes	PSS/OW	0.35	--	--	--	--	--	Yes	--	43,45
RR	Yes	PFO	0.19	--	--	--	--	--	Yes	--	55,56
SS	--	--	--	Yes	RIN	312	--		Yes	--	38
XX	Yes	OW	0.33	--	--	--	--	--	Yes	--	31
ZZ	Yes	PFO/PEM/OW	0.59	--	--	--	--	--	Yes	--	13,14,15, 22,23
BBB	Yes	PFO/PSS/PEM/ OW	1.25	--	--	--	--	--	Yes	Yes	41,42
FFF	Yes	PEM	0.05	--	--	--	--	--	Yes	--	126
GGG	Yes	PSS	0.15	--	--	--	--	--	Yes	--	125
HHH	Yes	PSS/PEM/OW	0.2	Yes	RUP/RIN	312	--	--	Yes	--	103,116, 120,123
JJJ	Yes	PEM	0.030	Yes	RUP/REPH	443	--	--	Yes	--	79,80
KKK	Yes	PFO	0.034	Yes	RUP	230	--	--	Yes	--	78
LLL	Yes	PSS/PEM	0.80	Yes	RUP	480	--	--	Yes	--	60,61,67
MMM	Yes	PEM	0.04	--	--	--	--	--	Yes	--	82
NNN	--	--	--	Yes	RIN	211	--	--	Yes	--	61
OOO	Yes	PSS/PEM	0.60	--	--	--	--	--	Yes	--	47
PPP	Yes	PFO/PEM	0.09	Yes	RUP	467	--	--	Yes	--	48,49
QQQ	Yes	PFO	0.16	--	--	--	--	--	Yes	--	48
RRR	Yes	PEM	0.04	--	--	--	--	--	Yes	--	46
SSS	--	--	--	Yes	RIN	44	--	--	Yes	--	46
TTT	Yes	PSS	0.058	Yes	RUP	652			Yes	--	64
VVV	--	--	--	Yes	RUP	272	C	Unnamed Tributary of Mill Creek	Yes	--	72

Delineation ID[7]	Wetland Present	Wetland Type[1]	Wetland Acreage Within Study Area	Stream Present	Stream Type[2]	Linear Feet of Stream Within Study Area[3]	NYSDEC Stream Class	Stream Name	Federal Jurisdiction[4]	State Jurisdiction[5]	Attach. A, Figure 8, Sheet #
WWW	Yes	PSS	5.23	--	--	--	--	--	Yes	Yes	106,107, 117,118, 119
XXX	Yes	PSS	0.14	--	--	--	--	--	Yes	--	118
YYY	Yes	PSS	3.73	Yes	RIN	265	--	--	Yes	Yes	106,107, 108,118, 119
ZZZ	Yes	PSS	0.62	--	--	--	--	--	Yes	--	109,110
AAAA	Yes	PEM	0.15	--	--	--	--	--	Yes	--	110
BBBB	Yes	PSS	1.53	--	--	--	--	--	Yes	--	110,111, 112
CCCC	Yes	PEM	0.05	Yes	RUP/REPH	539	--	--	Yes	--	72,75
DDDD	Yes	PFO	0.03	Yes	RUP	252	--	--	Yes	--	81
EEEE	Yes	PFO	1.80	Yes	RUP	224	--	--	Yes	--	92,93,97
FFFF	Yes	PEM	0.09	Yes	REPH	77			Yes	--	91
GGGG	Yes	PEM	0.10	--	--	--	--	--	Yes	--	89
HHHH	Yes	PFO	0.50	--	--	--	--	--	Yes	--	90
IIII	Yes	PEM	0.11	--	--	--	--	--	Yes	--	88
JJJJ	Yes	PFO/PSS	0.56	Yes	RUP	194	C(T)	Mill Creek	Yes	--	86,87
KKKK	Yes	PSS/PEM	0.29	--	--	--	--	--	Yes	--	78
LLLL	Yes	PFO	1.32	Yes	RUP/RIN	434	C(T)	Unnamed Tributary of Mill Creek	Yes	--	83,84
MMMM	Yes	PFO	1.85	Yes	RUP	548	--	--	Yes	--	113,114, 115
NNNN	--	--	--	Yes	RUP	210	C	Unnamed Tributary of Cassadaga Creek	Yes	--	113
OOOO	Yes	PFO/PEM	0.13	Yes	RUP	549	--	--	Yes	--	55,56
PPPP	--	--	--	Yes	REPH	114	--	--	Yes	--	54
QQQQ	Yes	PFO	0.07	Yes	RUP/RIN	336	--	--	Yes	--	54
RRRR	Yes	PSS/OW	0.94	Yes	RUP	547	--	--	Yes	Yes	65,71
SSSS	Yes	PFO	0.66	--	--	--	--	--	Yes	--	70,73
TTTT	Yes	PFO/PSS/PEM	0.92	Yes	RUP	373	--	--	Yes	--	62,63
UUUU	Yes	PFO/PSS/PEM	0.55	Yes	RUP/RIN	1,536	C	Unnamed Tributary of Mill Creek	Yes	--	69

Delineation ID[7]	Wetland Present	Wetland Type[1]	Wetland Acreage Within Study Area	Stream Present	Stream Type[2]	Linear Feet of Stream Within Study Area[3]	NYSDEC Stream Class	Stream Name	Federal Jurisdiction[4]	State Jurisdiction[5]	Attach. A, Figure 8, Sheet #
VVVV	--	--	--	Yes	RUP/REPH	293	--	--	Yes	--	70
WWWW	Yes	PEM	0.14	--	--	--	--	--	Yes	--	76
XXXX	Yes	PEM	0.03	--	--	--	--	--	Yes	--	76,77
YYYY	Yes	PFO/PEM	0.37	--	--	--	--	--	Yes	--	98
5B	Yes	PFO/PSS/PEM	1.18	Yes	RUP	249	--	--	Yes	--	83,96
5C	Yes	PFO/PSS	0.60	Yes	RUP	296	--	--	Yes	--	105
5D	--	--	--	Yes	RUP	244	C(T)	Unnamed Tributary of Cherry Creek	Yes	--	94
5E	Yes	PSS/PEM	0.11	Yes	RIN	48	--	--	Yes	--	66
5F	Yes	PEM	--	Yes	RUP	454	--	--	Yes	--	53,59
5O	--	--	--	Yes	REPH	43	--	--	Yes	--	42
5P[6]	Yes	PSS	0.48	Yes	RIN	505	C	Unnamed Tributary of Cherry Creek	Yes	--	99
5Q[6]	Yes	PEM	0.17	--	--	--	--	--	Yes	--	52
5R[6]	--	--	--	Yes	RUP/RIN	888	C	Unnamed Tributary of Branch Conewango Creek	Yes	--	57,58
5T[6]	--	--	--	Yes	RUP	138	--	--	Yes	--	34
5U[6]	Yes	PSS	0.30	--	--	--	--	--	Yes	--	39
5V[6]	--	--	--	Yes	RUP	195	C	Mill Creek	Yes	--	40
5W[6]	--	--	--	Yes	RUP	202	--	--	Yes	--	40,44
5X[6]	Yes	PEM	0.07	--	--	--	--	--	Yes	--	95
5Y[6]	Yes	PEM	0.18	--	--	--	--	--	Yes	--	83,95
5Z[6]	Yes	PSS	0.11	--	--	--	--	--	Yes	--	102
6A[6]	--	--	--	Yes	RIN	37	C	Unnamed Tributary of Cherry Creek	Yes	--	101
6B[6]	--	--	--	Yes	RIN	476	--	--	Yes	--	101
6C[6]	--	--	--	Yes	RUP	277	C	Unnamed Tributary of Cherry Creek	Yes	--	100
6D[6]	--	--	--	Yes	RUP	347	C	Unnamed Tributary of Cherry Creek	Yes	--	122
6E[6]	Yes	PSS	0.51	--	--	--	--	--	Yes	--	76,77
6F[6]	--	--	--	Yes	RIN	110	--	--	Yes	--	37
6G[6,8]	--	--	--	Yes	RIN	239	--	--	Yes	--	131,132
6H[6]	Yes	PFO	0.17	--	--	--	--	--	Yes	Yes	132

Delineation ID[7]	Wetland Present	Wetland Type[1]	Wetland Acreage Within Study Area	Stream Present	Stream Type[2]	Linear Feet of Stream Within Study Area[3]	NYSDEC Stream Class	Stream Name	Federal Jurisdiction[4]	State Jurisdiction[5]	Attach. A, Figure 8, Sheet #
6I[6]	Yes	PFO	1.28	Yes	RUP	441	--	--	Yes	--	12,13
6J[6]	--	--	--	Yes	RIN	66	--	--	Yes	--	30
6K[6]	Yes	PFO	0.07	Yes	RUP	237	--	--	Yes	--	30
6L[6]	--	--	--	Yes	RUP	203	--	--	Yes	--	35,36
6M[6]	Yes	PFO/PSS/PEM	1.56	--	--	--	--	--	Yes	--	50,51
6N[6]	Yes	PFO	0.33	--	--	--	--	--	Yes	--	50
6O[6]	--	--	--	Yes	RIN	232	--	--	Yes	--	36
6Q[6]	Yes	PEM	0.14	Yes	RIN	199	--	--	Yes	--	8,9
6R[6]	Yes	PEM	0.65	--	--	--	--	--	Yes	--	10
6S[6]	Yes	PSS/PEM	1.21	--	--	--	--	--	Yes	--	10,11
6T[6]	Yes	PSS	0.05	--	--	--	--	--	Yes	--	124
6U[6]	Yes	PSS	0.01	Yes	RUP	296	C	Unnamed Tributary of Mill Creek	Yes	--	121
6V[6]	Yes	PEM	0.27	--	--	--	--	--	Yes	--	121
6W[6]	Yes	PSS	0.57	--	--	--	--	--	Yes	--	104
6X[6]	Yes	PSS	0.64	--	--	--	--	--	Yes	--	32
6Y[6]	--	--	--	Yes	RUP	368	C	Wheeler Brook	Yes	--	39,40
Total Wetlands: 98				**Total Streams: 60**							

[1]Wetland community types are based upon the Cowardin et al. (1979) classification system: PSS = Palustrine Scrub-Shrub, PEM = Palustrine Emergent, PFO = Palustrine Forested, OW = Open Water.
[2]Stream types are based upon the Cowardin et al. (1979) classification system: RIN = Riverine Intermittent Stream, RUP = Riverine Perennial Stream, REPH = Ephemeral Stream.
[3]Linear feet of stream does not include distance where streams run through culverts.
[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 existing NYSDEC mapping of freshwater wetlands.
[6]Due to landowner access issues and project rerouting, these wetland and streams were approximated in January and February 2016 and will be revisited during the 2016 growing season.
[7]Field ID assigned by EDR. Several wetlands identified in the field are located outside of the Study Area, and are not addressed in this report.
[8]Related to a NYSDEC mapped C(T) stream, however, NYSDEC mapped stream depicted a straight line and was not accurate as to what was seen in the field. Stream was intermittent and did not appear to have C(T) characteristics. Final jurisdiction will be made by the NYSDEC.

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.

Forested wetland (PFO) – A total of 38 wetlands delineated within the Study Area contained forested wetland communities. These communities are dominated by trees that are 20 feet or taller, but also include an understory of shrubs and herbaceous species. They were typically dominated by red maple (*Acer rubrum*) and green ash (*Fraxinus pennsylvanica*), with occasional American elm (*Ulmus americana*), gray birch (*Betula populifolia*) and American hornbeam (*Carpinus caroliniana*). Understory vegetation typically included saplings of the above mentioned species, or shrub species such as dogwoods (*Cornus* spp.), willows (*Salix* spp.) and spice bush (*Lindera benzoin*). Herbaceous species in forested wetlands included sedges (*Carex* spp.), sensitive fern (*Onoclea sensibilis*), manna grasses (*Glyceria spp.*), spotted jewelweed (*Impatiens capensis*), cinnamon fern (*Osmunda cinnamomea*), true forget-me-not (*Myosotis scorpioides*). Evidence of wetland hydrology in the forested wetlands within the Study Area included water-stained leaves, water marks, moss trim lines, drainage patterns, surface water, high water table, saturated soils, microtopographic relief, and saturation visible on aerial imagery (see Photos 1-9 in Appendix C).

Scrub-shrub wetlands (PSS) – A total of 43 wetlands delineated within the Study Area were found to contain scrub-shrub vegetation. Scrub-shrub wetlands within the Study Area are characterized by dense stands of shrub species less than 20 feet tall, including willows (*Salix spp.*), viburnum species (*Viburnum* spp.) and dogwoods. Herbaceous vegetation in these areas includes sensitive fern, tearthumb (*Polygonum sagittatum*), field horsetail (*Equisetum arvense*), reed canary grass (*Phalaris arundinacea*), willowherb (*Epilobium* spp.), and various sedges. Evidence of wetland hydrology in the scrub-shrub wetlands identified within the Study Area included water-stained leaves, saturated soils, and microtopographic relief (see Photos 10-16 in Appendix C).

Emergent wetlands (PEM) – A total of 47 wetlands within the Study Area contained emergent vegetation communities. These wetlands are dominated by herbaceous vegetation, and generally characterized by soils that remain saturated or inundated throughout the year. Although the Cowardin classification was used to classify wetlands, some of the emergent wetlands in this category could be best described as wet meadow (Reschke, 1990). Wet meadow wetlands are usually found in poorly drained, low-lying depressional areas. Wet meadow wetlands may resemble grasslands and are typically drier than emergent marshes, except during periods of seasonal high water. They generally lack standing water for most of the year, though snow melt, storm water runoff, and/or a high water table allows the soil to remain saturated for a significant portion of the growing season.

Emergent wetlands and wet meadows identified in the Study Area are typically dominated by plants such as broadleaf cattail (*Typha latifolia*), sedges, rushes (*Juncus* spp.), darkgreen bulrush (*Scirpus atrovirens*), reed canary grass, late goldenrod (*Solidago gigantea*), wool grass (*Scirpus cyperinus*), spotted Joe-pye weed (*Eutrochium maculatum*), white turtlehead (*Chelone glabra*), rice cutgrass (*Leersia oryzoides*), willowherb, and boneset (*Eupatorium perfoliatum*). Evidence of wetland hydrology in the emergent wetlands identified within the Study Area included inundation, drainage patterns, high water table, saturated soils, microtopographic relief, and saturation visible on aerial imagery (see Photos 17-25 in Appendix C).

Open Water (OW) – Seven open water areas were delineated in the Study Area; these were usually adjacent to other wetland community types. They include small farm ponds, man-made impoundments, beaver ponds or naturally occurring ponds. These ponds occur in a variety of settings, including open fields, scrub-shrub, and forested environments. With the exception of the beaver and naturally occurring ponds, these ponds are typically excavated or diked, with well-defined banks, some of which support a fringe of emergent wetland vegetation. Although not verified, water depths are expected to be consistent with excavated ponds that are used as a source of water for livestock as

well as for fishing and aesthetic purposes. Such ponds are typically a minimum of 4 feet deep (see Photos 26-29 in Appendix C).

Streams – A total of 40 streams were delineated and 20 streams were approximated within the Study Area. These streams are mostly located within forests, and generally have a gentle to moderate gradient (0-5%). Most of the identified streams appear to be perennial, with a rocky substrate, well-defined banks and established floodplains. Water depths within the channels with stream flow averaged 2-10 inches (see Photos 30-36 in 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 “Considerations/Qualifiers” outlined in this 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. Functions and values were only evaluated for wetlands that were observed during the growing season, and where vegetation, soils and hydrological data were collected as part of a formal delineation. Functions and values assessments will be conducted on areas where wetland boundaries were approximated following formal delineation of these areas during the 2016 growing season. A total of 76 wetlands delineated within the Study Area were entered into the spreadsheet and the various wetland characteristics identified for each. Based on the entered data, the primary functions and values provided by each wetland were determined. Results of this evaluation are presented in the spreadsheet included as Appendix D, and summarized below.

The functions and values assessment indicates that most of the delineated wetlands within the Study Area provide some level of wildlife habitat, groundwater recharge and water quality improvement functions. In most cases these functions are limited by the small size of many of the wetlands. However, 13 of these wetlands were determined to provide a substantial wildlife habitat function. These wetlands are part of sizeable wetland complexes, include a variety of wetland covertypes (including forested wetland), and also have forested adjacent areas. The combination of these qualities provides habitat for a diversity of wildlife species. However, other than providing potential summer roosting habitat for northern long-eared bat, none of the wetlands is considered likely to provide habitat for listed threatened and endangered species. Wetlands noted as having standing water or seasonal pools may provide seasonal breeding habitat for amphibians and waterfowl, and have enhanced water quality and groundwater recharge functions. Lacking the other conditions described above, these wetlands were determined to provide wildlife habitat for a more limited number of species.

Eleven wetlands that are part of sizeable wetland complexes, contain dense vegetation, show evidence of inundation, or border a perennial stream, provide a production export function. Such wetlands have a higher productivity levels and have the potential to yield resources that can be consumed by downstream organisms.

There are currently 26 wetlands which are associated with perennial or intermittent streams. Those which contain dense vegetation and show evidence of inundation or a variable water level throughout the year were considered to provide an enhanced floodflow attenuation function. A combination of these characteristics suggest the ability to slow or disperse waters from flooding events and reduce the potential for damage to lands downstream. Wetlands that contained dense herbaceous vegetation and are bordered a perennial or intermittent stream were also determined to provide shoreline stabilization functions. Dense herbaceous vegetation surrounding a watercourse serves to stabilize banks and act as a buffer against the erosional forces of flood events. Eighteen wetlands containing associations with perennial streams were determined to provide potential fish habitat.

Nine wetlands which provide floodflow attenuation and also contain seasonal pools, standing water, or dense vegetation also have the potential to provide a substantial water quality enhancement function. Dense vegetation aids in filtering out sediment and the uptake of nutrients while standing or slow moving water in seasonal pools and inundated areas allow for sediment and pollutants to settle out of the water column or be adsorbed.

There are 39 wetlands which are adjacent to active agriculture areas. A majority of these wetlands contained dense herbaceous vegetation, and several also border watercourses or contain seasonal pools or standing water. These areas were determined to likely play an important role in water quality improvement by trapping sediment and absorbing nutrients from agricultural run-off.

Two delineated wetlands are located on public land. Due to their accessibility to the public, they have the potential to provide recreational, educational and scientific values. One wetland (delineated as Wetland 4R) is associated with NYSDEC freshwater Wetland HA-7. This wetland can be fully viewed from the public road, and as such, provides a visual quality/aesthetic value as well.

The uniqueness/heritage value is 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. One wetland, Wetland 5Q, occurs in a unique area containing circular depressions surrounded by steep slopes that appear to be the result of sinkholes or collapsed bedrock. Wetland 5Q appears to be a sinkhole wetland with no hydrologic inlets or outlets (Reschke, 1990). Currently this wetland is entirely covered with thick mucky mats and contains dense herbaceous vegetation including a dominance of mad dog skullcap (*Scutellaria lateriflora*).

5.0 CONCLUSIONS

EDR delineated 76 wetlands and approximated the location of 22 wetlands within the Study Area. These wetlands were identified based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology, and total 50.68 acres. The delineated areas include ponds, perennial, intermittent and ephemeral streams, and emergent, scrub-shrub, and forested wetlands. EDR also delineated 40 streams and approximated the location of 20 streams within the Study Area. These streams are primarily perennial, but also include intermittent and ephemeral channels, and total 18,519 linear feet. The primary functions provided by wetlands and streams within the Study Area include fish and wildlife habitat, flood flow attenuation, water quality improvement, and sediment/shoreline stabilization. Two wetlands located on public land provide recreation and education/scientific values (Wetlands 4R and 4S) and two have uniqueness/aesthetic value (4R and 5Q).

All of the wetlands appear to have surface water connections to other waters of the United States, and therefore are likely to be considered jurisdictional by the USACE under Section 404 of the Clean Water Act. A total of five delineated wetlands are expected to fall under state jurisdiction pursuant to Article 24, while three NYSDEC-protected streams (all Class C(T) streams) are protected under Article 15. However, final determination of jurisdictional status must be made by the USACE and NYSDEC.

6.0 REFERENCES

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Appendix A

Figures

Appendix B

Routine Wetland Determination Forms

(see Enclosed CD)

Appendix C

Photos of Representative Wetland Communities

Appendix D

Wetland Functions and Values Assessment Table