ATTACHMENT G
WETLANDS FUNCTIONS AND VALUES ASSESSMENT

CHAMPLAIN HUDSON POWER EXPRESS PROJECT

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1.0 INTRODUCTION

This report has been prepared by TRC on behalf of Champlain Hudson Power Express, Inc. (CHPEI), and provides a functional assessment of the freshwater wetland resources that may be impacted by construction and/or operation of the proposed Champlain Hudson Power Express Project (Project) in Washington, Saratoga, Schenectady, and Albany Counties, New York. This assessment is designed to address impacts to on-site wetlands not only in terms of disturbance area, but also by evaluating the potential for the alteration of the functions and values of the those wetlands that currently provide a public benefit.

The Project is designed to connect renewable sources of power generation to load centers in and around New York City. The Project will include underwater and underground high-voltage direct current (HVDC) transmission cables connecting an HVDC converter station in Canada with a HVDC converter station in Yonkers, New York. To the extent possible, CHPEI has proposed to install the transmission cables along existing waterways. However, an approximately 89.4 mile underground route (utilizing a railroad corridor) is required to bypass the Champlain Canal and dredging activities associated with the Upper Hudson River Polychlorinated Biphenyls (PCBs) Dredging Project. The underground route utilizing the railroad corridor extends from Whitehall, in Washington County, New York, to the Town of Coeymans, in Albany County, New York, and has been sited along the existing Canadian Pacific (CP) and CSX Corporation (CSX) railroad rights-of-way. Utilization of the railroad corridors for Project infrastructure was chosen to minimize environmental impacts to the extent possible by locating the cables within a previously disturbed corridor.

TRC and HDR|DTA were retained by CHPEI to identify and delineate federal and state jurisdictional wetlands and waterways along the underground route. Wetland scientists from TRC and HDR|DTA conducted wetland delineations from October to December 2009 and April to June 2010. The delineations were performed in accordance with the United States Army Corps of Engineers (USACE) wetland delineation methodology outlined in the USACE 1987 Wetland Delineation Manual, the Interim Regional Supplement for the Northcentral and Northeast Region (USACE, 2009), and the New York State Freshwater Wetlands Delineation Manual (Browne et. al., 1995).

This Wetlands Functions and Values Assessment includes all the impacted wetlands that are potentially under federal and/or state jurisdiction. Alterations to state jurisdictional wetlands are regulated under Article 24 of the Environmental Conservation Law and Regulations (6NYCRR Parts 663, 664 and 665), as administered by the New York State Department of Environmental Conservation's (NYSDEC) Freshwater Wetlands Program. State jurisdictional wetlands are mapped by the NYSDEC, and include wetlands that are at least 12.4 acres in size as well as smaller wetlands that have unusual local importance as determined by the NYSDEC. The NYSDEC also regulates activities within the 100-foot Adjacent Area outside of the boundary of state jurisdictional wetlands.

Federally jurisdictional Waters of the United States are subject to United States Army Corps of Engineers (USACE) permitting under Section 404 of the Clean Water Act (CWA) and Water Quality Certification under Section 401 of the CWA. Jurisdictional determination for federal wetlands is typically established as part of the USACE permitting process. This assessment is designed to evaluate all wetland areas potentially under federal jurisdiction that may be impacted by the Project.

2.0 FUNCTIONS AND VALUES ASSESSMENT METHODOLOGY

This functional assessment was conducted in accordance with the *Wetlands Functions and Values: Descriptive Approach* described in the September 1999 (NAEEP-360-1-30a) supplement to *The Highway Methodology Workbook* (Supplement) by the New England Division of the USACE. The method is

descriptive and designed to provide a flexible approach that incorporates wetland science along with human judgment regarding more subjective values and benefits. As part of this method, the evaluator takes into account a number of "Considerations/Qualifiers" that can be used as indicators or descriptors of particular functions and values.

Appendix A of the supplement identifies from three to as many as 32 "Considerations/Qualifiers" that may be possible indicators of different wetlands functions and values. Ultimately, the "Considerations/Qualifiers" are designed to be flexible and based on best professional judgment, taking into account other relevant site-specific observations of the evaluator. Using these indicators, the evaluator determines which functions and values are present in the wetland, and which are the principal functions and values that make up the important physical aspects of the wetland and/or are of special value due to their economic importance, their uniqueness, or their local, regional, and/or national significance.

Wetland functions are ecosystem properties that are present without regard to any subjective human values. They are considered to be the result of the biologic, geologic, hydrologic, biogeochemical and/or physical processes that take place within a wetland. The Supplement attributes the following possible functions to wetlands:

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

Wetland values are considered to be the perceived benefits to society that can be derived from the ecosystem functions and/or other characteristics of a wetland. These values may depend on considerations such as location of the wetland, accessibility, human disturbance or pressures, economics, surrounding land uses, and cultural or historic information. 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 by the *Highway Methodology Workbook Supplement*, and include:

1. Flood and storm control by the hydrologic absorption and storage capacity of freshwater wetlands;
2. Wildlife habitat by providing breeding, nesting and feeding grounds and cover for many forms of wildlife, wildfowl and shorebirds, including migratory wildfowl and rare species such as the bald eagle and osprey;
3. Protection of subsurface water resources and provision for valuable watersheds and recharging 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 sedimentation areas and filtering basins, absorbing silt and organic matter and protecting channels and harbors;
7. Education and scientific research by providing readily accessible outdoor bio-physical laboratories, living classrooms and vast training and education resources; and
8. Open space and aesthetic appreciation by providing often the only remaining open areas along crowded river fronts and coastal Great Lakes regions; and
9. Sources of nutrients in freshwater food cycles and nursery grounds and sanctuaries for freshwater fish.

The New York Freshwater Wetlands Act also requires the NYSDEC to rank classified state jurisdictional wetlands quality/importance based on the benefits and values they provide. Wetlands with higher classifications are considered to provide the greatest level of benefits to the public and are afforded a higher level of protection. Lower class wetlands may provide some important functions and benefits, but typically will continue to provide these functions with less protection. Consideration of the classifications assigned by the NYSDEC is included in this functional assessment.

3.0 EXISTING FRESHWATER WETLANDS

A total of 15.8 acres of freshwater wetlands will be temporarily affected by construction of the Project in New York. Of this acreage, approximately 4.5 acres of disturbance is associated with mapped state-jurisdictional wetlands.

Wetland types were assigned based on the national wetlands inventory (NWI) classifications as described in Cowardin et al., 1979. This classification is a hierarchical system based primarily on the general classification into palustrine (freshwater wetland), riverine (stream), lacustrine (lake), estuarine and marine systems, and the dominant vegetation layer. Freshwater wetlands delineated in the Project belong to four basic types: forested (PFO), scrub-shrub (PSS), emergent (PEM) and open water (POW). Wetland communities were also classified according to the Ecological Communities of New York State (Edinger et al., 2002) based on field observations. Note that larger wetland areas may frequently contain more than one cover class and/or ecological community type. Table 1 summarizes the observed ecosystem classifications for wetland systems. NWI and ecosystem classifications are described below for the potentially impacted wetlands in the Project area.

TABLE 1
PALUSTRINE ECOLOGICAL COMMUNITIES ALONG THE CHAMPLAIN-HUDSON POWER EXPRESS PROJECT

Code	Community Type
Open Wetland Communities	
A.1	Deep Emergent Marsh
A.2	Shallow Emergent Marsh
A.3	Shrub Swamp
B.2	Sedge Meadow
Forested Wetland Communities	
C.1	Floodplain Forest
C.2	Red Maple-Hardwood Swamp
C.4	Red Maple-Sweetgum Swamp
C.5	Silver Maple-Ash Swamp
C.6	Vernal Pool
C.7	Perched Swamp White Oak Swamp
C.8	Hemlock-Hardwood Swamp
Cultural (Disturbed) Wetland Communities	
E.3	Impounded Swamp
E.4	Reedgrass/Purple Loosestrife Marsh

3.1 Palustrine Forested Wetlands ("PFO")

Forested wetland cover types are dominated by trees and shrubs that have developed a tolerance to a seasonal high water table. In order to be characterized as forested, a wetland must be dominated by trees and shrubs that are at least six meters tall (Cowardin et. al., 1979). Forested wetlands typically have a mature tree canopy, and depending upon the species and density, can have a broad range of understory and groundcover community components. Forested wetland communities along the Project survey area include red maple (*Acer rubrum*) hardwood swamps, floodplain forest, and silver maple-ash swamps (Edinger et al., 2002). PFO wetlands occur as a single dominant wetland cover type, and also as a co-dominant wetland type when other plant community types exist within the wetland.

Red maple-hardwood swamps occur in poorly drained depressions, usually on inorganic soils. Red maple is either the only dominant tree species, or is codominant with one or more hardwoods (Edinger et. al, 2002). Hardwood species observed within this community type within the Project survey area include green and black ash (*Fraxinus pennsylvanica, F. nigra*), American and slippery elm (*Ulmus americana, U. rubra*), northern red oak (*Quercus rubra*), and white pine (*Pinus strobus*). Shrubs species commonly observed within red maple-hardwood swamps in the Project survey area include dogwoods, honeysuckle, speckled alder, and American hornbeam (*Carpinus caroliniana*). The herbaceous layer typically includes sensitive fern, cinnamon fern (*Osmunda cinnamomea*), tussock sedge (*Carex stricta*), goldenrods, reed canary grass, and royal fern (*Osmunda regalis*). Invasive species observed within red maplehardwood forests included honeysuckle, buckthorn, and reed canary grass.

Floodplain forests typically occur on mineral soils on low terraces of river floodplains and river deltas (Edinger et al., 2002). Tree species observed within this community type in the Project survey area include green ash, cottonwood (*Populus deltoides*), red maple, silver maple (*Acer saccharinum*), American elm, box elder (*Acer negundo*), shagbark hickory (*Carya ovata*), burr oak (*Quercus macrocarpa*), and swamp white oak (*Quercus bicolor*). Shrubs included dogwoods, speckled alder,

honeysuckle, American hornbeam, and buttonbush (*Cephalanthus occidentalis*). Sensitive fern, cinnamon fern, goldenrods, ostrich fern (*Matteuccia struthiopteris*), horsetail (*Equisetum spp.*), and sedges were commonly found in the herbaceous layer. Invasive honeysuckles (*Lonicera spp.)* and buckthorns (*Frangula alnus and Rhamnus cathartica*) were also observed in floodplain forests within the Project survey area.

Silver maple-ash swamps occur in poorly-drained depressions or along the borders of large lakes and, less frequently, in poorly drained soils along rivers. Ash-elm dominated swamps with little or no maple are currently included as part of this community type (Edinger et. al., 2002). Tree species observed within this community within the Project survey area include green ash, silver maple, elms, and cottonwood. Shrub species observed included silky dogwood, flowering dogwood (*Cornus florida*), and witch hazel (*Hamamelis virginiana*). The herbaceous layer typically included tussock sedge, jewelweed (*Impatiens capensis*), cattails, goldenrods, sensitive fern, skunk cabbage (*Symplocarpus foetidus*), and rough bedstraw (*Galium asprellum*). Invasive species observed within silver maple-ash swamps included honeysuckles, buckthorns, and reed canary grass.

3.2 Palustrine Scrub-Shrub Wetlands ("PSS")

The scrub-shrub wetland cover type includes areas that are dominated by saplings and shrubs that are less than 20 feet tall (Cowardin et. al., 1979). Scrub-shrub wetlands along the Project survey area were dominated by silky dogwood (*Cornus amomum*), gray dogwood (*Cornus foemina ssp. racemosa*), honeysuckle (*Lonicera spp.*), and speckled alder (*Alnus incana ssp. rugosa*). Other vegetation observed includes meadowsweet (*Spirea latifolia*), highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), spicebush (*Lindera benzoin*), elderberry (*Sambucus canadensis*), gray birch (*Betula populifolia*), and northern arrowwood (*Viburnum recognitum*). Invasive species observed within scrub-shrub wetlands includes honeysuckle and buckthorn (*Frangula alnus*). PSS wetlands occur as a single dominant wetland cover type, and also as a co-dominant wetland type when other plant community types exist within the wetland.

3.3 Palustrine Emergent Wetlands ("PEM")

The palustrine emergent wetland cover type is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens (Cowardin et. al., 1979). The freshwater emergent wetlands along the Project survey area primarily include shallow emergent marshes, deep emergent marshes, reedgrass/purple loosestrife marshes, and ditch/artificial intermittent stream (Edinger et. al., 2002). PEM wetlands occur as a single dominant wetland cover type, and also as a co-dominant wetland type when other plant community types exist within the wetland.

Shallow emergent marshes occur on mineral soils or deep muck soils that are permanently saturated and seasonally flooded. Water depths range from 6 inches to 3.3 feet during flood stages (Edinger et. al., 2002). Characteristic vegetation of shallow emergent marshes within the Project survey area includes bluejoint grass (*Calamagrostis canadensis*), cattails (*Typha spp.*), sedges (*Carex spp.*), goldenrods (*Solidago spp.*), spotted joe-pye-weed (*Eupatorium maculatum*), reed canary grass (*Phalaris arundinacea*), scouring rush (*Equisetum hyemale*), sensitive fern (*Onoclea sensibilis*), and soft rush (*Juncus effusus*). Invasive species observed within the shallow emergent marshes include common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*).

Deep emergent marshes occur on mineral soils or fine-grained organic soils with water depths ranging from 6 inches to 6.6 feet (Edinger et. al., 2002). Emergent vegetation observed within deep emergent marshes in the Project survey area includes cattails, bur-weeds (*Sparganium spp.*), bulrushes (*Scirpus*

spp.), and bluejoint grass. Common reed and purple loosestrife were observed within some of the deep emergent marshes within the Project corridor.

Reedgrass/purple loosestrife marshes consist of disturbed marshes where common reed or purple loosestrife has become dominant (Edinger et. al., 2002). This community was commonly found within disturbed areas adjacent to the rail bed.

The ditch/artificial intermittent stream community consists of artificial waterways constructed for drainage or irrigation (Edinger et. al., 2002). Vegetation within the ditches is typically dominated by grasses and sedges. Invasive species such as common reed, purple loosestrife, and reed canary grass are commonly found within the ditches along the railroad ROW.

3.4 Palustrine Open Water Wetlands ("POW")

Besides vegetated wetlands, a few scattered small ponds are located along the transmission cable corridor, adjacent to the railroad ROW. These wetland areas are characterized by a vegetation cover of less than 30 percent, although there may often be emergent or shrubby vegetation bordering the open water areas. Pond substrates may be silt, mud, cobble, or sand.

4.0 ADJACENT UPLANDS

Characteristics of surrounding upland landscape have the potential to influence the significant functions and values that may be provided by each wetland area. Land use in upland areas along the Project route is variable, ranging from urban and industrial developments, especially in the Schenectady area, to suburban residential, rural, agricultural, and forested landscapes. Upland community types were mapped and recorded as part of the wetland field survey efforts. Observed communities included 1) open upland communities 2) forested upland communities and 3) terrestrial cultural communities, which are defined as ecosystems that have been either created and maintained by human activities, or modified by human influence to such a degree that the physical conformation of the substrate or the biological composition of the resident community is substantially different from the character of the substrate or community that existed prior to human influence (Edinger et al. 2002).

Open upland vegetative cover types that were observed in the vicinity of the Project included successional old field and successional shrubland. Observed forested uplands included Appalachian oak-hickory forest, Appalachian oak-pine forest, successional northern hardwoods, and successional southern hardwoods. Terrestrial cultural communities included cropland/row crops, pastureland, mowed roadside/pathway, unpaved road/path, railroad, rip-rap/erosion control roadside, brushy cleared land, and urban vacant lot.

5.0 SITE WETLAND FUNCTIONS AND VALUES

Functions and values of the wetlands impacted by construction of the Champlain-Hudson Power Express Project depend on their physical, geographic, and environmental characteristics. Influencing factors can include: size and proximity of wetlands to ongoing development activity, geologic setting, soil characteristics, presence and duration of hydrology, landscape position, vegetation cover type, and dominant ecological community type. The effects of any changes to these physical characteristics are evaluated in assessing whether the Project impacts will have a significant effect on wetland functions and values.

Each of the eight wetland functions is performed by one or more of the wetlands crossed by the Project. In addition, four of the five values are associated with one or more of the wetlands crossed by the Project. Table 2 lists each of the wetlands potentially impacted by the Project, along with the functions and values that may be provided by the wetland.

The significance of various *Considerations/Qualifiers* for wetlands along the Project route is described below.

TABLE 2
FUNCTIONS AND VALUES OF WETLANDS ALONG THE UNDERGROUND TRANSMISSION CABLE CORRIDOR

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
					Forested Wetland (square feet)	Non-Forested Wetland (square feet)		
Railroad Right-of-Way (CP)								
111.8 – 111.9	D10	WH-1	PEM	1	-	1,890	Large, mostly open wetland containing deep emergent, shallow emergent, shrub swamp, and some forested wetland communities. Borders on the Champlain Canal and Lake Champlain. Observed beaver activity and green frog. Histosols present. Nearby New York State Bike Route 9.	Groundwater discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat*, uniqueness/heritage, recreation, visual quality/aesthetics
111.9 – 112.8	B56	WH-2	PEM	1	-	4,343	Large, mostly deep emergent wetland bordering on the Champlain Canal and an intermittent stream. Organic soils, with some gravel. Significant areas of pooled water. Nearby New York State Bike Route 9.	Groundwater discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat*, uniqueness/heritage, recreation, visual quality/aesthetics
113.6 – 118.2	B54	-	PEM/PFO/PSS	-	1,163	171	Large wetland consisting of shallow emergent marsh, shrub and red maple-hardwood swamps, bordering on the Champlain Canal and perennial tributaries. Fine-textured soils and areas of inundation. Nearby New York State Bike Route 9.	Groundwater discharge, floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat*, uniqueness/heritage, recreation, visual quality/aesthetics
118.3 – 118.7	B53	-	PEM	-	-	177	Relatively large shallow emergent marsh in a predominantly cleared/agricultural landscape. Borders on the Champlain Canal and intermittent tributaries. Fine-textured soils. Nearby New York State Bike Route 9.	Groundwater discharge, floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization*, wildlife habitat*, recreation

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
124.5 – 126.8	F8	-	PFO/PSS/PEM/ POW	-	1,595	98	A large wetland area bordering on Champlain Canal and tributaries and consisting of predominantly of shallow emergent, floodplain forest and silver maple-ash forest cover types. Contains areas of inundation and/or ponded open water. Coyote and potential turtle/amphibian habitat observed. Nearby New York State Bike Route 9.	Groundwater discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization*, wildlife habitat*, recreation
129.0 – 130.0	F2	-	PEM/PSS	-	-	490	Relatively large wetland area bordering on Champlain Canal and perennial tributary. Consists predominantly of shallow emergent marsh vegetation. Fine-textured soils. Deer tracks and nesting oriole observed.	Groundwater discharge, floodflow alteration, fish and shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat*
130.2 – 132.7	A54	HF-10	PSS	3		11	Large wetland bordering on Champlain Canal and a perennial tributary. Characterized primarily as deep and shallow emergent marshes and shrub swamp, with smaller floodplain forest. Seasonal inundation and fine-grained mineral soils. Muskrat and geese observed.	Groundwater discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat*, uniqueness/heritage, visual quality/aesthetics
134.5 – 134.6	A5	-	PSS	-	-	3,130	This is a narrow disturbed wetland occupying a ditch area between the railroad embankment and a dirt access road. The wetland was probably formerly part of a larger contiguous wetland that is present on the other side of the road, outside of the Project area. Predominant community type is reedgrass/purple loosestrife marsh, with some saplings and shrubby disturbance-tolerant species. Observed soils are sandy loams.	Groundwater recharge, floodflow alteration
137	A14	-	PEM/PSS	-	-	111	Relatively small wetland connecting to a drainage ditch along the railroad bed. The wetland also has an intermittent outlet draining towards the Hudson River. The outlet is constricted by a culvert under the railroad bed. Dominant cover types are shrub swamp in the wetland and shallow emergent marsh in the connected ditch.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization, wildlife habitat

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
137.9 – 138.0	A23	-	PEM	-	-	148	Small wetland upstream of a railroad culvert, with an intermittent outlet that drains through the culvert towards the Hudson River. Ecological community is primarily shallow emergent marsh. Soils are fine-grained and hydric.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation
138.0 – 138.3	A24	-	PFO/PEM/PSS	-	-	1,534	This wetland is primarily located in a deep/wide ditch but connects to other wetlands outside of the Project area. The dominant cover is shallow emergent marsh, particularly reed canary grass. The wetland is also associated with an intermittent inlet and drains towards the nearby Hudson River. Observed soils were silty clay loams.	Floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*
138.3 – 138.7	A26	F-20	PFO/PSS/PEM	2	-	300	This is a relatively large wetland adjacent to the Hudson River. In the Project area, the cover is primarily shallow emergent marsh and scrub-shrub swamp. Fine-textured soils.	Groundwater discharge, floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat*
139.9 – 140.6	A38	F-7	PFO/PSS	2	569	170	A moderate-sized wetland connecting to a larger NYSDEC-mapped wetland system outside the Project area. This wetland is predominantly red maple-hardwood and hemlock-hardwood swamp. Soils are sandy and there are signs of variable water level. Portions of the wetland are only connected through a railroad drainage ditch.	Groundwater recharge/discharge*, floodflow alteration, production export, wildlife habitat*
142.5 – 142.6	A47	-	PFO/PSS	-	43	-	Medium-sized wetland area located on both sides of the right-of-way. Portions have been significantly affected by the presence of houses/lawn. Includes shrub swamp south of the right-of-way and forested wetland to the north.	Groundwater recharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, wildlife habitat
142.9 – 143.4	A49	Q-32	PFO	1	528	-	Moderately-sized forested red maple-hardwood swamp associated with the mid to upper reaches of perennial and intermittent tributaries to Rice Brook. Connects to larger downstream NYSDEC-mapped wetlands. Portions of the wetland have been altered by railroad drainage ditches.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization*, production export, wildlife habitat
143.4	A52	-	PFO	-	9	-	A small apparently isolated wetland in a forested area. This wetland may be a potential vernal pool. Dominant cover is red maple-hardwood swamp. Soils are loamy sand with a histic epipedon.	Groundwater recharge, sediment/toxicant/pathogen retention, production export, wildlife habitat*

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
144.1 – 144.2	D6	GA-20	PFO	2	36	-	This is part of a large NYSDEC-mapped wetland that borders on the mid to upper reaches of a perennial unnamed tributary to Rice Brook. The community is primarily red maple-hardwood. Soils are sandy and shallow seasonal pools are present.	Groundwater recharge/discharge, floodflow alteration*, production export, wildlife habitat
144.3 – 144.6	D3	GA-21	PFO	2	691	-	This is part of a large NYSDEC-mapped wetland that borders on the mid to upper reaches of a perennial unnamed tributary to Rice Brook. Soils are hydric loam to sandy loam. The community is primarily red maple-hardwood. Potential amphibian breeding areas were noted.	Groundwater recharge/discharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention, transformation, production export, sediment/shoreline stabilization, wildlife habitat*
147.1 – 147.2	B39	Q-11	PFO/PEM/PSS	1	8	-	This wetland is part of a larger NYSDEC-mapped wetland that drains towards Delegan Brook. Communities observed were primarily red maple hardwood and shallow marsh. Areas of ponded open water present. Fine-textured soils. Wetland is located within the Wilton Wildlife Preserve and Park.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, wildlife habitat*, recreation, educational/scientific value
151.6 – 152.3	B3	S-19	PFO/PSS/PEM	1	273	17,687	A moderate to large wetland relatively high in the watershed above Loughberry Lake. Observed communities are predominantly shallow emergent marsh with reedgrass/purple loosestrife marsh in the associated ditch. Also associated with an intermittent stream. Soils are organic, within areas of ponding. Deer signs observed.	Groundwater recharge/discharge, floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, sediment/shoreline stabilization, production export, wildlife habitat
152.4 – 153.0	B4	S-19, S-50	PEM/PSS	1, 2	-	4,417	This is part of a large wetland system that drains towards Putnam Brook. The ecological community is largely shrub swamp and shallow emergent marsh. Fine-textured soils.	Floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, wildlife habitat
153.9	B6	-	PEM/PSS	-	-	1,015	This is a shrub swamp located on the west side of the right-of-way in a moderately developed area near the train station. Soils are sandy.	Groundwater recharge, floodflow alteration, nutrient removal/retention/transformation*, production export*, wildlife habitat
156.0 – 156.5	D9	S-20, S-21	PEM	3	-	7,023	A large wetland complex that has been altered by beaver activity, with portions deep emergent marsh, shallow emergent marsh, alder-dominated shrub swamp and red maple swamp. Impounded/ponded areas. Snapping turtle, deer and other wildlife. Southern portion of wetland is adjacent to Saratoga Nursery and Saratoga Spa State Park.	Groundwater recharge, floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, wildlife habitat*, recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics*

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
156.6 – 156.8	B47	S-21	PFO/PSS/PEM	3	7,528	-	Connected to the above wetland complex, this area has also been flooded by beaver activity. Soils organic. More disturbance and ditching is present along the railroad in this area. Also an intermittent stream within the wetland. Adjacent to Saratoga Nursery and Saratoga Spa State Park.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, wildlife habitat*, recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics
156.9 – 157.3	B45	-	PEM	-	-	4,763	This wetland is predominantly a shallow emergent marsh, associated with a perennial and two intermittent streams draining towards Kayaderosseras Creek. Some areas permanently flooded. Beaver activity and fish were observed within the wetland/stream complex. Portions of the wetland may be artificially ditched. Soils mostly coarse-grained.	Groundwater recharge/discharge, floodflow alteration, fish and shellfish habitat*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, wildlife habitat*
157.6 – 158.1	B44	-	PFO/PEM	-	27,218	-	This wetland contains long areas of ditched wetland, and is contiguous with a perennial unnamed tributary to Kayaderosseras Creek (outside of the corridor). Dominant ecological communities include shallow emergent marsh, reedgrass/purple loosestrife marsh and red maple-hardwood swamp. Soils are loams to sands.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, wildlife habitat
160.0 – 160.2	B18	-	PSS/PEM	-	-	682	This is a moderately large shrub swamp located to the west of the railroad tracks. The wetland connects to portions of railroad ditch. One upland island is included within the wetland. Soils are fine-grained.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, wildlife habitat*
160.6 – 160.7	B23	-	PEM	-	-	3,403	This area includes wetlands connected to intermittent streams artificial drainage ditches, all of which are hydraulically connected to a larger wetland system off the railroad property. The dominant wetland class on the property is reedgrass/purple loosestrife marsh. Mapped soils are fine-grained. Green frogs were observed in the wetland system.	Floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, wildlife habitat
161.0 – 161.5	B25	R-3	PFO/PSS/PEM	3	2,915	18,640	Mid-watershed wetland draining towards morning kill. Predominantly deep emergent marsh, shrub swamp and forested. Winterberry provides food source and aesthetic quality. Intermittent stream present. Fine-textured soils. Near Zim Smith hike/bike trail.	Groundwater recharge, floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, wildlife habitat*, recreation, visual quality/aesthetics*

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
161.9	B29	-	PEM/PSS	-	-	1,114	A small wetland that drains through a culvert under the railroad to a ditch/stormwater system. The predominant cover is shallow emergent marsh. Soils are fine-grained.	Groundwater discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient retention/removal/transformation
162.1 – 162.3	B30	-	PEM/PSS	-	-	13,390	This wetland is predominantly shallow emergent and reedgrass/purple loosestrife marsh. Much of it occurs along a ditch under a utlity line; however, portions are contiguous with two intermittent streams.	Groundwater recharge/discharge, floodflow alteration, nutrient removal/retention/transformation, sedimentation/shoreline stabilization*, wildlife habitat
162.6 – 162.8	B31	R-11	PEM	2	-	561	Connected to a large NYSDEC-mapped wetland system contiguous with Ballston Lake, low in the watershed. Intermittent stream is present. Loam to silt loam soils. Vegetative communities include shallow emergent marsh and shrub swamp.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization*, wildlife habitat
162.8 – 163	B32	R-11	PEM	2	-	154	Connected to a large NYSDEC-mapped wetland system contiguous with Ballston Lake, low in the watershed. Intermittent stream is present. Silt loam soils. Vegetative communities include shallow emergent marsh and red maple hardwood swamp. Ponded water present. Portions of wetland connected by ditches.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization*, wildlife habitat*
163.7 – 164.0	B-C1	-	PEM	-	-	14,179	This wetland is mostly located within a railroad ditch, hydraulically connected to C1. This is mostly shallow emergent marsh and reedgrass/purple loosestrife marsh.	Floodflow alteration*
164.0 – 164.2	C1	-	PSS/PEM	-	-	18,170	This wetland is located on the west side of the railroad tracks and is contiguous with a perennial tributary to Ballston Lake. The wetland type is primarily shallow emergent marsh. Some ditching. Soils are fine-grained.	Floodflow alteration*, fish and shellfish habitat, nutrient removal/retention/transformation, sediment/shoreline stabilization
164.4	C2	-	PEM	-	-	399	Small, apparently isolated reedgrass/purple loosestrife marsh.	Floodflow alteration
164.4 – 164.5	C4	-	PEM	-	-	6,189	Wetland area associated with ditch along the railroad containing hydrophilic vegetation. The dominant community type is shallow emergent marsh.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation
164.7	C5	R-18	PEM	2	-	684	Small shallow emergent marsh connected by an intermittent outlet to larger NYSDEC-mapped wetland areas contiguous to Ballston Lake. Organic and silty soils. Near the Ballston Veteran's Bikeway.	Floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
165.2 – 165.5	C8	R-18	PFO/PEM	2	-	16,639	This wetland is a shrub swamp on both sides of the railroad right-of-way, connected to a larger NYSDEC-mapped wetland system adjacent to Ballston Lake. Two intermittent streams flow through the wetland. Silty soils.	Floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat, recreation, visual quality/aesthetics
165.8 – 165.9	C12	-	PEM	-	-	3,080	Small, apparently isolated wetland west of the railroad right-of-way. This wetland contains shallow emergent marsh. Mapped soils are organic.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transforamtion*
165.9 – 166.0	C14	-	PEM	-	-	5143	Wetland is primarily along a wide ditch, but is hydraulically connected to an intermittent outlet draining towards Ballston Lake. The community type is shallow emergent marsh and/or sedge meadow. Areas of shallow inundation.Fine-grained mineral and organic soils.	Groundwater recharge/discharge*, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, wildlife habitat
166.7-166.7	C21	-	PEM	-	-	4	Relatively small shallow/deep emergent marsh in the Project area. This wetland is associated with an intermittent stream that drains towards Alplaus Kill. The stream appears to have been straightened in places. Observed soils were fine-grained mineral.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/alteration, wildlife habitat
168.1 – 168.2	C29	B-31	PEM	2	-	2,167	This is a deep emergent marsh bordering Alplaus Kill and an intermittnet tributary that flows under the railroad. Soils have a thick organic surface horizon underlain by silt loam. Portions inundated with a significant perennially ponded area off the right-of-way. Disturbance and residential development have affected nearby uplands.	Floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat
168.4 – 168.6	C31	B-31	PSS/PEM	2	-	204	Wetland is associated with a larger wetland system along Alplaus Kill, relatively low within the drainage basin. An intermittent tributary flows through the wetland. Soils are fine-textured mineral. The plant communities are predominantly shallow emergent marsh and shrub swamp.	Floodflow alteration*, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat
169.1 – 169.2	C35	-	PSS/PEM	-	-	286	This wetland is located along the west side of the tracks near Alplaus Kill. The wetland community is predominantely reedgrass/purple loosestrife marsh, shallow emergent marsh and shrub swamp. Observed soils include fine-grained and sandy horizons. No inlet/outlet observed.	Groundwater recharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, wildlife habitat

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
170.8 – 171.6	C42	S-107	PFO/PSS/PEM	2	-	15,159	This is part of a large NYSDEC-mapped wetland adjacent to the Hudson River. Two intermittent tributaries flow through the wetland. The wetland is characterized as deep emergent and shrub swamp, and has been altered by beaver activity. Ponded water is present. Other wildlife observations included deer, woodcock and red-tailed hawk. Soils are mostly fine-grained.	Groundwater recharge/discharge, floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization, wildlife habitat*, visual quality/aesthetics
CP Railroad Right-of-Way Subtotal:					**42,576 (1.0 acre)**	**167,725 (3.9 acres)**		
Railroad Right-of-Way (CSX)								
179.2 – 179.4	E2	-	PSS	-	-	1,643	This is a seasonally saturated headwater wetland that drains towards Normans Kill. No inlet or outlet was mapped within the Project area. Community types present include red maple-hardwood and shrub swamp. Soils are sandy.	Groundwater recharge/discharge, floodflow alteration, production export*, wildlife habitat*
179.5 – 179.8	E3	-	PFO	-	14,427	5,494	This wetland is present on both sides of the railroad track, and is contiguous with perennial and intermittent tributaries to Normans Kill. The dominant ecological type is reedgrass/purple loosestrife marsh, and the wetland is generally degraded by human activity, including rutting from vehicle tires and various invasive species. Soils are sandy.	Groundwater recharge/discharge, floodflow alteration*, fish and shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization*
179.8 – 180.1	E4	-	PEM	-	-	11,617	This is a wide wetland bordering on a perennial tributary to Normans Kill. Reedgrass/purple loosestrife marsh is the dominant community in much of the wetland; however some shrub swamp and emergent marsh (with native species) is also present. Soils range from sandy and fine-grained mineral to organic within portions of the wetland. Areas of inundation are present.	Groundwater recharge/discharge, floodflow alteration*, fish and shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization*, production export, wildlife habitat
180.1 – 180.5	E5	-	PFO	-	2,332	7,160	Located on the west side of the railroad tracks, this wetland is contiguous with adjacent railroad ditches; however, no inlet or outlet connecting to other wetlands or waterways was observed. The dominant ecological communities are red maple-hardwood swamp and forested vernal pool. One amphibian egg mass was observed within the potential vernal pool portion of the wetland. Soils are loams/silt loam.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transforamtion, production export, wildlife habitat*

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
180.4 – 180.7	E7	-	PFO/PSS	-	-	7,073	This wetland borders on a perennial tributary to Normans Kill. Stream flows are somewhat sinuous/diffuse within the wetland. The wetland includes primarily reedgrass/purple loosestrife marsh and shrub swamp. Portions of the wetland connect to a wet ditch.	Groundwater recharge/discharge, floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization*, production export, wildlife habitat
180.7 – 181.3	E9	S-117	PEM	2	-	36,829	This is a wide wetland bordering unnamed perennial tributaries to Normans Kill. Cover is predominantly reedgrass/purple loosestrife marsh, shallow emergent marsh, and red maple-hardwood swamp. Inundated areas are present in portions of the wetland. Thick organic horizon is present over sandy soils.	Groundwater recharge/discharge, floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, sediment/shoreline stabilization*, wildlife habitat*
181.3 – 181.6	E10	-	PEM/PSS	-	-	10,767	Two perennial tributaries to Normans Kill flow within this wetland. Dominant ecological classes include shallow emergent marsh, with contiguous areas of forested wetland and shrub swamp located mostly off the right-of-way. Observed soils were sandy.	Groundwater recharge/discharge, floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization*, production export, wildlife habitat
181.6 – 181.8	E12	S-15	PFO/PEM/PSS	2	16,492	-	This wetland is predominantly forested and shallow emergent marsh and occurs along perennial unnamed tributaries to Normans Kill. Sampled soils were fine-grained.	Floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization*, production export, wildlife habitat*
181.9 – 182.6	E15	-	PFO/PEM	-	9,165	22,555	This includes wetland areas bordering on two perennial tributaries to Watervliet Reservoir. Portions of the wetland are contiguous with railroad ditches. Dominant wetland communities include shallow emergent marsh, shrub swamp and red maple-hardwood swamp. Ponded water visible from adjacent roadway. Soils are sandy.	Groundwater recharge/discharge, floodflow alteration, fish and shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization*, wildlife habitat*, uniqueness/heritage, visual quality/aesthetics*
182.7 – 182.8	E95	-	PEM/PSS	-	-	344	Relatively small wetland area between two railroad tracks, bordering on a perennial tributary to Watervliet Reservoir flowing through railroad culverts. The dominant cover is shallow emergent marsh and shrub swamp. Observed soils were sandy and gravelly. Evidence of deer and nesting wild turkey was observed.	Groundwater recharge/discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, wildlife habitat

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
182.8 – 183.0	E96	-	PFO/PEM/PSS	-	-	2,853	This seasonally-flooded wetland includes emergent marsh (along to the railroad right-of-way) and red maple-hardwood swamp (adjacent to the right-of-way), upstream of Watervliet Reservoir. No inlets or outlets within the Project area were observed. Soils range from silt loam to sandy loam.	Groundwater recharge/discharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, wildlife habitat*
183.0 – 183.3	E97	-	PEM/PSS	-	-	925	This wetland consists primarily of shallow emergent marsh bordering on a perennial tributary to Watervliet Reservoir. The tributary shows signs of sedimentation. Wetland soils are sandy loams.	Groundwater recharge/discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation, sediment/shoreline stablization*, wildlife habitat
184.1	E79	-	PFO/PSS	-	817	-	Predominantly shrub swamp and forested wetland dominated by elm and ash. This wetland is contiguous with the Watervliet Reservoir, and inundation/ponding is extensive within the wetland. Soils are fine-grained mineral.	Floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transforamtion, production export, wildlife habitat*
184.2 – 184.3	E77	-	PSS	-	-	591	This wetland is directly associated with the Watervliet Reservoir and contains areas of ponded water. The dominant community type is shrub swamp. Soils are fine-grained.	Floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transforamtion, production export, wildlife habitat*
184.5 – 184.6	E75	-	PFO	-	241	-	In the Project area this is a small wetland finger draining toward Watervliet Reservoir. The wetland is predominantly red maple-hardwood swamp. Observed wetland soils are fine-grained but contain some gravel.	Groundwater recharge/discharge, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, wildlife habitat*
184.9 – 185.0	E17	-	POW	-	138	6,079	This is an apparently isolated pool in a forested areas, corresponding to the ecological classification forested vernal pool. No inlet or outlet was observed and the wetland area itself is largely unvegetated. Soils are sandy.	Groundwater recharge, floodflow alteration, nutrient removal/retention/transformation, wildlife habitat*
186.4 – 187.1	E21	-	PEM/PSS/PFO	-	1,984	13,640	A relatively long wetland near railroad yard, which includes shallow emergent, reedgrass/purple loosestrife, forested wetland and shrub swamp communities. Associated with intermittent tributaries to Black Creek. Soils are loamy Udorthents. Canada geese and muskrat observed.	Floodflow alteration, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation, sediment/shoreline stabilization*, production export, wildlife habitat

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
187.1 – 187.6	E24	V-51	PEM/PFO	3	13,776	17,292	This is a moderate to large wetland system located upstream of Vly Creek. Wetland communities include forested communities with dominant elm and deep emergent wetland. Forested areas exhibit relatively undisturbed vegetation, but some trash is present. Soils are fine-grained.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, wildlife habitat*
187.9 – 188.0	E26	-	PEM/PSS	-	-	37	This wetland is a perched swamp white oak wetland and shrub swamp, above nearby downslope wetlands. No inlet/outlet was observed in the Project area. Soils are fine-grained and hydric.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, wildlife habitat
187.9 – 188.5	E28	V-52	PEM/PSS/PFO	2	1,296	7,529	Along a perennial tributary upstream of Vly Creek, this wetland is mixed deep emergent marsh, impounded swamp and vernal pool. The wetland soils are fine-grained mineral to organic. This wetland area has been altered by beaver activity; kingfisher and wood duck were also observed. Significant ponded open water is present.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, sediment/shoreline stabilization*, wildlife habitat*, visual quality/aesthetics
188.5 – 188.7	E29	-	PEM/PSS/PFO	-	783	4,277	Located along a perennial tributary to Vly Creek, this wetland is predominantly shrub swamp with smaller portions of forested cover. The wetland is located between the railroad and an adjacent road, and the stream shows evidence of disturbance and sedimentation. A neighbor commented on past issues with flooding. Soils are Udorthents and were observed to be mostly fine-grained in the wetland. Accessible but generally degraded appearance.	Groundwater recharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization*, wildlife habitat
190.2	E32	-	PEM	-	-	1,682	Relatively small wetland that drains into a perennial tributary to Vloman Kill through railroad culvert. The wetland is primarily shallow to deep emergent marsh, with some ponded water.	Groundwater recharge/discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation*, production export, wildlife habitat
190.3 – 190.5	E33	-	PSS/PEM	-	-	14,338	This wetland is located along perennial tributaries to Vloman Kill. Cover type is primarily shrub swamp. Soils range in texture from sandy loam to fine-grained mineral to organic. Wildlife observed include kingfisher, spring peeper and garter snake.	Groundwater recharge/discharge, floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retentrion/transformation*, sediment/shoreline stabilization, production export, wildlife habitat*

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190.6	E82	-	PEM	-	-	1,678	Relatively small wetland, mostly within a ditch, connecting off right-of-way. Associated with an intermittent tributary to Vloman Kill. Predominantly reedgrass/purple loosestrife marsh, shallow emergent marsh and shrub swamp (off right-of-way). Soils are mostly fine-grained but significantly gravelly or stony.	Groundwater recharge/discharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization*, wildlife habitat
190.8 – 190.9	E83	-	PEM	-	-	6,076	A wetland on a topographical gradient in the watershed of Vloman Kill. Wetland is dominated by shallow emergent marsh and includes areas of shrub swamp off the right-of-way. The wetland soils are fine-grained.	Floodflow alteration*, nutrient removal/retention/transformation, production export, wildlife habitat
190.9 – 191.0	E34	-	PEM/PFO	-	1,920	5,993	This wetland is located on topographical gradient downstream of wetland E83 in the watershed of Vloman Kill. The wetland is dominated by red maple-hardwood swamp and sedge meadow. Areas of inundation. Soils are fine-grained mineral.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, wildlife habitat*
191.0 – 191.1	E36	-	PFO	-	4,000	-	This wetland is located in a flatter area downstream of wetland E34 in the watershed of Vloman Kill. The wetland is dominated by red maple-hardwood swamp and shrub swamp. Fine-grained mineral soils are present.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, wildlife habitat*
191.1 – 191.4	E37	-	PSS/PFO	-	-	25,691	This wide wetland is located in a flatter area downstream of wetland E36 and is associated with a perennial tributary to Vloman Kill. The wetland is dominated by shrub swamp. Areas of seasonal inundation are present. Soils are fine-grained mineral.	Groundwater recharge/discharge, floodflow alteration*, fish/shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization*, wildlife habitat
191.6 – 191.8	E39	-	PEM	-	-	19,375	A relatively wide wetland low in the watershed, associated with an unnamed intermittent tributary to Vloman Kill. This wetland is primarily reedgrass/purple loosestrife and shallow emergent marsh. Has fine-grained mineral soils. Located just outside the Five Rivers Education Center.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transforamtion*, sediment/shoreline stabilization*, wildlife habitat
192.0 – 192.3	E42	-	PFO/PEM	-	2,496	21,529	This wetland includes shallow emergent marsh, shrub swamp and forested wetland classes. Portions of the wetland are along/connected to an inundated railroad drainage ditch. Soils are fine-grained.	Floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, wildlife habitat

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192.4 – 192.6	E46	-	PEM	-	-	18,517	Wetland is located along the west side of the track, upstream of Vloman Kill. The dominant cover is shallow emergent marsh, with significant areas of open, shallow inundation. Soils are fine-grained, with some gravel. Tadpoles and amphibian egg masses observed.	Groundwater recharge/discharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation*, production export, wildlife habitat*
192.6 – 192.9	E47	-	PFO/PEM	-	-	19,039	Relatively small wetland located west of the right-of-way. The wetland is predominantly shallow emergent marsh with significant areas of ponded water. Soils are fine-grained mineral with some gravel.	Groundwater recharge/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, wildlife habitat*
193.8 – 193.9	E48	-	PFO/PEM	-	535	3,305	A relatively long wetland bordering one perennial and two intermittent unnamed tributaries to Coeymans Creek. Evidence of erosion along banks. Ecological communities include red maple-hardwood swamp, shrub swamp and reedgrass/purple loosestrife marsh. Portions are ditched along the railroad. Soils are fine-grained. Wildlife observations included deer, frogs and tadpoles.	Groundwater recharge/discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention*, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization*, wildlife habitat*
194.6 – 195.7	E58	-	PEM	-	-	79,472	Most of this wetland consists of reedgrass/purple loosestrife marsh along a drainage ditch near the Selkirk Yard; however, the area is hydraulically connected to Coeymans Creek. Soils are fine-grained.	Floodflow alteration*, fish/shellfish habitat (in creek), sediment/shoreline stabilization
197.4 – 197.6	E104	-	PEM	-	-	3,528	Reedgrass/purple loosestrife marsh within a drainage ditch along the Selkirk Yard. Soils are fine-grained.	Floodflow alteration*
198.6 – 199.6	E101	-	PEM	-	-	23,641	Relatively large wetland area on the southwest side of the railroad tracks near the Selkirk Yard. Drains to a perennial unnamed tributary to Coeymans Creek outside of the Project area. Predominantly reedgrass/purple loosestrife marsh in the Project area, portions along ditch. Soils texture is loam to sand. Evidence of deer and frogs observed.	Groundwater rechage/discharge, floodflow alteration*, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, sediment/shoreline stabilization, wildlife habitat

Approx MP	Field ID Number	NYSDEC Wetland ID	NWI Classification [a/]	NYDEC Wetland Class	Total Temporary Impacts within the Construction Corridor		Summary	Functions and Values (* denotes principal functions/values)
199.7 – 200.0	E99	-	PFO/PSS/PEM	-	3,713	-	Red maple-hardwood and shrub swamp associated with a perennial tributary to Coeymans Creek. Soils are silty to sandy. Contiguous with more extensive forested area.	Groundwater recharge/discharge, floodflow alteration, fish/shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization*, wildlife habitat
CSX Railroad Right-of-Way Subtotal:					**74,115 (1.7 acres)**	**400,569 (9.2 acres)**		

a/ May include classification for portions of the wetland outside of the area of impact.

5.1 Groundwater Recharge/Discharge

Most wetlands perform some role in Groundwater Recharge/Discharge due to the fundamental interactions between wetlands and aquifers through the fluctuation of the water table. Groundwater in the Project area may be found in unconsolidated deposits of sand and gravel (surficial geology) and bedrock formations. Aquifer recharge may occur from precipitation directly on the land, by seepage from the tributary streams, rivers, and lakes flowing across the aquifer, by subsurface flow from the till on the sides of the valleys, and by seepage from bedrock and deposits of low permeability adjacent to the aquifers. Wetlands and streams also receive groundwater discharge typically where the water table is high relative to the wetland/waterbody elevation.

Wetlands in the Project area that are associated with a perennial or intermittent watercourse have hydric soils may contribute groundwater baseflow to the stream when the water table is low and/or the stream may receive groundwater discharge when the water table is high. Wetlands that contribute to groundwater recharge or discharge often show signs of variable water levels. Wetlands in the Project area that function in groundwater recharge/discharge were observed to have characteristics such as ponded water, water-stained leaves, water marks, an intermittent outlet or other indications that the water level changes periodically or seasonally within the wetland.

Wetlands with the Groundwater Recharge/Discharge function often lack an inlet or outlet, or have a constricted outlet. For the Champlain-Hudson Express Project, wetland outlets are frequently constricted by the presence of a culvert along the railroad bed, or at a road crossing. Wetlands lacking an outlet, or with a constricted outlet, have the potential to contribute to groundwater recharge. In these instances, water flowing to the wetland from surface water runoff and precipitation is retained and infiltrates into the groundwater. Where a wetland area lacks an inlet, this suggests that groundwater discharge or seepage may contribute to the saturation of the wetland.

In general, the majority of wetlands in the Project area contain fine-grained soils, including mineral silt, clay and/or organic soils. Because relatively few wetlands contain sandy or coarse-grained soils that may be particularly permeable, contributing to a higher potential for aquifer recharge/discharge, and are not near known groundwater withdrawal areas, most of the wetlands in the Project area are not considered to have groundwater recharge/discharge as one of their principal functions. For portions of the Project area where sandy soils are present, the importance of the Groundwater Recharge/Discharge function is expected to increase.

5.2 Floodflow Alteration

Most of the wetlands in the Project area have at least some ability to function for Floodflow Alteration. State-jurisdictional wetlands, in particular, tend to be large wetlands (over 12.4 acres), and often border on perennial and/or intermittent watercourses. These wetlands are mostly in a relatively flat area adjacent to the watercourse and receive waters from periodically from overbank flooding. Dense vegetation, often persistent emergent vegetation associated with deep emergent and/or shallow emergent marshes, along with hydric soils that can absorb water, both contribute to the ability to attenuate waters from flooding events, reducing the potential for downstream damage due to flooding. Many of these wetlands with a high potential to function for Floodflow alteration have ponded water, water marks on trees or other visible signs of variable water.

Smaller wetlands in the upper part of the drainage basin can also be very important in this function, by receiving retaining and slowing flood waters flowing to downstream watercourses during storm events. In the Project area, this is a principal function of some headwater wetlands and other smaller wetlands bordering intermittent streams in the upper part of their drainage basins, where the wetlands receive

overland sheetflow and where there is little or no flood storage in the watershed above the wetlands. This is function also important in urban areas where the watershed contains largely impermeable surfaces that cannot absorb waters during storm events, and economic consequences or other damage to downstream properties may result from flooding events. In some instances, reedgrass/purple loosestrife marshes that are connected to or located largely within railroad drainage ditches may contribute few other wetland functions and values, but serve primarily to collect and attenuate stormwaters and/or floodwaters entering downstream waterways.

5.3 Fish and Shellfish Habitat

Wetlands providing the Fish and Shellfish Habitat are typically associated with perennial streams or lakes. Wetlands along high quality streams or designated trout streams may have Fish and Shellfish Habitat as as a principal function. Wetlands associated with perennial streams with slow to moderate streamflows, occurring in watersheds where undisturbed, forested land is dominant, are considered the best Fish and Shellfish Habitat. Streamside vegetation overhanging the banks provides shading for suitable habitat and cover objects such as cobbles, boulders or woody debris in the substrate may also improve habitat quality.

Wetlands were also included as contributing to potential fish/shellfish habitat if they are adjacent to a perennial waterbody located nearby outside the Project area, and they contained intermittent tributaries and/or ponded wetland areas that may connect to that perennial waterbody and provide seasonal fish habitat.

5.4 Sediment/Toxicant/Pathogen Retention

Many of the wetlands in the Project area are suitable to function in the retention of excessive sediments or pathogens that may be carried by surface water runoff within the drainage, and many have this as a principal function. Characteristic wetlands in the Project area have fine-grained silty or clayey mineral soils, or organic soils that drain slowly. Many also have ponded water or other inundation. Where the water is ponded or moves slowly within the wetland sediments, toxicants and/or pathogens to settle out. Dense vegetation, which is typically present in deep and shallow emergent marshes throughout the Project area, can also assist in trapping sediment.

Wetlands are associated with a watercourse and provide Floodflow Alteration are often particularly involved in Sediment/Toxicant/Pathogen Retention, as excess sediments/toxicants are carried downstream and deposited in wetlands during flooding events. Sometimes the watercourses will have a visible decrease in velocity or become diffuse in the wetland, allowing sediment and other materials to be deposited.

Suspected potential sources of excess sediment or toxicants, such as construction sites, roadways, industrial activities, and/or other developments, in the watershed above the wetland may increase the importance of this function.

5.5 Nutrient Removal/Retention/Transformation

Most wetlands in the Project area are suitable for Nutrient Removal/Retention/Transformation and many have it as a principal function. These wetlands share many of the characteristics that also assist in sediment trapping and sediment retention, such as ponded water and deepwater habitats, slowly-drained, fine-grained mineral or organic soils, and dense vegetation. An abundance and diversity of vegetation allows for more uptake, retention and transformation of nutrients in wetland systems. Wetlands

associated with watercourses may show a decline in water velocity within the wetland, which may be due to thick vegetation or a constricted outlet.

Because significant portions of Project area are under agricultural land us, the Nutrient Removal/Retention/Transformation function is particularly important in helping reduce the input of excess nutrients to downstream watercourses. Excess nutrients in waterbodies can be associated with increased productivity, eutrophication and lowered dissolved oxygen, which may lower water quality, alter aquatic habitat and adversely impact fish and other aquatic species.

5.6 Production Export

This function relates to the ability of a wetland to produce resources that may be consumed or used by wildlife and humans. In order to perform this function, wetlands usually have high productivity levels. Often, these wetlands are also associated with the wildlife habitat function, as wildlife at the higher trophic levels consume and export vegetation, invertebrates and/or other wildlife at lower trophic levels that are using the wetland.

Many of the wetlands in the Project area are associated with some production export function. The exception to this is wetlands that are primarily reedgrass/purple loosestrife marshes and other wetlands that lack a diverse plant community and do not have significant wildlife habitat value. Wetlands with the Production Export function are often are deep or shallow emergent marshes, which typically have high productivity and use by wildlife. Often, high productivity and high levels of production export are indicated by a dense vegetative community, containing both a relatively high species richness and a high structural diversity. Wetlands with ponding or seasonal inundation also serve as breeding areas for insects that are consumed by bats, birds and other insects. Even lower-quality disturbed wetlands may serve this function because of the use of flowering plants, even invasive plants such as purple loosestrife, by nectar and pollen-gathering insects. Forested wetlands are typically lower in productivity, but also serve this function due to the availability of wildlife food sources such as berries and acorns.

Where Project-area wetlands border a perennial watercourse, production export may also occur via detritus or flushing from the permanent wetland outlet.

5.7 Sediment/Shoreline Stabilization

Sediment/Shoreline Stabilization is a function of most wetlands that border on a perennial or intermittent stream. This may be a principal function in areas where evidence and/or topography suggests otherwise high erosive forces, especially during storm events when water is moving quickly. Wetlands in the Project area were considered to function in stabilizing the sediment and bank if they form a wide buffer zone adjacent to a waterbody and contain dense vegetation which acts to absorb energy during flood events. This vegetation may consist of dense emergent vegetation, trees and/or shrubs. Signs that large trees, saplings and other woody vegetation near a watercourse serves to stabilize the existing banks include a step between the stream bed and bank, typically with roots visible throughout. Although many Project-area wetlands are located in areas that are relatively flat, in some cases, a topographical gradient within the wetland indicates the presence of potential erosive forces. Other evidence of the Sediment/Shoreline Stabilization function observed included sedimentation or siltation within a waterbody, channelized flow, high water flow velocities and/or the presence of decreased, sinuous or diffuse flows within the wetland.

5.8 Wildlife Habitat

Most wetlands have some functional value as Wildlife Habitat and many have this as a principal function. Exceptions are reedgrass/purple loosestrife marshes and other wetlands were the vegetative community lacks essential species diversity, structural diversity and/or wildlife food sources. Wildlife use or evidence of wildlife use was directly observed during field surveys in many of the larger wetlands. Canada geese, wood ducks, kingfisher, coyote, deer, green frogs, turtles and various other species were seen in Project wetlands during field surveys. Other evidence of wildlife use included old turtle nests, deer tracks or signs, mammal burrows, beaver dams and chews.

In some cases, wildlife use was not observed during field surveys, but wildlife habitat value was has been inferred by the characteristics of the wetland, particularly its ecological community type, dominant vegetation, and landscape setting. A number of the wetlands in the Project are part of relatively large contiguous areas of deep or shallow emergent marsh, which may be suitable for a variety of wetland bird species such as red-winged blackbird, Virginia rail and/or swamp sparrow. Emergent wetlands often support abundant insect populations which provide a food source for birds, bats and other wildlife. Aquatic vegetation such as woolgrass may be used by waterfowl.

Many of the Project area wetlands have pools and seasonally inundated areas can provide aquatic breeding habitats for amphibians, as well as breeding areas for insects and other invertebrates that provide food sources for higher trophic levels.

Wooded swamps are also of particular habitat value for some species of birds and mammals. In shrub swamps and forested wetlands, shrubs and trees that produce berries such as blueberries, buckthorn, ashes and winterberry, may be used by birds and mammals. Hard-mast tree species (e.g. oaks, hickories) produce acorns, which are often consumed or cached by mammal species.

With the exception of certain urban and residential areas, much of the landscape in the Project area consists of agricultural lands, undeveloped lands and other open space. Many of the wetlands have an undeveloped buffer, providing a habitat matrix for wildlife and overland access to other upland or wetland habitats. The state jurisdictional wetlands in the Project area are typically part of a larger contiguous wetland complex, providing a large and relatively undisturbed wetland habitat area.

Human activity due to the presence of the railroad right-of-way, roadways and other development has caused disturbance that limits the value of other suitable habitat areas for wildlife. Invasive species, particularly common reed and purple loosestrife, have altered the habitat quality by reducing the diversity of native vegetation, affecting the abundance and quality of food sources and/or other affects. In other areas, habitat fragmentation due to development and the creation of barriers to wildlife movement (highways, culverts, etc.), has reduced the ability of wildlife to use otherwise suitable areas. These affects tend to have greater impact on the larger wildlife, wildlife that require an extensive home range or territory containing appropriate habitat, and species such as certain amphibians that need both aquatic and terrestrial habitats for portions of their life cycle. Even in areas fragmented by development, however, wetlands may provide important habitat islands or stop-overs for migrating birds.

5.9 Recreation

Most wetlands in the Project are not considered suitable for recreation, as they are located on private land without available public access, parking, or available recreational facilities. Although hunting on private lands may occur in the vicinity of the Project, access along or across the railroad rights-of-way is not permitted due to safety concerns. However, the wetlands located along or visible from New York Bike Route 9 and the Zim Smith Trail, as well as wetlands located partially on public lands such as the Wilton

Wildlife Preserve and Park, the Saratoga Nursery, and the Saratoga Spa State Park, may have some recreational value to cyclists, hikers, wildlife observers, and other passive users. Considerations that may increase the value to these recreational users include the use of the wetland wildlife, aesthetic value, and the presence of perennial watercourses. Due to the limited public access and recreational opportunities, this is not a principal value for any of the wetlands in the Project area.

5.10 Educational/Scientific Value

The majority of wetlands in the Project area do not provide this value, as they are located on private land without available or safe public access, parking or facilities. This is not a principal value for any wetlands in the Project area. Wetland areas that are located partially within the Wilton Wildlife Preserve and Park, Saratoga Nursery and/or Saratoga Spa State Park, may have some educational value associated with these existing public lands and any outreach or education programs currently conducted within those lands. Wilton Wildlife Preserve and Park, in particular is managed for a wildlife species, especially Karner Blue Butterfly. Although this species does not typically use wetland habitats, the potential exists for future scientific use of wetlands associated with the Wilton Wildlife Preserve and Park for research relating to this or other wildlife species.

5.11 Uniqueness/Heritage

The Uniqueness/Heritage value takes into account the special value of a site in the context of the overall landscape, cultural features, and the rarity of the wetland/habitat type in the local area. Some of the wetlands in the Project area have Uniqueness/Heritage value primarily due especially large and un-fragmented nature of the wetland area, high quality of the wetland habitat and/or the presence of the wetland within protected or historic open space such Saratoga Spa State Park. Additionally, wetlands along the Champlain Canal were included as part of the open space and visual landscape along this historic feature.

5.12 Visual Quality/Aesthetics

Many of the wetlands in the Project area are unsuitable for Visual Quality/Aesthetics, because they lack a primary or publicly-accessible viewing location, or they are in locations were wetland quality has been degraded by invasive species, disturbance and/or development. Wetlands providing visual quality/aesthetic value along the Project route include the larger, un-fragmented emergent wetlands along large waterbodies such as the Champlain Canal or the Hudson River, wetlands that have an especially diverse assemblage of native species vegetation, wetlands that have been influenced by beaver activity and have a high interspersion of vegetation and open water, and wetlands that are partially located on public lands or recreational hiking or biking trails (see above). Some of these wetlands also have a high density of red maples that turn bright colors in the fall, and/or winterberry shrubs that keep attractive red berries throughout the winter. Views of the wetland to or from adjacent large waterbodies, such as Lake Champlain, the Champlain Canal, the Hudson River, or scenic perennial streams, were also considered.

6.0 SUMMARY

Of the 13 functions and values commonly attributed to wetlands, a total of 12 functions and values are associated with wetlands in the Project area. In general, the dominant natural community types are characterized as relatively large deep and shallow emergent marshes, wooded swamps and shrub swamps. Invasive species such as purple loosestrife and common reed are frequently common or dominant, particularly where wetlands connect to railroad ditches. The majority of the wetlands have the ability to

provide some function in Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal/Retention/Transformation, Production Export and Wildlife Habitat.

Many of the Project area wetlands occur along intermittent streams, perennial streams, rivers or lakes. Wetlands associated with waterbodies may provide some function in Sediment/Shoreline Stabilization and/or Fish and Shellfish Habitat. Additionally, a few wetlands in the Project area possess values such as Recreation, Educational/Scientific Value, Uniqueness/Heritage and Visual Quality/Aesthetics.

No loss or fill of wetlands evaluated in this report will result from construction and installation of Project facilities. Short-term impacts that will occur to wetlands from constructing these facilities include temporary disturbance to wetland soils, hydrology, and vegetation within construction workspace. Following construction, CHPEI will restore topsoil and contours the extent practicable, thereby restoring hydrology and promoting the re-establishment of hydrophytic vegetation. Ultimately, the physical, hydrologic, and chemical composition of the impacted wetland areas will be restored following the completion of construction. No significant long-term impacts for most existing functions and values are anticipated for wetlands temporarily affected by construction.

Because excavation activities for the transmission cable will be shallow (approximately 3 feet), soil will be replaced following trench excavation and no change in hydrology or affect on the Groundwater Recharge/Discharge is expected. There will be no new fill in wetlands or addition of new impervious surfaces. Temporary affects due to removal of vegetation and/or compaction of soil during construction are expected to be minor and to cease once construction is complete and the right-of-way has been restored.

Because the cables will be located belowground without new aboveground structures in or adjacent to wetlands or watercourses, the Floodflow Alteration function will not be significantly affected. Any temporary affects due to removal of vegetation will be short-term, and vegetation density is expected to return to its previous level soon after construction is completed. Similarly, no long-term impacts to other physical/chemical functions such as Sediment/Toxicant Retention, Nutrient Removal/Retention/Transformation and Production Export are expected.

Impacts to the Wildlife Habitat function will be primarily short-term due to the disturbance of wetland habitat and clearing of vegetation. Typically, vegetation is expected to quickly re-establish once the right-of-way has been stabilized and restored. Some long-term impacts to wetland habitat may occur in areas were significant amounts of woody vegetation must be cleared, especially large trees. In general, these impacts have been minimized to the extent possible by aligning the Project adjacent to an existing, already disturbed railroad corridor. This alignment minimizes or avoids the creation of any new forest habitat fragmentation and reduces the potential impact on mature forested vegetation in general, since much of the corridor has been previously cleared. Because mature trees require a long period of time to re-establish, any clearing of forested vegetation may represent a long-term impact to wildlife habitat. Also, since trees will not be allowed to establish directly over the cable trench following construction, this may also represent a small area of permanent change in vegetation cover.

Clearing of forested wetland, where applicable, would alter the wildlife habitat function of the wetland, by replacing one habitat type with another. This habitat alteration may reduce the quality of the habitat for some wildlife species while increasing the value for others. Due to the distribution and availability of similar forested habitat types in the immediate Project area and the relatively small area of forested wetland affected, construction is not expected to significantly impact wildlife habitat or wildlife populations and will not adversely affect the distribution or regional abundance of wildlife species.

An additional concern relative to the wildlife habitat function is the potential for establishment of exotic invasive wetland plant species into new wetland area. As noted, purple loosestrife, common reed and a variety of other invasive plants are common in wetlands in the Project area. Invasive plant species may reduce habitat quality (as well as affecting values such as Visual Quality/Aesthetics) by reducing species diversity, altering physical, chemical and ecological properties of the wetland, affecting the abundance of wildlife food sources, and changing structural properties of the habitat. To address these potential impacts, the EM&CP for the Project will contain measures for the identification of invasive species along the right-of-way, and best management practices to be implemented to minimize and/or control the spread of exotic invasive wetland plant species.

Values of Project area wetlands include Recreation, Educational/Scientific Value, Uniqueness/Heritage, and Visual Quality/Aesthetics. Because the Project will not result in a loss of wetlands or open space, and physical, hydrologic and ecological characteristics are expected to substantially return to pre-construction conditions relatively soon following the completion of construction and restoration of the right-of-way, no significant alteration of these values is expected. In general, much of the Project area is not accessible to the public; however, where access is currently available along existing roads, pathways, or through publically-owned lands, the Project will not affect the ability of the public to access and enjoy these wetlands.

7.0 REFERENCES

Browne, S. et. al. 1995. New York State Freshwater Wetlands Delineation Manual. New York State Department of Environmental Conservation, Division of Fish and Wildlife, Bureau of Habitat, Albany, NY.

Cowardin, L.M., V. Carter, F. Golet, and E. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. 103 pp.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. (Draft for review). New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY. Accessed online February 1, 2010 at: http://www.dec.ny.gov/animals/29392.html

U.S. Army Corps of Engineers (USACE). 1995. The Highway Methodology Workbook Supplement. Wetland Functions and Values: A Descriptive Approach. U.S. Army Corps of Engineers, New England Division. NENEP-360-1-30a. 32 pp.

U.S. Army Corps of Engineers (USACE). 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.