Exhibit 4

STATE OF NEW YORK
DEPT. OF PUBLIC SERVICE
DATE 10-29-03
CASE NO. 03-T-0644
EX 4

NIAGARA MOHAWK POWER CORPORATION

EXHIBIT 4

Environmental Impact

345 kV TRANSMISSION LINE

BESICORP - EMPIRE DEVELOPMENT COMPANY PROJECTS

Pursuant to Section 86.5

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TERMS, ACRONYMS AND ABBREVIATIONS

The following Terms, Acronyms and Abbreviations are provided for reference purposes. Not all Terms, Acronyms and Abbreviation in the following list are used in this Exhibit, but they may be used elsewhere in this Article VII Application.

AADT	annual average daily traffic
ACSR	aluminum conductor steel reinforced
AGT	Algonquin Gas Transmission Company
AM	amplitude modulated radio signal
ANSI	American National Standard Institute
Applicant	Niagara Mohawk Power Corporation
AR	Agriculture – Residence Zoning District
Article X Application	Application for proposed BEDCO Power Plant and RNMP under review by the NYSPSC (Case No. 00-F-2057).
B2	General Business Zoning District
BEDCO	Besicorp – Empire Development Company, LLC
BEDCO Power Plant	505 megawatt combined cycle cogeneration power plant proposed in conjunction with the recycled newsprint manufacturing plant (Article X Case No. 00-F-2057).
BEDCO Projects	BEDCO Power Plant and RNMP proposed in Article X Application (Case No. 00-F-2057); integral components are an electrical delivery connection (Proposed Transmission Line) and a fuel supply connection (NMPC E-37 Natural Gas Pipeline).
Best Management Practices	construction techniques designed to contain sediments and turbid water from impacting off site soils, surface water and groundwater, and vegetation.
BG	General Business Zoning District
C/P	Community / Public Zoning District
Caisson	single reinforced concrete pier / pier foundation
CCR	Code of the City of Rensselaer
CCVT	capacitive coupled voltage transformer
Central Hudson	Central Hudson Gas & Electric Corporation
CI	Coastal Industrial Zoning District
conductor	single or multiple wire(s) used to transmit electricity
conductor security zone	air space around a conductor that must be free of vegetation for safe operation of a transmission line

TERMS, ACRONYMS AND ABBREVIATIONS (CONTINUED)

CMP	New York State Coastal Management Policy
C.T. Male	C.T. Male Associates
CZL	Comprehensive Zoning Law
DEM	digital elevation model
dielectric fluid	an alkylbenzene dielectric liquid used to balance heat dissipation from underground high pressure fluid-filled electric cables
double circuit	two sets (three conductors each) of electrical lines for two transmission connections
EA	Environmental Assessment
EDR	Environmental Design & Research, P.C.
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
encroachment	any man-made structure of a permanent nature that, if allowed to remain in its current location, could interfere with the construction, maintenance or operation of the Proposed Transmission Line or the temporary relocation of the Greenbush #16 Circuit
EO	element occurrence (in reference to rare species population status)
EM&CS&P Plan	Environmental Management and Construction Standards and Practices Plan
EMF	electric and magnetic field
EPRI	Electric Power Research Institute
Epsilon	Epsilon Associates, Inc.
ESNP	proposed BEDCO Power Plant and RNMP
FERC	Federal Energy Regulatory Commission
FF	Flood-Fringe Overlay District
FM	frequency modulated radio signal or short-wave
GDEIR	Generic Draft Environmental Impact Report
H	Highway Corridor Zoning District
H-frame	double pole structure type designed to support aboveground electric circuits
HDD	horizontal directional drill
HPFF	high pressure fluid filled cable
HVCC	Hudson Valley Community College

TERMS, ACRONYMS AND ABBREVIATIONS (CONTINUED)

IEEE	Institute of Electrical and Electronic Engineers
IG	Industrial Zoning District
ISONE	Independent System Operator of New England
IT	Interstate Transition Zoning District
kcmil	thousand circular mills
kV	kilovolt
kV/m	kilovolts per meter
LB	Light Business Zoning District
LEF	longitudinal electric field
LG&E	Louisiana Gas and Electric
LWRP	Local Waterfront Revitalization Plan
M&E Rating	Mechanical & Electrical Strength Ratings
M&N	Maritimes & Northeast Pipeline
MEPA	Massachusetts Environmental Policy Act
mG	milligauss
monopole(s) or monopole structure(s)	steel tubular structure(s) designed to support aboveground electric circuits
MP	milepost
MSE	MSE Power Systems, Inc.
mV	millivolts
MVA	megavolt ampere
MW	megawatt
NEPA	National Environmental Policy Act
NESC	National Electric Safety Code
NG	National Grid USA Service Company, Inc., parent company of NMPC
NMPC	Niagara Mohawk Power Corporation
NMPC bulk electric system	existing circuits with a voltage of 115 kV or higher
NMPC E-35 Natural Gas Pipeline	existing NMPC 8-inch gas pipeline

TERMS, ACRONYMS AND ABBREVIATIONS (CONTINUED)

NMPC E-37 Natural Gas Pipeline	proposed natural gas pipeline to supply fuel to the BEDCO Power Plant
NPCC	Northeast Power Coordinating Council
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
NYCRR	New York State Code of Rules and Regulations
NY-ISO	New York Independent System Operator
NYNHP	New York Natural Heritage Program
NYPP	New York Power Pool (predecessor of the NY-ISO)
NYSDAM	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
NYSDOT	New York State Department of Transportation
NYSEG	New York State Electric and Gas Corporation
NYSPA	New York State Power Authority
NYSPSC	New York State Public Service Commission
NYSTA	New York State Thruway Authority
O&M	operation and maintenance
OI	Corporate Office / Light Industrial Zoning District
OPRHP	Office of Parks, Recreation and Historic Preservation
OSHA	Occupational Safety and Health Administration
PBD	Professional Business Zoning District
PES	Power Engineering Society of the IEEE
PILOT	payment in lieu of taxes
Port District Strip	area of land in segment 1 that is owned by the Albany Port District Commission
Proposed Transmission Line	proposed 345 kV transmission line interconnection between the BEDCO Power Plant to the NMPC Reynolds Road substation
psi	pounds per square inch
PPE	personal protection equipment
ppt	parts per thousand
pu	per unit
PVC	polyvinyl chloride

TERMS, ACRONYMS AND ABBREVIATIONS (CONTINUED)

R2	Residential Zoning District
RB	Residential Buffer Zoning District
RM	Residence – Multiple Family Zoning District
RNMP	Recycled Newsprint Manufacturing Plant proposed in the Article X Application (Case No. 00-F-2057) by BEDCO in conjunction with the BEDCO Power Plant
ROW	right-of-way
ROWs	rights-of-way
RPI	Rensselaer Polytechnic Institute
RS	Residence – Single Family Zoning District
SEQRA	State Environmental Quality Review Act
SEDNY	NMPC Station Electric Design Department of New York
Segment 1	initial 1.7 miles of the Proposed Transmission Line
Segment 2	subsequent 2.3 miles of the Proposed Transmission Line
Segment 2A	short section of the ROW that connects to the Greenbush substation, which could be used in one of the alternatives to the Proposed Transmission Line.
Segment 3	final 4.1 miles of the Proposed Transmission Line
SRIS	System Reliability Impact Study
State	New York State
SUNY	State University of New York
T	Transportation Overlay Zoning District
ULS	Universal Licensing System of the Federal Communications System
USACOE	United States Army Corps of Engineers
USGS	United States Geological Survey
VIA	Visual Impact Assessment
VEF	vertical electric field
WGI	Washington Group International, Inc.
XLPE	cross linked polyethylene cable

EXHIBIT 4 - ENVIRONMENTAL IMPACT

4.1 Introduction

This exhibit addresses the requirements of Part 86.5 of Title 16 of the New York State Code of Rules and Regulations (NYCRR) and Article VII of the Public Service Law (§§ 121 and 122). A detailed description of specific studies conducted to evaluate the potential environmental effects of the Niagara Mohawk Power Corporation (NMPC) proposed 345 kilovolt (kV) transmission line (Proposed Transmission Line) is included or summarized in this exhibit. Each of these studies had a research stage, technical assessment stage, and on-site field investigations. A final stage of each study was to determine how to avoid or minimize impacts to these resources through project design, construction techniques, mitigation and restoration, and proper operational procedures. Studies were conducted on:

- land use, based on review of aerial orthophotographs (Year 2000 and 2002), field reviews, and contact with local and county land use planning agencies;
- terrestrial habitat, wetlands and streams, based on review of aerial orthophotographs, resource maps, and field delineations (documented in accordance with New York Department of Environmental Conservation (NYSDEC) and United States Army Corps of Engineers (USACOE) permit requirements);
- historical and archaeological resources through a Phase 1 Cultural Resources survey of the proposed alignment; and
- visual resources in accordance with visual analysis procedures outlined in 16 NYCRR §86.5 (b)(2)(i), (ii), and (8).

A final review of detailed construction procedures will be completed as part of the development of a project specific Environmental Management and Construction Standards and Practices Plan (EM&CS&P Plan) that will be submitted to the New York State Public Service Commission (NYSPSC) for review and approval.

An important characteristic of the preferred routing of this Proposed Transmission Line is that it minimizes potential impacts by confining its preferred alignment almost entirely within existing NMPC rights-of-way (ROWs). The use of existing ROWs avoids a change in land use and avoids creating a new cleared corridor that can fragment existing land use. It also utilizes existing disturbed areas within the right-of-way (ROW) for much of the construction activities. It therefore addresses most of the issues of concern identified in 16 NYCRR Part 86.5. The forest clearing required for the construction and operation of the Proposed Transmission Line will be minimized, as a majority of the area is presently a maintained ROW. Existing access roads located within the ROW followed by the Proposed Transmission Line will be upgraded and utilized for construction and operational access. New roadway construction will be limited to short segments on the existing ROW to access specific structure locations. Following an existing ROW will reduce the visual impact, as the Proposed Transmission Line will be parallel to or replace existing poles. No substantive changes to physical or biological processes of plant life or wildlife will result from temporary construction impacts, including hydrology, soils, or topography.

4.2 Construction Procedures and Schedule

A general route description was provided in Exhibit 2. The discussion below focuses on construction techniques and the schedule for constructing the Proposed Transmission Line. Operation and Maintenance (O&M) procedures are also described.

4.2.1 Construction Process

Construction of the Proposed Transmission Line would occur in five general phases: ROW clearing and preparation, foundation construction, assembly of steel monopole structures, stringing of the conductors, and finally the cleanup and restoration. Site-specific construction techniques may be required at certain locations along the ROW based on existing land use or environmental constraints. A project specific EM&CS&P Plan will identify specific construction techniques and erosion control measures for the entire alignment. The EM&CS&P Plan will be submitted to the NYSPSC for review and approval prior to construction. The EM&CS&P Plan will detail measures that will be implemented to avoid or minimize impacts to environmental resources. Typical measures that will be implemented include:

- limit access of construction vehicles in sensitive areas;
- upgrade and utilize existing access roads to the extent possible;
- review EM&CS&P Plan with contractor(s) prior to the start of construction;
- mark sensitive resources in the field;
- provide an Environmental Inspector on-site during construction;
- minimize construction disturbance by use of existing disturbed ROW to the extent possible;
- use of appropriate erosion control and best management practices during construction;
- develop site specific erosion control measures at streams and wetlands;

- stabilize and revegetate disturbed areas as soon as possible; and

- inspect areas after construction to verify success of restoration.

ROW Clearing and Preparation

The initial step in the construction process will provide for safe access for heavy construction equipment required for construction of the Proposed Transmission Line. This will include clearing of vegetation, upgrading of existing access roads, and construction of new segments of access roads along the ROW. The construction contractor will be provided a detailed set of construction plans as part of the EM&CS&P Plan that will identify the access road locations, structure locations, clearing designations, and sensitive areas along the ROW. The ROW boundaries will be staked and flagged in the field to avoid clearing outside of the ROW boundaries.

Three categories of clearing activities will be utilized for the Proposed Transmission Line to establish the conductor security zone and stringing areas for conductors. One technique is hand cutting and removal. This technique does not require heavy equipment. The soil surface of sensitive areas is not disturbed, limiting the potential for erosion or sedimentation. A second technique is "lop and drop" where vegetation is cut by hand, bucked to lay low, and left on the ground to decay naturally. A third technique is mechanized clearing. This involves using either: (a) chainsaws to or mechanized felling equipment to cut, skidders and whole tree chippers to handle logs and slash, or (b) hydraulic mowers, depending on site-specific environmental conditions. The goal of mechanized clearing is to remove from the ROW all logs and limbs, and doing so in wetlands in a manner to prevent severe perturbation of the soils and surface contours.

Within the ROW, selective clearing will be carried out to allow safe movement of construction vehicles and safe operation of the Proposed Transmission Line. Correct vegetative management will reduce the potential for ground faults caused by trees that could lead to outages in the transmission system. NMPC's Forestry Department has an intensive NYSPSC-approved and mandated program to enhance operational reliability using integrated vegetative management strategies. An integral part of this strategy is to promote the growth and dominance of shrub and grass/forb species on the "floor" of the ROW. Prior to construction, the NMPC Forester will work with the NMPC Environmental Inspector to delineate the extent of clearing and trimming necessary to provide transmission system clearances and to preserve any appropriate vegetative buffer at the edge of the ROW. The dimensions and engineering of a 345 kV class circuit will also require ROW improvements in the form of upgraded access roads for the requisite construction and maintenance equipment necessary to construct and maintain the Proposed Transmission Line. Grading and placement of fill will be limited to the improvement or construction of access roads, conductor stringing areas, and workspace for structure assembly.

Access road construction will consist of installing erosion controls, appropriately sizing culverts within the roadways to maintain proper surface flow across the ROW, and placement of gravel and/or crushed stone over the entire access road surface to create a smooth and safe travel surface for equipment needed for construction and operation of the Proposed Transmission Line.

Once clearing, establishment of erosion controls and access road improvements are completed, construction equipment will utilize the established access roads to travel across the ROW to the various monopole structure locations. To protect sensitive environmental resources along the alignment, specific sections of the ROW will be identified as "no

access" or "limited vehicular access" where equipment will not be allowed to cross or will be limited to use of the improved access road to protect sensitive environmental resources. Drainage devices and silt fences will be installed as needed to prevent erosion or migration of sediments into sensitive areas on the ROW.

Staging or supply yard areas will be identified in the EM&CS&P Plan and prepared for temporary storage of material and parking for heavy trucks. The staging areas will have sanitation, dumpsters, and specific containers for waste conductors and other material.

Foundation Construction

A workspace of approximately 50 feet by 70 feet will be established at each of the estimated 73 structure locations for foundation work and structure assembly (See Exhibit 5, Figures 5-1 through 5-3). Foundations will consist of reinforced concrete caissons, or piers, drilled from 30 to 40 feet deep depending on soil conditions (See Exhibit 5, Figure 5-4). The workspace will be graded and leveled to accommodate the drill rig and to provide safe working conditions for its crew and concrete trucks. The drill rig will be used to auger the foundation shaft, of variable diameters, nominally 6 to 9 feet, to the required depth. Depending on the individual site conditions, the soil excavated may be either graded into and around the workspace to create a stable crane pad or removed from the work area and spread on level upland areas within the ROW. A rebar cage and anchor bolt cluster will be placed within the hole and the foundation will be filled with concrete with a continuous pour to the proper elevation.

Where solid rock is encountered, the piers must extend at least one pier diameter into the rock. Where possible, ripping or hammering equipment will be used to remove the rock. If required, blasting will be employed to the required depth using the minimum charge

required to break up the rock. A project specific blasting plan will be tailored from existing NMPC standards to include powder charges, blasting mats, noise, notifications, and cleanup of rock and debris criteria. It is NMPC's objective to minimize noise and vibration disturbances where blasting must be conducted near noise-sensitive sites.

Dewatering

Should dewatering be necessary during the excavation for structure foundations or during the concrete pour, all water will be filtered through hay bale sediment traps or filter bags and discharged to a stabilized vegetated area to control siltation, sedimentation, and erosion. The contractor will be required to keep equipment on hand for dewatering activities including pumps, hoses, hay bales, and filter bags.

Monopole Assembly

The Proposed Transmission Line will use steel monopoles to support the conductors. A crew will transport the monopoles in segments, along with insulators and insulator hardware, from the staging area to each foundation location on the ROW. The monopole sections will be jacked together in a staging area, then lifted and set on the foundation by a crane. The davit arms will be individually hoisted and framed to the monopole structure. The insulators, clamps, travelers, and other associated hardware will be installed at the ends of the davit arms.

Conductor Stringing

Workspace required for conductor stringing and pulling equipment varies widely. Final staging areas will be identified in the EM&CS&P Plan. The "tension stringing" method will be employed to install the conductors. Using this method, the conductor is unreeled under tension and is not allowed to contact the ground. Travelers (stringing blocks, consisting of a

urethane-lined sheave or pulley wheels) are attached to each davit arm. The conductor is placed in reels at the stringing area within the ROW, one end of a pulling line is threaded through the travelers and attached to a winch, and the other end is connected to a reel of conductor. This pulling line is then used to pull the conductor from the reels through the travelers. Tension is maintained on the conductor during the process to maintain a minimum height above the ground.

Once the conductors are strung, they must be properly "sagged" to maintain the pre-determined conductor tension. While under tension, the conductor is "clipped-in" place by removing the stringing blocks and replacing them with clamps, which attach and secure the conductors to the insulator strings.

This installation method keeps the conductor off the ground, minimizing the possibility of surface damage and limits problems at roadway crossings. It also limits damage to the ROW by minimizing heavy vehicular traffic.

Cleanup and Restoration

Upon completion of the construction as prescribed in the EM&CS&P Plan, the ROW will be inspected to ensure all construction debris has been removed and any areas disturbed by construction have been stabilized. The improved access roads will remain in place to provide access for maintenance activities. New segments of permanent access roads built across regulated wetlands will require mitigation and potentially wetland replication to compensate for wetland loss. Mitigation will also be provided for permanent conversion of forested wetland type to emergent/scrub shrub type. The Applicant is currently preparing a permit application for the USACOE to address wetland and waterway impacts and appropriate mitigation for unavoidable impacts. Follow up inspections will be

implemented for at least two growing seasons to ensure restoration thresholds are met and mitigation measures have been successful. Typical restoration measures to be used include:

- installation of permanent water bars on steep slopes;
- designing permanent road crossings with proper drainage;
- inspecting disturbed areas for success of restoration efforts;
- reseeding areas where restoration is unsuccessful;
- installation of necessary erosion control devices; and
- allowing regrowth of vegetation outside the conductor security zone.

Operation and Maintenance

Operation and maintenance consists primarily of vegetation management and occasional repairs. Periodically a ROW will be surveyed by NMPC to check for encroachments and extension of vegetation into the conductor security zone. Vegetation will be trimmed or removed in accordance with the NYSPSC-approved Vegetative Management Plan. Maintenance also includes inspection of the integrity and condition of access roads and culverts. Continued access to the new structure locations will be needed for operation and maintenance of the Proposed Transmission Line. Herbicides will be used to clear and maintain these ROWs as prescribed by NMPC Foresters. Certified New York State Category-6 Applicators will apply herbicides in conformance with permit standards and the NYSPSC-approved ROW Vegetation Management Plan.

4.2.2. Site Specific Construction Techniques

Construction techniques may vary from the general steps described above at certain locations along the ROW based on site constraints or sensitive resources. Specific construction techniques will be implemented in residential areas, agricultural areas, road crossings, stream crossings, wetlands, and steep slopes. Table 4-1 provides a list of typical techniques utilized at each of the land use categories.

4.2.3 Construction Equipment and Workforce

A general list of equipment required to construct the Proposed Transmission Line is included in Table 4-2. Specific equipment requirements will vary depending on the contractor involved.

A construction workforce of approximately 30 linemen, electricians, general construction workers, and members of other crafts and trades will be necessary to clear the existing ROW, establish access roads, and construct the Proposed Transmission Line.

4.2.4 Construction Schedule

The following construction schedule is estimated for each stage of construction:

Construction Process	Duration
Mobilization	3 weeks
Clearing ROW & access roads	3 weeks
Foundation construction & monopole installation	16 weeks
Insulators & conductor stringing	11 weeks
Line inspection & testing	2 weeks
Energize line	1 week
Demobilization & close out	1 week

There will be some overlap of the tasks identified above. The overall construction duration will be approximately 9 months.

Table 4-1: Construction Techniques

ROW Characteristics	*Typical Construction Measures*
Streams and Wetlands	• Establish erosion control at the edge of work areas and access roads • Establish dewatering sites • Make crossing of streams perpendicular to direction of flow • Limit construction vehicle to the proposed access road • Restore original contours and implement temporary soil stabilization as soon as possible
Residential Areas	• Maintain access to all homes during construction • Limit construction to normal business hours • Environmental Inspector to consult with home owners as needed • Clearly mark the edge of ROW to prevent off-site disturbance
Agriculture	• Low ground impact vehicles • Till after construction to loosen soil compacted by construction activities • Coordinate with farmer on construction timing and compensation, as needed
Steep Slopes	• Work around steep slope areas with alternate access • Limit construction primarily to access roads • Implement permanent erosion control and stabilization measures (water bars, slope breakers, etc.)
Road / Railroad Crossings	• Use flagmen and police details • String conductors during off-peak hours when traffic flow is at its lowest • Review construction plans with local and state highway departments

Table 4-2: Typical Construction Equipment

Equipment Type	Purpose	Weight & Height	Remarks
Mobile Hydraulic Cranes	Monopole installation	18,000 LB 160 foot reach	100+ sticks
Fork Lift	Lifting	8,000 LB; 36 foot reach	6000 LB lift
Tracked Dozer	Earthwork	22,000 LB; 8 way blade 10 foot	105 horse power
Bucket Truck	Reaching	20,000 LB 36 foot telescopic	One man bucket
Drill Rig	Foundation drilling	79,000 LB 25 foot	6 to 9 foot diameter track mounted
Concrete Pump Truck	Foundations	68,000 LB 12 foot	
Concrete Truck	Foundations	88,000 LB 11 foot	
Bullwheel Pullers & Tensioners	Conductor stringing	65,000 LB 10 foot	Truck mounted
Assorted smaller vehicles and equipment	Miscellaneous tasks		

4.3 Land Use

Land use within a half mile of the Proposed Transmission Line was characterized in detail through review of several information sources. Land use was identified from:

- field investigations;
- 2000 and 2002 aerial photographs of the Proposed Transmission Line alignment;
- contact with the City of Rensselaer, Town of East Greenbush and Town of North Greenbush (2002);
- review of zoning regulations for each municipality;
- Rensselaer County government;

- New York State GIS Clearinghouse; and
- Rensselaer County Farm Service Center.

Included in Section 4.10 is a list of resources consulted during preparation of this exhibit. Figure 4-1 identifies land use within a half mile of the Proposed Transmission Line alignment.

4.3.1 Agricultural Use

Existing Conditions

The Proposed Transmission Line has limited potential to impact agricultural land. Based on a review of the proposed alignment, the New York State Department of Agriculture and Markets (NYSDAM) concluded that the Proposed Transmission Line would have minimal impact on agricultural areas (NYSDAM, 2001). Agricultural districts as certified by the NYSDAM are located at the southern end of the Proposed Transmission Line. However, only one area is in active agricultural use. This field is along Segment 1 located in the Town of East Greenbush (see Figure 4-1). The Proposed Transmission Line will be aligned within an existing ROW that is located at the edge of this field. A farm road is located within the ROW and is used for access to the existing Greenbush #16 Circuit 115 kV and to the adjacent farm field. The Proposed Transmission Line alignment crosses approximately 3,000 linear feet of this active agricultural field.

Impacts and Mitigation

An area of approximately 4.0 acres that is presently farmed will be disturbed by construction as shown in Figure 4-1. Construction of this segment of the Proposed

Transmission Line will require installation of temporary structures on the western side of the ROW for the Greenbush #16 Circuit 115 kV, followed by removal of the existing structures and finally, the installation of new double circuit monopoles on the eastern side of the ROW. The Greenbush #16 Circuit 115 kV will then be moved to the new monopoles followed by removal of the temporary structures. Construction and excavation vehicles required for the temporary structure foundations may disturb the agricultural field. Several measures have been identified that can limit these impacts. The primary measure is the alignment of the Proposed Transmission Line at the edge of the field within an existing ROW. Additionally, the existing access road in the ROW can be used for construction. Equipment may be limited to the use of the access road and at each structure location to minimize potential compaction of soil during construction. Any construction debris generated, such as tree clearing or trimming and removal of existing structures, will be removed from the ROW and disposed of off-site. The construction in this area will be timed to avoid disruption of agricultural activities and/or the landowner will be compensated (depending on easement or license fee) for any lost crops as a result of construction. Agreements with individual landowners will be negotiated with consideration to existing easement agreements on this segment of the Proposed Transmission Line.

Segment 1 proposes replacing the existing structures with a new double circuit monopole in a similar alignment that can accommodate both the Greenbush #16 Circuit 115 kV and the Proposed Transmission Line. Utilizing the similar alignment will avoid impacts to the agricultural land use.

4.3.2 Residential

Existing Conditions

Residential areas along the alignment were determined by a review of zoning for the municipalities crossed by the Proposed Transmission Line, review of recent aerial photographs (Year 2000 and 2002), and field investigations. A significant portion of the Proposed Transmission Line alignment is residentially zoned. However, most of the areas adjacent to the ROW have not been developed. There is only one area along the Proposed Transmission Line where the neighborhood overlaps the ROW. This is in the vicinity of Route 151 and Old Red Mill Road. Residences are located on both sides of the ROW and a residential street crosses the ROW. Based on review of Year 2002 aerial photographs, there are a total of 59 buildings within 300 feet of the existing ROW. A majority of these structures are residential.

Impacts and Mitigation

Based on the alternatives review provided in Exhibit 3, the Applicant concludes that following the existing ROWs will greatly minimize any impacts on residential areas in the City of Rensselaer, Town of East Greenbush, and Town of North Greenbush. Construction in proximity to residential areas will result in disruptions such as noise and dust generated by the construction activities. The new structures may also alter the visual environment as discussed in Section 4.8. The EM&CS&P Plan that will be prepared for the Proposed Transmission Line will address mitigation measures to minimize disruption to residential areas. Protective EM&CS&P Plan standards and practices will be used. Typical measures include:

- marking the edge of workspace to keep construction vehicles on the ROW;

- limiting construction to daylight hours;
- time the stringing of conductor across roadways to minimize traffic disruption;
- use of mufflers on construction equipment and limited idling of equipment at the construction site;
- wetting exposed areas to limit dust generation;
- Environmental Inspector on hand to address any concerns of residents;
- providing a community liaison to address concerns of residents;
- Traffic Control and Safety Plan; and
- following site-specific blasting procedures.

4.3.3 Commercial/Industrial

Commercial/Industrial areas along the alignment were determined by a review of zoning for the municipalities crossed by the Proposed Transmission Line, review of recent aerial photographs and field investigations. There are three locations along the ROW with existing commercial and industrial uses: the Port of Rensselaer near the BEDCO Power Plant site and areas to the south along Segment 1, commercial areas along NYS Routes 9 & 20 on Segment 2, and a commercial area at Third Avenue Extension on Segment 3. There is also a large portion of the Proposed Transmission Line along Segment 3 in the Town of East Greenbush that is zoned for commercial use but has not been developed. This area was reviewed in a Generic Draft Environmental Impact Report (GDEIR) for development as the Mill Creek Commerce Park. The "target growth scenario" proposed in the GDEIR limited development to proposed roadway crossings of the ROW. To date no development

of Mill Creek Park has occurred and there are no current development proposals under consideration (Rensselaer County Economic Development Commission, 2002).

The same measures described above for residential areas will be implemented for commercial areas to minimize disruption from construction activities. Access will be maintained to businesses in close proximity to the Proposed Transmission Line.

4.3.4 Community Resources

Figure 4-2 presents community resources within a half-mile radius of the Project area. These include schools, churches, daycare centers, and emergency services. None of these facilities are located adjacent to the Proposed Transmission Line. Construction or operation of the Proposed Transmission Line will not impact access or use of these facilities. The Proposed Transmission Line also avoids direct impacts to any park or recreational resource. A review of recreational facilities is provided in the Visual Assessment prepared for the Proposed Transmission Line included in Exhibit __ (JIK-1). A map depicting existing parks and recreational facilities within 3 miles of the Proposed Transmission Line alignment is included as graphical Exhibit 2-3.

4.3.5 Transportation

The Proposed Transmission Line crosses seventeen (17) roadways. Table 4-3 lists each roadway crossed and specifies whether it is a Federal, State, or local roadway. The Proposed Transmission Line will cross Interstate 90 in the Town of North Greenbush and will also cross the ramps for Exit 8 that connects Interstate 90 to Washington Avenue. The Proposed Transmission Line will also cross seven state numbered roadways.

Crossing Requirements for State Roads

Overhead crossings over a New York State highway are permissible, particularly in cases of existing crossings. A permit process with the New York State Department of Transportation (NYSDOT) will be followed demonstrating compliance with standard design criteria. Service of this document on parties from whom permits are anticipated is part of this process. All plans for road crossings will be reviewed with the appropriate local and State officials to minimize traffic flow impacts during installation of conductors. Installation of the conductors will be scheduled during times of low traffic volume such as early morning before rush hours, late at night or early on a Sunday. Crossing of Interstate 90 will most likely be staged to limit closings to 5-10 minute intervals using police details and flagmen to control traffic. A traffic control and safety plan will be prepared as part of this process.

Table 4-3: Road Crossings along Proposed Alignment

Location	Name	Type
City of Rensselaer	Port Access Highway	Local
Town of East Greenbush	Teller Road	Local
Town of East Greenbush	River Road – State Highway 9J	State
Town of East Greenbush	Ridge Road	Local
Town of East Greenbush	Worthman Lane	Local
Town of East Greenbush	Columbia Turnpike – U.S. Highway 9 & 20	Federal
Town of East Greenbush	Stock Lane	Local
Town of East Greenbush	Old Red Mill Road	Local
Town of East Greenbush	Red Mill Road – State Highway 151	State
Town of East Greenbush	Temple Lane	Local
Town of East Greenbush	Interstate 90	State
Town of East Greenbush	3rd Avenue – State Highway 43	State
Town of North Greenbush	Exit 8 Ramp	State
Town of North Greenbush	Washington Avenue Ext	Local
Town of North Greenbush	Laura Lane (2 crossings)	Local
Town of North Greenbush	Valley View Boulevard	Local
Town of North Greenbush	North Greenbush Road – U.S. Highway 4	Federal

Crossing Requirements for Local Roads

All plans for crossing local roads will be reviewed with the proper local officials. Work over local roads will be appropriately timed for an early morning or late evening time period to avoid times of heavy traffic flow. Local police and flagmen will most likely be required to assist in controlling traffic in the area affected by the installation of conductors.

Planned Roadway Projects in the Area

Construction currently in progress on NYS Routes 9 & 20 will not affect the area of the ROW crossing. Construction was recently completed at Exit 8 on Interstate 90. A second phase of that project will extend a roadway north of the intersection of Washington Street and the Exit 8 Ramp to Hudson Valley Community College (HVCC) and the Rensselaer Technology Park. A Draft Environmental Impact Statement is currently in preparation for that project. The current roadway alignment across the ROW was obtained from the Region 1 District Engineering Office of NYSDOT (Peterson, 2002). An additional access road farther north from Route 4 is also under consideration.

Design plans for the Proposed Transmission Line will be reviewed with the NYSDOT District Engineer to avoid any design conflicts with the proposed roadway alignment.

4.3.6 Planned Developments

Officials from the City of Rensselaer, Town of East Greenbush, and Town of North Greenbush were contacted in an effort to locate any planned developments that would be impacted by the Proposed Transmission Line. Others sources of information on planned developments include field review, aerial photographs, and local planning documents.

Residential Developments

Contact with local officials indicated that there were no planned residential developments in the City of Rensselaer, the Town of East Greenbush, and the Town of North Greenbush that would be impacted by the Proposed Transmission Line. However, it is evident from aerial photographs of the area, taken in the years 2000 and 2002, that there has been development of residential properties on Washington Street, in both the Town of North Greenbush and the City of Rensselaer, and also north of Route 151 in the Town of East Greenbush. These areas are shown in the aerial photograph in Exhibit 2-4. The Applicant will continue to seek input from town and city planning agencies during continued design activities associated with the Proposed Transmission Line.

Commercial Developments

There is an area along Segment 3 in the Town of East Greenbush that was reviewed in a Generic Draft Environmental Impact Report (GDEIR) for development as the Mill Creek Commerce Park. To date no development of Mill Creek Park has occurred and there are no current development proposals under consideration (Rensselaer County Economic Development Commission, 2002). Commercial growth along Route 4 is continuing with the expansion of the mall at the corner of Third Avenue and Route 4.

Another development with planned commercial expansion is Rensselaer Technology Park, located northeast of the Reynolds Road Substation in the Town of North Greenbush. This complex includes 1,250 acres with planned and currents developments including the Rensselaer Polytechnic Institute (RPI) Technology Park development, housing associated with RPI, riverfront development, and open space areas. Two access points are under consideration for the Rensselaer Technology Park, one starting from a second phase of construction for Exit 8 of Interstate 90 and a second access road from Route 4. Both of

these access proposals will cross the ROW followed by the Proposed Transmission (Peterson, 2000; Roland, 2003). As discussed in Section 4.3.5, design plans for the Proposed Transmission Line will be reviewed with the NYSDOT District Engineer to avoid any design conflicts of the Proposed Transmission Line with the proposed roadway alignment.

4.4 Terrestrial Resources

4.4.1 Vegetation and Wildlife

The Applicant infers that much of the scope of Part 86.5 of Title 15 of the NYCRR and the Public Service Law is intended to discuss perceived impacts on habitats when converted to ROW. Because most of the work in this case takes place within the confines of an existing ROW, with its resources managed for three decades in accordance with NYSPSC-approved Vegetative Management Plan under Section 84, the Applicant believes that there will be little permanent change from existing conditions as a result of construction and operation of the Proposed Transmission Line. A description of the existing ROW habitats and habitats adjacent to the existing ROW are described. Figures 4-1, 4-3, and 4-4 depict the cover types and sensitive resources proximate to the Proposed Transmission Line.

The United States Forest Service, in *Description of the Ecoregions of the United States* by Robert Bailey (1995), has divided the country into "ecosystems of regional extent or ecoregions". It is a classification system based on factors such as climate, vegetation, and geography. According to this system the site exists in the Hudson Valley Section of the Eastern Broadleaf Forest (Oceanic) Province.

Setting

The Hudson Valley Section is primarily a linear lowland created by graben-faulting, eroded bedrock, and glacial scour. Elevations range up to 1000 feet, but are typically below 500 feet. Approximately 50 to 80 percent of the area is made up of gentle slopes and 50 to 75 percent can be classified as uplands.

The major vegetation types found in this region include northern hardwood forests and Appalachian oak forests. Pitch pine-scrub oak communities can be found in the Albany sand plains, which are located to the northwest of the Proposed Transmission Line alignment.

Common wildlife in the Hudson Valley Section includes white-tailed deer *(Odocoileus virginianus)*, gray squirrels (*Sciurus carolinensis)*, white-footed mice (*Peromyscus leucopus)*, red-eyed vireos (*Vireo olivaceus*), and red-spotted newts *(Notophthalmus v. viridescens)*. This area is devoid of unique federally listed threatened and endangered species (see agency letters in Exhibit __ (DJS-1).

As a result of European settlement, much of the original forest ecosystem, and consequently the original forest fauna, was converted to agricultural ecosystems and are grossly influenced by exotic species. In present times, forest ecosystems have reestablished themselves on abandoned agricultural land. While many forest species have been able to reestablish themselves, large predators have not. Predators have not rebounded because they require larger unfragmented habitat and because they were sought out and killed. Thus, populations of major herbivores, such as deer, have grown largely unchecked, causing wildlife problems including damage to vehicles, domestic plants and crops. ROW

management for the increasingly rare scrub-shrub vegetation community partially depends upon, and favors populations of small herbivores and insectivores.

The average annual temperature in this region ranges from 45 to 50 degrees Fahrenheit. Annual precipitation averages 40 inches, while annual snowfall averages 40 to 60 inches. The dominant surface water characteristics of this area are the Hudson River and its tributaries. Also occurring are freshwater wetlands, small lakes, ponds, and perennial streams.

Approximately 60 percent of this area is forested. However, there is minimal forested land immediately adjacent to the river and its urbanized corridor. The non-forested land areas can be classified as commercial/industrial, open field, residential, or agricultural.

Existing Terrestrial Community Types

The New York State Department of Environmental Conservation (NYSDEC) has developed a list of the Ecological Communities that reflect the biological landscape of New York State. The primary NYSDEC defined upland ecological communities encountered by the Proposed Transmission Line are Successional Old Field, Successional Shrubland, and a composite of several forest community types, which will be referred to as "Forested Areas" in this Article VII Application. The sole secondary community type traversed by the Proposed Transmission Line is a gravel pit (see Figure 4-1, Sheet 2 of 3). The gravel pit is a denuded open site where active gravel extraction takes place. It supports little vegetation or wildlife. A description of the community types is provided along with tabulations of plant (Table 4-4) and animal species (Table 4-5) typically found in these communities.

Table 4-4: Representative Vegetation by Upland Community Type

Common Name	Taxa	Comments
Successional Old Field - Shrubs		
gray stem dogwood	*Cornus foemina*	• Swamps, riverbanks, and coastal plains
northern arrowwood	*Viburnum recognitum*	• Moist woods and swamps
staghorn sumac	*Rhus typhina*	• Dry, open places
common buckthorn	*Rhamnus cathartica*	• Fencerows, fields, vacant lots, and open woods
Successional Old Field - Herbaceous Plants		
Queen Anne's lace	*Daucus carota*	• Open places with varying soil conditions
common teasel	*Dipsacus sylvestris*	• Roadsides and waste grounds, especially in low moist places
goldenrods	*Solidago spp.and Euthamia spp.*	• Open places with varying soil conditions
common ragweed	*Ambrosia artemisifolia*	• Waste places
bull thistle	*Cirsium vulgare*	• Pastures, fields, roadsides, and waste places
Canada thistle	*Cirsium arvense*	• Fields and waste places
sorrels	*Rumex spp.*	• Open places with varying soil conditions
crown vetch	*Coronilla varia*	• Along highways and other open areas
English plantain	*Plantago lanceolata*	• Cosmopolitan weed, particularly in moist areas
common plantain	*Plantago major*	• Lawns, roadsides, and wet places
black knapweed	*Centaurea nigra*	• Fields, roadsides, and waste places
common burdock	*Arctium minus*	• Roadsides and waste places
blackberries	*Rubus spp.*	• Wide variety of disturbed sites

Table 4-4: Representative Vegetation by Upland Community Type (Continued)

Common Name	Taxa	Comments
Successional Old Field - Herbaceous Plants (Continued)		
tick trefoil	*Desmodium spp.*	• Open places with varying soil conditions
asters	*Aster spp.*	• Open places with varying soil conditions
common milkweed	*Asclepias syriaca*	• Fields, meadows, and roadsides
multiflora rose	*Rosa multiflora*	• Open places with varying soil conditions
red clover	*Trifolium pratense*	• Fields and roadsides
mixed grasses	*Poa spp., Phleum pratense,Agropyron repens, Bromus sp., Anthoxanthum odoratum, Dactylis glomerata*	• Open places with varying soil conditions
Successional Shrubland - Shrubs		
gray stem dogwood	*Cornus foemina*	• Swamps, riverbanks, and coastal plains
northern arrowwood	*Viburnum recognitum*	• Moist woods and swamps
staghorn sumac	*Rhus typhina*	• Dry, open places
common buckthorn	*Rhamnus cathartica*	• Fencerows, fields, vacant lots, and open woods
roses	*Rosa multiflora*	• Disturbed areas, thickets, and woods
quaking aspen	*Populus tremula*	• Moist upland woods and stream sides, often on cut-over or burned land
hawthorns	*Crataegeous spp.*	• Disturbed sites, along the margins of woodlands, stream banks, and abandon fields
honeysuckle	*Lonicera morrowii*	• Thickets, fields, woods
multiflora rose	*Rosa multiflora*	• Open places with varying soil conditions

Table 4-4: Representative Vegetation by Upland Community Type (Continued)

Common Name	Taxa	Comments
Forested Areas -Trees		
sugar maple	*Acer saccharum*	• Rich to fairly dry woods, especially in calcareous soils
American beech	*Fagus grandifolia*	• Moist or wet lowland soils especially on and near the coastal plain
white oak	*Quercus alba*	• Upland woods
white pine	*Pinus strobus*	• Many habitats, especially in fertile or well drained, sandy soils
red maple	*Acer rubrum*	• Swamps, alluvial soils and moist uplands
American elm	*Ulmus americana*	• Moist fertile soils
white ash	*Fraxinus americana*	• Moist woods
hornbeam	*Ostrya virginiana*	• Moist woods
black cherry	*Prunus serotina*	• Waste land and forest margins
chestnut oak	*Quercus prinus*	• Dry or moist upland or rocky woods
red oak	*Quercus rubra*	• Hill slopes to valley floors, deep fine textured soils
hawthorns	*Crataegeous spp*	• Rich woods
American basswood	*Tilia americana*	• Rich woods
black birch	*Betula lenta*	• Moist woods
Forested Areas - Shrubs		
ironwood	*Carpinus caroliniana*	• Moist woods
common buckthorn	*Rhamnus cathartica*	• Fencerows, fields, vacant lots, and open woods
May apple	*Podophyllum peltatum*	• Moist, preferably open, woods
Virginia creeper	*Parthenocissus quinquefolia*	• Moist soils
wood white aster	*Aster divaricatus*	• Woods
white snakeroot	*Eupatorium rugosum*	• Woods
partridgeberry	*Mitchella repens*	• Woods
Gravel Pit		
No Vegetation		

Table 4-5 Representative Wildlife by Upland Community Type

Common Name	Scientific Name	Community Type		
		SOF*	SS**	FA***
Amphibians/Reptiles				
eastern American toad	*Bufo a. americanus*	X	X	
spotted salamander	*Ambystoma maculatum*			X
northern redback salamander	*Plethodon cinereus*			X
Eastern American Toad	*Bufo a. americanus*			X
Northern Spring Peeper	*Pseudacris c. crucifer*			X
Gray Treefrog	*Hyla versicolor*			X
Wood Frog	*Rana sylcatica*			X
Northern Brown Snake	*Storeria d. dekayi*	X	X	X
Common Garter Snake	*Thamnophis sirtalis*	X	X	X
Nothern Black Racer	*Coluber c. constrictor*	X	X	X
Eastern Smooth Green Snake	*Liochlorophis vernalis*		X	
Eastern Milk Snake	*Lampropeltis t. triangulum*		X	X
Northern Redbelly Snake	*Storeria o. occipitomaculata*			X
Northern Ringneck Snake	*Diadophis punctatus edwardsii*			X
Birds				
Red-tailed Hawk	*Buteo jamaicensis*	X	X	X
American Kestrel	*Falco sparverius*	X	X	
Ring-necked Pheasant	*Phasianus colchicus*	X		
Eastern Kingbird	*Tyrannus tyrannus*	X	X	
Tree Swallow	*Tachycineta bicolor*	X		
Eastern Bluebird	*Sialia sialis*	X	X	
American Tree Sparrow	*Spizella arborea*	X	X	
Field Sparrow	*Spizella pusilla*	X		
Song Sparrow	*Melospiza melodia*	X	X	
Brown-headed Cowbird	*Molothrus ater*	X	X	
American Goldfinch	*Carduelis tristis*	X		
American Woodcock	*Scolopax minor*		X	

Table 4-5 Representative Wildlife by Upland Community Type (Continued)

Common Name	Scientific Name	Community Type		
		SOF*	SS**	FA***
Birds (Continued)				
Black-billed Cuckoo	*Coccyzus erythropthalmus*		X	
Yellow-billed Cuckoo	*Coccyzus americanus*		X	
Chimney Swift	*Chaetura pelagica*		X	
Gray Catbird	*Dumetella carolinensis*		X	
Northern Mocking Bird	*Mimus polyglottus*		X	
Cedar Waxwing	*Bombycilla cedrorum*		X	
Yellow Warbler	*Dendroica petechia*		X	
Eastern Towhee	*Pipilo Erythrophthalmus*		X	X
Northern Cardinal	*Cardinalis cardinalis*		X	
Ruffed Grouse	*Bonasa umbellus*			X
Wild Turkey	*Meleagris gallopavo*			X
Eastern Screech-Owl	*Otus asio*			X
Downy Woodpecker	*Picoides pubescens*			X
Hairy Woodpecker	*Picoides villosus*			X
Northern Flicker	*Colaptes auratus*			X
Eastern Wood-Pewee	*Contopus virens*			X
Great Crested Flycatcher	*Myiarchus crinitus*			X
Red-eyed Vireo	*Vireo olivaceus*			X
Blue Jay	*Cyanocitta cristata*			X
American Crow	*Corvus brachyrhynchos*			X
Black-capped Chickadee	*Poecile atricapillus*			X
Tufted Titmouse	*Baeolophus bicolor*			X
White-breasted Nuthatch	*Sitta carolinensis*			X
Brown Creeper	*Certhia americana*			X
Veery	*Catharus fuscescens*			X
Hermit Thrush	*Catharus guttatus*			X
Wood Thrush	*Hylocichla mustelina*			X
Brown Thrasher	*Toxostoma rufum*			X
Chestnut-sided Warbler	*Dendroica pensylvanica*			X
Black-and-white Warbler	*Mniotilta varia*			X

Table 4-5 Representative Wildlife by Upland Community Type (Continued)

Common Name	Scientific Name	Community Type		
		SOF*	SS**	FA***
Birds (Continued)				
American Redstart	*Setophaga ruticilla*			X
Ovenbird	*Seiurus aurocapillus*			X
Dark-eyed Junco	*Junco hyemalis*			X
Rose-breasted Grosbeak	*Pheucticus ludovicianus*			X
Mammals				
Virginia Opossum	*Didelphis virginiana*	X	X	X
Northern Short-tailed Shrew	*Blarina brevicauda*	X	X	X
Hairy-tailed Mole	*Parascalops breweri*	X		X
Eastern Cottontail	*Sylvilagus floridanus*	X	X	
Little Brown Myotis	*Myotis lucifugus*			X
Eastern Chipmunk	*Tamias striatus*			X
Gray Squirrel	*Sciurus carolinensis*			X
Southern Flying Squirrel	*Glaucomys volans*			X
Deer Mouse	*Peromyscus maniculatus*			X
Woodland Vole	*Microtus pinetorum*			X
Woodchuck	*Marmota monax*	X	X	
Meadow Vole	*Microtus pennsylvanicus*	X	X	X
Meadow Jumping Mouse	*Zapus hudsonius*	X	X	
Woodland Jumping Mouse	*Napaeozapus insignis*			X
Coyote	*Canis latrans*	X	X	X
Red Fox	*Vulpes vulpes*	X	X	X
Gray Fox	*Urocyon cinereoargenteus*		X	X
Raccoon	*Procyon lotor*	X	X	X
Ermine	*Mustela erminea*	X	X	X
Long-tailed Weasel	*Mustela frenata*	X	X	X
Striped Skunk	*Mephitis vison*	X	X	X
White-tailed Deer	*Odocoileus virginianus*	X	X	X

*SOF = Successional Old Field

**SS = Successional Shrubland

***FA = Forested Area

Successional Old Field

Successional Old Fields are found throughout New York State. They are meadows dominated by forbs and grasses that occur on sites that have been cleared, plowed, and abandoned. Shrubs are often also present in this community type, but make up less than 50 percent of the coverage in this community. Successional Old Fields are found on most soil types and across a full range of moisture regimes. NMPC's Vegetative Management Plan promotes development of this community type on the existing ROW.

Goldenrods (*Solidago* spp. and *Euthamia* spp.), Queen-Anne's-lace (*Daucus carota*), gray stem dogwood (*Cornus foemina*), northern arrowwood (*Viburnum recognitum*), red clover (*Trifolium pratense*), and common milkweed (*Asclepias syriaca*) are common dominant species in this community type.

Table 4-4 provides a list of plant species typically found in this community type.

Successional Old Fields are home to amphibians, reptiles, birds, and mammals. One amphibian that may be found in this community type is the eastern American toad (*Bufo a. americanus*). Reptiles that are associated with Successional Old Fields include the common garter snake (*Thamnophis sirtalis*), northern brown snake (*Storeria d. dekayi*), and the northern black racer (*Coluber c. constrictor*). Some of the birds that inhabit this community type include red-tailed hawks (*Buteo jamaicensis*), field sparrows (*Spizella pusilla*), and American goldfinches (*Carduelis tristis*). Common mammals in Successional Old Fields include the eastern cottontail (*Sylvilagus floridanus*), the woodchuck (*Marmota monax*), the meadow vole (*Microtus pennsylvanicus*), and the meadow jumping mouse (*Zapus hudsonius*).

Table 4-5 provides a list of wildlife species that are typically found in this community type.

Successional Shrubland

Successional Shrublands can be found across New York State, but are becoming increasingly rare as forest succession and urbanization occur. They typically occur on sites that have been cleared or disturbed, but with regrowth at a more advanced stage than the Successional Old Fields. By definition, shrubs make up at least 50 percent of the coverage in this community type. Successional Shrublands are found on most soil types and across a full range of moisture regimes. Successional shrubs and communities are common on NMPC ROWs. NMPC ROWs are actively managed under NYSPSC Section 84, Vegetative Management Plans to promote the development of this community type.

Gray stem dogwood (*Cornus foemina)*, common buckthorn (*Rhamnus cathartica*), and honeysuckle (*Lonicera morrowii)* are common dominant species in this community type.

Table 4-4 provides a list of plant species typically found in this community type.

The eastern American toad is an amphibian that may be found in this community type. The eastern smooth green snake (*Liochlorophis vernalis*), the eastern milk snake (*Lampropeltis t. triangulum*), and the common garter snake are reptiles that are commonly found in Successional Shrublands. Birds typical of Successional Shrublands include the gray catbird (*Dumetella carolinensis*), the song sparrow (*Melospiza melodia*), and the cedar waxwing (*Bombycilla cerorum*). Common mammals in this community type include the white-tailed deer (*Odocoileus virginianus*), the red fox (*Vulpes vulpes*), the coyote (*Canis latrans*), and the eastern cottontail.

Table 4-5 provides a list of wildlife species that are typically found in this community type.

Forested Areas

Forested Areas, about 24 percent of New York State in 1990, now comprise about 64 percent of the landscape in New York State. Forested Areas are present within the existing ROW. Portions of the existing ROW are outside the conductor security zone for the existing circuits in the ROW. NMPC's Vegetative Management Plan will essentially allow these areas outside the conductor security zone to return to a natural forested state with only occasional trimming of trees that could damage a conductor based height and proximity to the transmission line, referred to by NMPC Forester's as "danger trees". Approximately 30 percent of the areas that will be disturbed by construction consists of forested areas, approximately 33 acres in size. The forested areas on the Proposed Transmission Line vary in their composition and environmental characteristics. Soils range from calcareous to alluvial. Forested areas also exist across an array of moisture regimes from wetlands to upland areas. Wetland forests account for approximately 5 percent of the ROW area that will be disturbed (see Section 4.5.2 for a discussion of wetland resources).

White oak *(Quercus alba)*, red oak (*Quercus rubra)*, and sugar maple *(Acer saccharum)* are common dominant species in the Forested Area community type. Black cherry (*Prunus serotina)* and American basswood (*Tilia Americana)* are common associates, and typical understory species include Virginia creeper and ironwood.

Table 4-4 provides a list of plant species typically found in this community type.

Amphibians typical of Forested Areas include northern redback salamanders (*Plethodon cinereus*), gray treefrogs (*Hyla versicolor),* and wood frogs (*Rana* sylcatica). This community type is often home to reptiles including northern brown snakes and common garter snakes. Birds that are often found in this community type include the ruffed grouse (*Bonasa*

ubellus), the wild turkey (*Meleagris gallopavo*), the downy woodpecker (*Picoides pubescens*), the black-capped chickadee (*Poecile atricapillus*), the brown creeper (*Certhia americana*), and the ovenbird (*Seirurus aurocapillus*). Mammals that may inhabit Forested Areas include white-tailed deer, coyotes, eastern chipmunks, and gray squirrels (*Sciurus carolinensis*).

Table 4-5 provides a list of wildlife species that are typically found in this community type.

Unique, Sensitive, or Protected Habitats

Coastal Zone of the Hudson River

Segment 1 of the Proposed Transmission Line is located in the coastal zone of the Hudson River. The New York Department of State (NYSDOS) reviews all projects proposed in the coastal zone for consistency with New York's coastal zone policies (See Exhibit _ (DJS-1), letter dated August 1, 2002). Local communities may create local development plans to encourage appropriate uses within the coastal zone. The City of Rensselaer has developed such a plan for the Port of the Hudson River which may be affected by the Proposed Transmission Line. With this Application and supporting documents, the NYSPSC will be requested to determine and certify that this Proposed Transmission Line is consistent with these local and state policies. The Applicant believes that the Proposed Transmission Line is consistent with local and state policies. Table 4-6 lists the Coastal Zone Management Policies and identifies the Proposed Transmission Line's applicability and consistency with the policies.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies

Policy Number	Description	Consistency
Policy 1	Restore, revitalize, and redevelop deteriorated and underutilized waterfront areas for commercial and industrial, cultural, recreational and other compatible uses.	Consistent. The Proposed Transmission Line will be located in an area of heavy industrial use. The Proposed Transmission Line is related to the BEDCO Power Plant, which will result in utilization of an existing inactive industrial property.
Policy 1A	Redevelop the Albany Port District property and related vacant and tank farmlands as an integral part of a regional marine transportation facility and, thus, the industrial focus of the city local waterfront revitalization program.	Consistent. The Proposed Transmission Line is not a marine transportation facility. However, the Proposed Transmission Line conforms to the land use intent of utilizing the existing riverfront industrial lands for continued industrial use.
Policy 1B	Redevelop the City of Rensselaer's central riverfront (generally defined as that area including the Zappala block, Huyck Felt, City Hall and the Amtrak properties) as a focus for commercial expansion within the city's Local Waterfront Revitalization Plan (LWRP).	Not applicable. The Proposed Transmission Line is not located within the described area boundaries
Policy 1C	Redevelop the City of Rensselaer's Northern riverfront as a uniquely situated site for new residential and recreational/ open space development.	Not applicable. The Proposed Transmission Line is not located within the described area boundaries.
Policy 1D	Stabilize and revitalize the historic Fort Crailo and Bath neighborhoods for residential and compatible limited commercial uses.	Not applicable. The Proposed Transmission Line is not located within the described area boundaries.
Policy 1E	Stabilize and revitalize the City of Rensselaer downtown; i.e., the central business district and shopping center areas, for more major retail, office, and related activities.	Not applicable. The Proposed Transmission Line is not located within the described area boundaries.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 1F	Integrate the various waterfront area land uses, provide recreation and public access opportunities, and preserve waterfront lands through the development of an open space / trail system extending fully from a port area overlook in the cities highly industrial southern end to an expansion open space / park area on lands owned by RPI in the vicinity of the Patroon Island (I-90) bridge.	Not applicable. The Proposed Transmission Line will not impact recreation, public access, or recreational resources.
Policy 1G	Allow the extension of proposed office park development supportive of the Rensselaer Technology Park southward from the Town of North Greenbush coastal area into the RPI-owned northern extremes of the Rensselaer riverfront, provided environmental and access problems can be resolved.	Consistent. The Proposed Transmission Line alignment will be designed to avoid conflict with potential access from Exit 8 of Interstate 90.
Policy 2	Facilitate the siting of water-dependent uses and facilities on or adjacent to coastal waters.	Consistent. The Proposed Transmission Line is required for the BEDCO Power Plant. The BEDCO Power Plant will utilize Hudson River water for process water at the recycled newsprint manufacturing plant, boiler feed water at the cogeneration plant, service water, backup cogeneration plant cooling tower makeup, and fire protection water.
Policy 2A	Maintain all suitable industrial land within and contiguous to the Port lands, to provide a critical landmass for marine-dependent industrial development.	Consistent. Although the Proposed Transmission Line is not marine development, it conforms to the land use intent of utilizing existing riverfront industrial lands for continued industrial use.
Policy 3	Further develop the state's major ports of Albany, Buffalo, New York, Ogdensburg and Oswego as centers of commerce and industry and encourage the siting, in these port areas, including those in the jurisdiction of state public authorities, of land use and development which is essential to, or in support of, the waterborne transportation of cargo and people.	Consistent. The Proposed Transmission Line will further the development of port capabilities by providing energy and upgrading infrastructure that will encourage other industrial and/or commercial uses in the Rensselaer Port area adjacent to the Albany Port.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 3A	Require commitments to significant near term improvements in land {i.e., vehicular} access to the port and industrial area prior to approval of development actions which may result in an increased truck and related traffic through the cities existing residential neighborhoods.	Not Applicable. The Proposed Transmission Line will not result in increased traffic through the city's existing residential neighborhoods.
Policy 4	Strengthen the economic base of smaller harbor areas by encouraging the development and enhancement of those traditional uses and activities which have provided such areas with their unique maritime identity.	Not Applicable. The Proposed Transmission Line is not located in a small harbor area.
Policy 7	Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.	Consistent. The Proposed Transmission Line runs adjacent to the northernmost border of Papscanee Marsh and crosses the creek within an existing ROW. The installation and operation of the Proposed Transmission Line will not impair the viability of the habitat of Papscanee Marsh.
Policy 5	Encourage the location of development in areas where public services and facilities essential to such development are adequate.	Consistent. The Proposed Transmission Line will increase the level of public service by the transmission of additional electrical capacity. The Proposed Transmission Line will not have an adverse impact on existing public services and facilities.
Policy 6	Expedite permit procedures in order to facilitate the siting of development activities at suitable locations.	Consistent. The Proposed Transmission Line will be licensed under Article VII of the Public Service Law.
Policy 8	Protect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bio accumulate in the food chain or which cause significant sub lethal or lethal effect on those resources.	Consistent. There will be no discharges of hazardous waste associated with the Proposed Transmission Line.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 9	Expand recreational use of fish and wildlife resources in coastal areas by increasing access to existing resources, supplementing existing stocks, and developing new resources. Such efforts shall be made in a manner which insures the protection of renewable fish and wildlife resources and considers other activities dependant on them.	Consistent. The Proposed Transmission Line is located in an existing right-of-way and will not alter or impact public use access, the supplementation of existing stocks, or the development of new resources.
Policy 10	Further develop commercial finfish, shellfish, and crustacean resources in the coastal area by encouraging the construction of new, or improvement of existing on-shore commercial fishing facilities, increasing marketing of the state's seafood products, maintaining adequate stocks, and expanding aquaculture facilities.	Not applicable. The Proposed Transmission Line will not affect commercial fishing.
Policy 11	Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.	Consistent. Proposed structures will not reduce flood storage or alter flood flows.
Policy 12	Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.	Consistent. Proposed structures will not reduce flood storage or alter flood flows. Use of an existing ROW will minimize impact to natural resources. The Proposed Transmission Line will not impact any natural protective features.
Policy 13	The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least thirty years, as demonstrated by design and construction standards and/ or assured maintenance or replacement programs.	Not applicable. The Proposed Transmission Line does not involve construction or reconstruction of erosion protection structures.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 13A	The construction of erosion control bulk heading, rip rapping, sea wall construction or reconstruction, or piling installation including that necessary to maintain the navigable channel of the Hudson River and the port turning basin, shall meet sound construction practices and procedures and be undertaken only if they have reasonable probability of functioning as demonstrated in design and construction standards and/or assured maintenance or replacement programs.	Not applicable. The construction of the Proposed Transmission Line will not impact the Hudson River.
Policy 14	Activities and development, including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development at any other locations impacted by such activities or development.	Not Applicable. The construction of the Proposed Transmission Line will not result in a measurable increase in erosion or flooding. The Applicant will follow all applicable guidelines for erosion control and will follow Best Management Practices to avoid or minimize erosion during construction and operation.
Policy 15	Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.	Not Applicable. There will be no mining, excavating, or dredging relating to the construction of the Proposed Transmission Line.
Policy 16	Public funds shall only be used for erosion protective structures where necessary to protect human life or existing development, and for new development which requires a location within or adjacent to an erosion hazard area to be able to function; but only where the public benefits outweigh the long-term monetary and other costs, including the potential for increasing erosion and adverse effects on natural protective on natural protective features.	Not Applicable. No public funds will be utilized to construct or operate erosion protective structures for the Proposed Transmission Line.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 17	Whenever possible, use nonstructural measures to minimize damage to natural resources and property from flooding and erosion. Such measures shall include the following: (A) the set-back of buildings and structures; (B) The planting of vegetation and the installation of sand fencing and drainage: (C) The reshaping of bluffs; and (D) The flood proofing of buildings or their elevation above the base flood level.	Not applicable. Proposed structures will not reduce flood storage or alter flood flows. Use of an existing ROW will minimize impact to natural resources. The Proposed Transmission Line will not impact any natural protective features.
Policy 18	To safe guard the vital economic, social, and environmental interests of the state and its citizens, proposed major actions in the coastal must give full considerations to those interests, and to those safe guards in which the state has established to protect valuable coastal resource areas.	Consistent. The Proposed Transmission Line is subject to comprehensive review under the Article VII process, where the Proposed Transmission Line must ensure that the economic, social, and environmental interests of the State are evaluated as a condition of obtaining a certificate for the construction and operation of an electrical transmission line, and that adverse impacts of the transmission line are avoided, minimized, or mitigated.
Policy 19	Protect, maintain, and increase the levels and types of access to public water-related recreational resources and facilities so that these resources and facilities may be fully utilized by all the public in accordance with reasonable- anticipated public recreational needs of the protection of historic and natural resources. In providing such access, priority shall be given to public beaches, boating facilities, fishing areas, and waterfront parks.	Not applicable. The Proposed Transmission Line does not affect public access to water-related recreational resources and facilities.
Policy 19A	Develop a port area overlook, including small boat launch, as a facility for passive and water-dependent active recreation and a perspective from which port activities on both shores of the Hudson River might be viewed.	Not Applicable. The Proposed Transmission Line does not interfere with any site being considered for the development of a port area overlook and boat launch.
Policy 19B	Develop a class 2 bikeway linking the port area overlook through the Fort Craillo neighborhood and central business district to Riverfront Park at its proposed downtown entrance.	Not Applicable.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 19C	Extend development of Riverfront Park to include proposed downtown entrance and expand parking and recreational facilities.	Not Applicable. The Proposed Transmission Line is not located within the described area boundaries.
Policy 19D	Provide public access for continuation of the riverfront open space trail system through the central riverfront, the school district property, and the Amtrak property to its immediate north.	Not Applicable. The Proposed Transmission Line is not located within the described area boundaries.
Policy 19E	Acquire an interest in Amtrak`s river-most property to permit development of overlooks and open unstructured recreational areas with direct access to the beach-like shoreline at the location.	Not Applicable. The Proposed Transmission Line is not located within the described area boundaries.
Policy 19F	Extend the riverfront trail through a redeveloped northern riverfront area, including clustered housing and a waterfront restaurant with associated boat mooring and fishing pier at Bath.	Not Applicable. The Proposed Transmission Line is not located within the described area boundaries.
Policy 19G	Provide a northern focus for the cities riverfront open space trail system by developing picnic areas and active recreational facilities, such as ball fields and tennis courts, on the RPI lands north of the Barnet Mills and extending to and beyond the Patroon Island bridge.	Not Applicable. The Proposed Transmission Line is not located within the described area boundaries.
Policy 19H	Link the City's Riverfront open space system with further recreational amenities and development proposed in the Town of North Greenbush under its Local Waterfront Revitalization Program.	Not Applicable. The Proposed Transmission Line is not located within the described area boundaries.
Policy 20	Access to the publicly owned foreshore and to the lands immediately adjacent to the foreshore or the waters edge that are publicly owned shall be provided in a manner compatible with adjoining uses. Such lands shall be retained in public ownership.	Not Applicable. The Proposed Transmission Line will be located in an existing right-of-way and will not alter or impact public access to the publicly owned foreshore or adjacent lands.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 21	Water-dependent and water-enhanced recreation shall be encouraged and facilitated and shall be given priority over non-water-related uses along the coast, provided such recreation is consistent with the preservation and enhancement of other coastal resources and takes into account demand for such facilities. In facilitating such activities, priority shall be given to areas where access to the recreation opportunities of the coast can be provided by new or existing public transportation services and to these areas where the use of the shore is severely restricted by existing development.	Not Applicable. The Proposed Transmission Line will be located within an existing right-of-way in an area not conducive to water dependent recreational uses. The Proposed Transmission Line will connect with the BEDCO Power Plant, which is a water related use.
Policy 22	Development, when located adjacent to the shore, shall provide for water-related recreation, as a multiple use, whenever such recreational use is appropriate in light of reasonably anticipated demand for such activities and the primary purpose of the development.	Not Applicable. The Proposed Transmission Line will be located within an existing right-of-way in an area not conducive to water dependent recreational uses. The Proposed Transmission Line will not impede public access to water-related recreation.
Policy 23	Protect, enhance, and restore structures, districts, areas, or sites that are of significance in the history, architecture, archeology, or culture of the state, its communities, or the nation.	Consistent. The Proposed Transmission Line will not impact structures, districts, areas or sites that are of significance in the history, architecture, archeology, or culture of the state, its communities, or the nation. See Exhibit __ (JIK-1) includes a cultural resource survey for the Proposed Transmission Line.
Policy 24	Prevent impairment of scenic resources of statewide significance.	Not Applicable. No scenic resources of statewide significance are within the Project area.
Policy 25	Protect, restore, and enhance natural and man-made resources which are not identified as being a statewide significance but which contribute to the scenic quality of the coastal area.	Consistent. The Proposed Transmission Line will not significantly impact natural and man-made resources (see Exhibit 4 and Exhibit __ (JWG/MPC-1)

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 26	Conserve and protect agricultural lands in the state's coastal area.	Consistent. The Proposed Transmission Line will be sited in an existing right-of-way and will have minimal impacts on agricultural lands. Provides a benefit in that it provides access for agricultural vehicles.
Policy 27	Decisions on the siting and construction of major energy facilities in the coastal area will be based on public energy needs, compatibility of such facilities with the environment, and the facility's need for a shorefront location	Consistent. The Proposed Transmission Line will and integral part of the proposed BEDCO Power Plant and is designed to minimize impact to the environment. A portion of Segment 1 parallels the edge of an agricultural filed and the Applicant maintains an existing access road jointly used by the Applicant and the farmer.
Policy 28	Ice management practices shall not interfere with the production of hydroelectric power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding.	Not Applicable.
Policy 29	Encourage the development of energy resources on the outer continental shelf, in Lake Erie and in other water bodies, and ensure the environmental safety of such activities.	Not Applicable.
Policy 30	Municipal, industrial, and commercial discharge of pollutants, including but not limited to, toxic and hazardous substances, into coastal waters will conform to state and national water quality standards.	Not Applicable. There will be no discharge of pollutants into coastal waters associated with the construction and operation of the Proposed Transmission Line.
Policy 31	State coastal area policies and purposes of approved local waterfront revitalization programs will be considered while reviewing coastal water classifications and while modifying water quality standards; However, those waters already overburdened with contaminates will be recognized as being a development constraint.	Not Applicable.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 32	Encourage the use of alternative or innovative sanitary waste systems in small communities where the costs of conventional facilities are unreasonable high, given the size of the existing tax base of these communities.	Not Applicable.
Policy 33	Best management practices will be used to ensure the control of stormwater runoff and combined sewer overflows draining into the coastal waters.	Consistent. Best management practices will be employed during the construction and operation of the Proposed Transmission Line to control stormwater runoff.
Policy 34	Discharge of waste materials from vessels into coastal waters will be limited so as to protect significant fish and wildlife habitats, recreational areas and water supply areas.	Not Applicable.
Policy 35	Dredging and dredge spoil disposal in coastal waters will be undertaken in a manner that meets existing state dredging permit requirement, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands.	Not Applicable.
Policy 36	Activities related to the shipment and storage of petroleum and other hazardous materials will be conducted in a manner that will prevent, or at least minimize spills into coastal waters; all practicable efforts will be undertaken to expedite this cleanup of such discharges and restitution for damages will be required when these spills occur.	Not Applicable.
Policy 37	Best management practices will be utilized to minimize the non-point discharge of excess nutrients, organics and eroded soils into coastal waters.	Consistent. Best management practices will be employed during the construction and operation of the Proposed Transmission Line to control stormwater runoff.

Table 4-6: Consistency with State and Local Coastal Zone Management Policies (Continued)

Policy Number	Description	Consistency
Policy 38	The quality and quantity of surface water and groundwater supplies will be conserved and protected, particularly where such waters constitute the primary or sole source of water supply.	No areas crossed by the proposed alignment Include primary or sole source municipal water supplies. The Proposed Transmission Line will not impact groundwater. Best management practiced will be employed during construction and operation to maintain surface water quality.
Policy 39	The transport, storage, treatment and disposal of solid wastes, particularly hazardous wastes, within coastal areas will be conducted in such a manner so as to protect groundwater and surface water supplies, significant fish and wildlife habitats, recreation areas, important land and scenic resources.	Not Applicable.
Policy 40	Effluent discharged from major steam electric generating and industrial facilities into coastal waters will not be unduly injurious to fish and wildlife and shall conform to state water quality standards.	Not Applicable.
Policy 41	Land use or development in the coastal area will not cause national or state air quality standards to be violated.	Not Applicable.
Policy 42	Coastal management policies will be considered if the state reclassifies land areas pursuant to the prevention of significant deterioration regulations of the federal clean air act.	Not Applicable.
Policy 43	Land use or development in the coastal area must not cause the generation of significant amounts of acid rain precursors: nitrates and sulfates.	Not Applicable.
Policy 44 (2)	Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these land areas.	Consistent. The Proposed Transmission Line alignment within an existing ROW and outside of wetland areas to the extent possible will preserve benefits derived from freshwater wetlands. Best management practices will be employed during construction and operation of the Proposed Transmission Line.

Papscanne Marsh and Creek

The Proposed Transmission Line is also located immediately north of a significant coastal fish and wildlife habitat, Papscanee Marsh and Creek. This wetland is in the Town of East Greenbush just north of the southernmost extent of the Proposed Transmission Line. Papscanee Marsh and Creek have degraded into a *Phragmites* dominated floodplain wetland habitat and is the northernmost major wetland area in the Hudson River estuary. The Moordener and Papscanee Creeks are tidal creeks that provide habitat for many species. Anadromous and resident freshwater fish use them for spawning and nursery purposes, and a reported population of map turtles also inhabits the creeks. Many birds use the Papscanee Marsh and Creek for feeding and resting during migration, while other bird species nest here. The nesting species include the least bittern (*Ixobrychus exilis*), green-backed heron (*Butorides virescens*), Canada goose (*Branta canadensis*), American black duck (*Anas rubripes*), wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), Virginia rail (*Rallus limicola*), common moorhen (*Gallinula chloropus*), spotted sandpiper (*Actitis macularia*), common sandpiper (*Actitis hypoleucos*), swamp sparrow (*Melospiza georgiana*), marsh wren (*Cistothorus palustris*), and belted kingfisher (*Ceryle alcyon*).

The Proposed Transmission Line avoids the Papscanee Marsh, reducing the potential for impacts to this significant habitat. The Proposed Transmission Line will use an existing ROW to cross the Papscanee Creek. This ROW includes an existing access road which the Proposed Transmission Line will use. Construction via this road will avoid and/or minimize the amount of clearing required and avoid related impacts to the riparian ecosystem proximate to the road and the ROW.

Impacts and Mitigation

The initial construction of the Proposed Transmission Line will impact all three vegetative communities identified above that occur in the ROW. In the long term, the ROW maintenance practices will allow the Successional Old Field, Shrubland and a section of the Forested Area to return to its current state. The only long-term impact will result from permanent clearing of Forested Areas on the ROW within the conductor security zone. These areas will be converted to a Successional Shrubland type of habitat. The clearing of forest will be kept to a minimum by overlap with an existing cleared ROW to the extent possible. The clearing of forest will be consistent with NYSPSC mandated application of Integrated Vegetation Management strategies by NMPC to improve system reliability. A by-product of this effort is enhancement of ROW diversity and preservation of habitat for scrub-shrub fauna such as neotropical songbirds. Using existing cleared areas adjacent to the ROW will also help prevent forest fragmentation. Access and staging areas will be identified to maximize use of existing clearings. Clearing areas adjacent to the existing clearing within the ROW will not add to forest fragmentation. Areas disturbed by construction will be restored once construction is complete.

No long-term impacts to wildlife are anticipated from the Proposed Transmission Line since the habitat types impacted are common throughout the Project area. Direct mortality of wildlife will be limited since the species are mobile and can move away from the construction area. Wildlife species are not specialized to the point that the construction activities will adversely impact the overall stability of their populations. Species that utilize the Successional Shrubland habitat may in fact benefit from the Proposed Transmission Line due to an increase in the amount of this habitat.

4.4.2 Threatened and Endangered Species

The New York Natural Heritage Program (NYNHP) was contacted with a request for information on potential threatened and endangered species in the vicinity of the Proposed Transmission Line. The letter received (NYNHP, 2002) from NYNHP mentioned two state-listed threatened or endangered species: the least bittern (*Ixobrychus exilis*), last observed in 1983, and the southern wood violet (*Viola hirsutula*), last observed historically in 1910. There were no federally listed threatened or endangered species (United States Fish and Wildlife Service, 2001). A copy of this letter is included in Exhibit __ (DJS-1).

Least Bittern

The least bittern has New York State status as a threatened species. The least bittern has a dual state ranking based on its occurrence as a breeding population (S3B) and as a non-breeding population (S1N) that migrates through the Project area. The S3B ranking defines the breeding population in the range of 21 and 100 occurrences with limited acreage. The S1N ranking defines the non-breeding population of 5 or fewer occurrences and very few remaining individuals or acres occupied. The element occurrence (EO) rank identifies the species' likelihood of long-term survival. The least bittern has an EO rank of E, indicating that there is limited field data to confirm the population size or distribution. The least bittern is at the edge of its range in New York State, which helps explain its local rarity (Field Guide to the Birds of North America, 1999). Its global rank, a measure of global rarity, is G5. A G5 ranking indicates that the species is demonstrably secure from the global perspective, although it is rare in parts of its range, particularly the periphery.

Fieldwork was conducted during July and August of 2002 to delineate wetlands and investigate other upland resources along the route of the Proposed Transmission Line. During the course of completing fieldwork least bitterns were not observed.

Southern Wood Violet

The southern wood violet has a New York State status as an endangered species. The southern wood violet has an EO ranking of H, which also indicates that occurrences are historical without any recent field information. The southern wood violet is at the northern extreme of its range in New York State (Newcomb, 1977). The global rank for this species is G4. A G4 ranking indicates that the species is apparently secure globally, but it may be very rare in parts of its range, particularly on the periphery.

Fieldwork was conducted during the summer of 2002 to delineate wetlands and investigate other upland resources along the route of the Proposed Transmission Line. During the course of completing fieldwork, the southern wood violet was not observed.

Potential Impacts

Construction and maintenance of the Proposed Transmission Line may impact both the least bittern and southern wood violet if either species or their habitat is present in the area disturbed by construction or maintenance activities.

Habitat used for foraging or breeding by the least bittern may be altered by construction activities such that it can no longer be used for these activities. If present, the southern wood violet may be affected by ground disturbance of microclimate changes from topping or removing tree canopy. The combination of clearing and topping of trees has the potential to change the microhabitat such as light and moisture regimes, which may discourage the persistence of the southern wood violet. Construction work could also encourage invasive species now common along the ROW.

Habitat Enhancement and Mitigation

Several steps can be taken to mitigate the potential impacts to the threatened and endangered species or enhance habitat along the ROW. Additional consultation with the NYSDEC will be conducted during the NYSPSC's review of the application to more clearly define the potential presence of these species and what additional field efforts, if any at the time of construction, may be appropriate for a complete assessment of potential impact.

Should these rare species be found to exist, the EM&CS&P Plan prepared for the Proposed Transmission Line will detail measures that will be implemented during construction to avoid or minimize impacts. Typical measures that could be implemented include:

- Environmental Inspector on site during construction;
- minimizing construction disturbance by use of existing disturbed ROW to the extent possible;
- timing construction to avoid sensitive breeding season for the least bittern;
- restrict construction activities in areas of known occurrence (none are known at this time);
- use of appropriate erosion control and best management practices during construction; and
- stabilize and revegetate disturbed areas with a seed mix that includes naturalized species, as practicable.

Measures identified in the EM&CS&P Plan will be submitted to the NYSPSC and the NYSDEC for review and approval prior to construction.

4.5 Hydrologic Resources

4.5.1 Streams

Streams along the Proposed Transmission Line were identified based on review of United States Geological Survey (USGS) topographic maps and field delineations. The delineation methodology is described in detail in Section 4.5.2. Correspondence was received from the NYSDEC identifying the stream classification for all streams that appear on the USGS map (see Exhibit__(DJS-1)). Table 4-7 lists the streams identified on the USGS map and in the field. The determination made in the field on stream flow - perennial or intermittent - is noted in the table. All of the streams along the ROW are Class C or lower and therefore are not under NYSDEC jurisdiction. The wetland ID corresponds with the field delineation. The Proposed Transmission Line will not cross two of the streams, as the streams are adjacent to the ROW. Access has also been proposed that would avoid crossing of Mill Creek and its largest tributary (streams associated with wetlands B-20 and B-17).

4.5.2 Wetlands

To facilitate Federal/State environmental permitting activities, the boundaries of all wetlands associated with the portions of the NMPC ROW that may be disturbed by construction were delineated in the field in the summer and fall of 2002.

Wetland Delineation Overview

Prior to the conduct of field investigations, existing data relative to the presence/absence of wetlands within the NMPC ROW were reviewed. These source materials primarily included:

- USGS topographic maps (Troy South, East Greenbush, and Delmar quadrangles);
- site visits with the USACOE and NYSPSC;

Table 4-7: Stream Crossings along Proposed Alignment

No.	Name	Perennial / Intermittent	Class / Wet ID	Source/Comments
Segment 1 (1.7 miles)				
1	Tributary to Hudson River	Perennial	D / A-24	Field delineated, not crossed
2	Tributary to Hudson River	Perennial	D / A-23	Field delineated, not crossed
3	Papscanee Creek	Perennial	C / A-22	USGS Map (NYSDEC letter #10), field delineated
Segment 2 (2.3 miles)				
4	Tributary to Papscanee Creek	Perennial	C / A-21	USGS Map (NYSDEC letter #9)
5	Tributary to Papscanee Creek	Perennial	C / A-21	USGS Map (NYSDEC letter #8)
6	Tributary to Papscanee Creek	Intermittent	C / A-19	USGS map (NYSDEC letter #6), field delineated
7	Tributary to Papscanee Creek	Intermittent	C / A-18	USGS map (NYSDEC letter #6), field delineated
8	Tributary to Mill Creek	Intermittent	C / A-25	Field delineated
9	Tributary to Mill Creek	Intermittent	C / A-25A	Field delineated
10	Pond	N/A	C / B-21	USGS Map (NYSDEC letter. #5), field delineated
Segment 3 (4.1 miles)				
11	Mill Creek	Perennial	C / B-20	USGS Map (NYSDEC letter #4), field delineated; crossing avoided
12	Tributary to Mill Creek	Intermittent	C / B-17	USGS Map (NYSDEC letter #3), field delineated; crossing avoided
13	Tributary to Unnamed Tributary to Hudson River	Intermittent	C / A-11	Field delineated
14	Unnamed Tributary to Hudson River	Perennial	C / A-10	USGS Map (NYSDEC letter #2), field delineated
15	Tributary to Unnamed Tributary to Hudson River	Intermittent	C / A-9	Field delineated
16	Tributary to Unnamed Tributary to Hudson River	Perennial	C / A-8	Field delineated
17	Tributary to Unnamed Tributary to Hudson River	Perennial	C / A-7	Field delineated
18	Unnamed Tributary to Hudson River	Intermittent	D / B-12	Field delineated
19	Tributary to Unnamed Tributary to Hudson River	Perennial	C / B-10	USGS Map (NYSDEC letter #1); field delineated
20	Unnamed Tributary to Hudson River	Intermittent	D / B-5	Field delineated

- NYSDEC Freshwater Wetlands Maps for the Troy South, East Greenbush, and Delmar quadrangles;
- review of the Soil Survey of Rensselaer County, New York (U.S. Department of Agriculture, January 1988); and
- review of Year 2000 orthophotos for the Proposed Transmission Line alignment.

The Wetland Delineation Report previously prepared for the subject NMPC ROW and submitted with the Article X Application was reviewed as well (see Appendix H-1 of the Article X Application). A full wetland delineation report has been prepared and submitted to the USACOE for the Proposed Transmission Line as part of the permit process to assess potential impacts to wetlands and waterways of the United States.

Following the review of existing information, field investigations were conducted to delineate the boundaries of wetlands within the ROW. These boundary delineations were conducted in accordance with the [U.S. Army] *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, January 1987) and, specifically, methodologies associated with "Routine Delineations", as described in the manual. These methodologies are consistent with the field delineation methods set forth in the *New York State Freshwater Wetlands Delineation Manual* (NYSDEC, July 1995).

At each wetland along the ROW, the boundary between the upland and the wetland was delineated in the field with flagging tape labeled "Wetland Delineation." Additionally, information regarding wetland location, wetland classification, plant species composition, hydrologic features (e.g., perennial or intermittent streams), hydric soils, wetland functions/values, and any wildlife observations was recorded on a Wetland Summary Form. At multiple locations along the transmission line corridor, USACOE "Routine Wetland

Determination Data Forms" were completed to document the upland and wetland conditions. At these sites, wetland and upland observation plots were established along a transect at a specific flag location. One data form was used to document vegetation, soils and hydrologic conditions within the wetland and the other data form used to document the same information in the adjacent upland.

The wetland delineation was surveyed and compiled on a set of plans with topography, existing man-made features, and vegetative community. These plans will serve as the basis to the EM&CS&P Plan construction plans for the Proposed Transmission Line. The wetland delineation was reviewed in the field with the USACOE Troy Office. A jurisdictional determination that certifies the wetland and stream boundaries is expected from the USACOE.

Description of Existing Wetland Conditions

Based on the overall wetland delineation effort, a total of sixty-two (62) wetlands are associated with or occur proximate to portions of the NMPC ROW that will be disturbed by construction.[1] Wetland resources delineated in the field are illustrated on Figure 4-3. Wetlands resources within the ROW are tabulated in Table 4-8. An estimate of wetland disturbance is based on the latest design and field survey data for the Proposed Transmission Line. The Applicant is preparing an application with the USACOE to address more specifically the amount of wetland impact, types of disturbances, any additional opportunities to minimize impacts to wetlands, and to develop mitigation plans for unavoidable impacts.

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1. Only two of these areas (Wetlands A-21 and A-22) are within a NYSDEC regulated wetland.

Segment 1 (see Figure 4-3, Sheets 1 and 2) - Along Segment 1, six (6) wetlands were delineated. Wetland area disturbed by construction on Segment 1 of the Proposed Transmission line is tabulated in Table 4-8. Palustrine forested and emergent plant communities dominate the majority of these wetlands. All six have characteristics and wetland functions altered by roads, embankments, agricultural practices, impervious surfaces, and upstream flood control and navigation dams. One wetland (A-24), however, primarily consists of Palustrine scrub/shrub and aquatic bed communities. Based on Cowardin (1979), Palustrine wetlands include all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand (ppt).

In addition to Palustrine wetlands, three of the Segment 1 wetlands also contain Riverine communities. As described Cowardin (1979), Riverine wetlands include all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5 ppt. Three of the wetlands (i.e. A-24, A-23 and A-22) within the Segment 1 ROW contain perennial waterways. A drainage ditch is associated with Wetland B-27. Channel widths range from approximately 3 to 6 feet in Wetlands A-24, A-23, and B-27 to approximately 6 to 12 feet wide in Wetland A-22.

As may be expected, forested wetlands are very limited on the ROW, and they primarily occur within peripheral and/or uncut portions of the ROW, while scrub/shrub and emergent wetlands are associated with the cleared portion of the ROW. This scenario is consistent for all three segments of the Proposed Transmission Line.

Table 4-8: Existing Wetland Resources

Wetland ID	Surface Water	Acres of Fill (Forested)	Acres of Fill (Scrub Shrub /Emergent)
Segment 1			
F	–	<0.1	0.0
H	–	0.0	0.0
B-28	–	0.0	0.0
A-24	Perennial Stream, Ditch/Swale	0.0	0.0
A-23	Perennial Stream	0.0	0.0
B-27	Intermittent Stream	<0.1	0.0
B-26	Ditch/Swale	<0.1	0.3
A-22	Perennial Stream	0.0	0.0
Segment 1 Area Totals		**0.2**	**0.3**
Segment 2			
A-21	–	0.0	0.1
A-20	–	0.0	0.0
A-19	Intermittent Stream	0.0	0.0
A-18	Intermittent Stream	0.0	0.0
B-25	Intermittent Stream	0.0	0.0
B-25A	Intermittent Stream	0.0	0.0
B-25B	–	0.0	0.0
B-24	–	0.0	0.0
B-23	–	0.0	<0.1
B-22	–	0.0	0.0
B-21	Pond	0.0	0.0
Segment 2 Area Totals		**0.0**	**0.1**
Segment 3			
A-17	–	0.0	0.0
B-20	Perennial Stream	0.0	0.0
B-19	–	0.0	0.0
B-18	Ditch/Swale	0.0	0.0
B-17	Intermittent Stream	0.0	0.0

Table 4-8: Existing Wetland Resources

Wetland ID	Surface Water	Acres of Fill (Forested)	Acres of Fill (Scrub Shrub /Emergent)
Segment 3 (Continued)			
B-16	Intermittent Stream	0.0	0.0
A-12	Intermittent Stream	0.0	<0.1
A-13	–	0.0	<0.1
A-14B	–	0.0	0.0
A-14	–	0.0	0.0
A-14A	–	0.0	0.0
A-15	–	0.0	0.0
A-16	–	0.0	0.1
B-15/14/13	Perennial Stream	0.1	0.1
A-11	Intermittent Stream	0.0	0.1
A-10	Perennial Stream	0.0	<0.1
A-9	Intermittent Stream	0.0	<0.1
A-8	Perennial Stream	0.0	<0.1
A-7	Perennial Stream	0.0	0.0
A-7A	Perennial Stream	0.0	0.0
A-5	–	0.0	0.0
A-6	–	0.0	0.0
A-4	Ditch/Swale	0.0	0.0
A-3	–	0.0	<0.1
A-2	–	0.0	<0.1
A-1	–	0.0	0.0
A-1A	–	0.0	<0.1
B-12	Intermittent Stream	0.0	<0.1
B-11	–	0.0	0.0
B-10	Perennial Stream	0.0	0.0
B-9	–	0.0	0.0
B-9A	–	0.0	0.0
B8A	–	0.0	0.0

Table 4-8: Existing Wetland Resources

Wetland ID	Surface Water	Acres of Fill (Forested)	Acres of Fill (Scrub Shrub /Emergent)
Segment 3 (Continued)			
B-8	–	0.0	0.0
B-8B	–	0.0	0.0
B-8C	–	0.0	0.0
B-7	–	0.0	0.0
B-6	–	0.0	0.0
B-5	Intermittent Stream	0.0	0.0
B-4	–	0.0	0.0
B-3	–	0.0	0.0
B-2	–	0.0	0.0
B-1	–	0.0	0.0
Segment 3 Area Total		0.1	0.5

Summary of Wetland Disturbance		
Segment	Acres of Fill (Forested)	Acres of Fill (Scrub Shrub /Emergent)
Segment 1	0.2	0.3
Segment 2	0.0	0.1
Segment 3	.1	0.5
Project Total	**0.3**	**0.9**

Within forested wetlands, dominant plant species consist of box elder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), black ash (*Fraxinus nigra*), cottonwood (*Populus deltoides*), red maple (*Acer rubrum*) and silver maple (*Acer saccharinum*). Plant species common to scrub/shrub wetlands include elderberry (*Sambucus* canadensis), silky dogwood (*Cornus amomum*), willow (*Salix* sp.) and immature box elder and slippery elm (*Ulmus rubra*). Emergent plant communities, for the most part, are comprised of cattail (*Typha latifolia*), purple loosestrife (*Lythrum salicaria*), sensitive fern (*Onoclea sensibilis*), lance-

leaved goldenrod (*Solidago graminifolia*), jewelweed (*Impatiens capensis*), sedge (*Carex lurida*) and common reed (*Phragmites australis*). Wetland A-22, the majority of which is characterized by forested wetlands, is part of NYSDEC Wetland EG-1, as designated on the NYSDEC Freshwater Wetlands Map for the East Greenbush quadrangle. Wetland B-26, while not actually a part of EG-1, occurs immediately west of Route 9J. The railroad forms the western boundary of EG-1 at this location. EG-1 meets several of the criteria of a Class II wetland as found in 6 NYCRR Part 664.5. NYSDEC regulates adjacent areas, which are areas that extend 100 feet from a NYSDEC designated wetland, measured horizontally. Approximately 2,900 linear feet of ROW are within 100 feet of EG-1 for Segment 1.

Wetlands A-24, B-27 and much of B-26 border the ROW edge. The existing access road crosses A-23, and B-26 at existing culverted locations.

Segment 2 (See Figures 4-3, Sheets 2-4) - Along Segment 2 of the study corridor eleven (11) wetlands have been delineated, all of which occur south of NYS Routes 9 & 20. No wetlands are associated with the subject segment between NYS Routes 9 & 20 and the northerly terminus of this segment. Wetland area disturbed by construction on Segment 2 of the Proposed Transmission line is tabulated in Table 4-8.

Palustrine emergent and forested plant communities dominate wetlands within Segment 2. Scrub/shrub wetland characteristics are primarily associated with only three wetlands (B-24, B-23 and B-21). Wetlands A-19 and A-18 exhibit Riverine wetlands characteristics. Within each of these wetlands, intermittent streams are present, with channel widths ranging from approximately 1 foot to 4 feet. A small pond within Wetland B-21 constitutes a Palustrine aquatic bed community, with duckweed (*Lemna* sp.) being the most prevalent plant species.

Plant species associated with forested wetlands within Segment 2 typically include slippery elm, swamp white oak (*Quercus bicolor*), red maple, silver maple, and box elder. Sapling, shrub and emergent species occurring in conjunction with forested wetlands include common buckthorn (*Rhamnus cathartica*), elderberry, spicebush (*Lindera benzoin*), jewelweed, beggar-ticks (*Bidens* sp.), clearweed (*Pilea pumila*), skunk cabbage (*Symplocarpus foetidus*), sensitive fern, tussock sedge (*Carex stricta*) and sedge (*Carex vulpinoidea*).

Scrub/shrub wetlands within Segment 2 characteristically are dominated by arrowwood (*Viburnum recognitum*), speckled alder (*Alnus rugosa*), common buckthorn, willow, jewelweed, purple loosestrife and sensitive fern. Plant species recorded within emergent wetlands included cattail, lance-leaved goldenrod, purple loosestrife, jewelweed, bur-reed (*Sparganium americanum*), stinging nettle (*Urtica dioica*), sensitive fern and common reed, among others.

Wetland A-21 is part of NYSDEC Wetland EG-1, as designated on the NYSDEC Freshwater Wetlands Map for the East Greenbush quadrangle. Approximately 850 feet of Segment 2 is within 100 feet of a NYSDEC-designated wetland.

Wetlands A-21, B-20, and A-18 mostly occupy area outside the ROW. To a large extent, the existing access road skirts or makes abbreviated crossings of the remaining seven wetlands.

Segment 3 (see Figure 4-3, Sheets 4-7)

Along the third ROW segment, forty-five (45) wetlands have been delineated. Palustrine emergent plant communities dominate greater than 50 percent of these wetlands. Because much of the ROW segment occurs in conjunction with open fields, such as the ROW

between Temple Road and Route 43 (Third Avenue), Palustrine forested and scrub/shrub wetlands are limited in abundance. Wetland area disturbed by construction on Segment 1 of the Proposed Transmission line is tabulated in Table 4-8.

Riverine wetlands also occur within Segment 3. These waterways are associated with twelve wetlands (B-20, B-17, B-15, B-13, A-11, A-10, A-9, A-8, A-7, B-12, B-10, and B-5). Based on their size and channel/substrate characteristics, six of the streams are anticipated to be intermittent, with the remaining six streams being perennial. With the exception of Mill Creek (Wetland B-20), stream channels do not exceed approximately 6 feet in width. In contrast, the Mill Creek channel ranges from approximately 20 to 25 feet wide.

The plant species composition associated with forested wetlands within the Segment 3 ROW is similar to that within Segments 1 and 2. Dominant plant species consist of red maple, silver maple, green ash, and black ash. Other species associated with Segment 3 forested wetlands include common buckthorn, hornbeam (*Ostrya virginiana*), rough-stemmed goldenrod (*Solidago rugosa*), jewelweed, skunk cabbage, sensitive fern, and sedge (*Carex vulpinoidea*). Scrub/shrub wetlands within the Segment 3 ROW predominantly consist of silky dogwood, gray dogwood (*Cornus racemosa*), elderberry, arrowwood, willow, speckled alder, beggar-ticks, jewelweed, purple loosestrife, soft rush (*Juncus effusus*), sensitive fern, and common reed. Plant species common to emergent wetlands primarily include Joe-pye-weed (*Eupatorium maculatum*), boneset (*Eupatorium perfoliatum*), cattail, lance-leaved goldenrod, rough-stemmed goldenrod, purple loosestrife, jewelweed, soft rush, sensitive fern, tussock sedge, sedge (*Carex lurida*), sedge (*Carex vulpinoidea*), and common reed.

All the wetlands encountered in Segment 3 appear to be associated with cross-drainage features on the ROW landscape.

No NYSDEC-designated wetlands are associated with Segment 3. Segment 3 of the Proposed Transmission Line is not within 100 feet of a NYSDEC-designated wetland.

Wetland Functions and Values

With respect to wetland functions and values, all wetlands delineated within the NMPC ROW are expected to function with respect to groundwater recharge/discharge, as well as provide habitat for a diverse assemblage of wildlife species. However, wildlife diversity and abundance may be notably reduced in wetlands lacking certain features (e.g. Wetland B-19, a small isolated wetland dominated by purple loosestrife). This type of wetland does not contain features that would support wildlife diversity and abundance as would those wetlands that contain high plant species, structural diversity, a high degree of interspersion and juxtaposition or wetlands that exhibit aquatic communities (e.g. Wetland B-20, Mill Creek).

Wetlands with perennial streams and to a lesser extent, wetlands containing intermittent streams, also are anticipated to function in terms of flood flow alteration/storage; aquatic diversity/abundance; sediment, toxicant and pathogen retention; nutrient removal, retention and transformation; production export; and sediment/shoreline stabilization. None of the wetlands for which delineations were conducted are expected to function and, therefore, exhibit recreation, educational/scientific, uniqueness/heritage, visual quality/aesthetics and endangered species habitat values.

4.5.3 Floodplains

Segment 1 and a small portion of Segment 2 are located in the floodplain of the Hudson River. Segment 3 crosses a second floodplain associated with Mill Creek. The configuration of the Proposed Transmission Line will not result in any alteration of flood storage since no enclosed structures are proposed and foundation construction will occur below the ground surface. Floodplains within a half-mile of the Proposed Transmission Line are shown on Figure 4-4. It should be noted that since construction of the Conklinville Dam at Great Sacandaga Lake there has not been a significant flood of the Hudson River in the City of Rensselaer. This dam is maintained by the Hudson River-Black River Regulating District for flood control and low-flow augmentation to regulate upstream salt water intrusion within the mid-Hudson River area.

While major flooding is not perceived to be an issue with construction and operation of the Proposed Transmission Line, localized and short duration events will be addressed during the preparation of the EM&CS&P Plan. Maintaining cross-flow and controlling erosion and sedimentation during periods of spring snowmelt or runoff from thunderstorms will be considered when designing access upgrades and evaluating work site impacts.

4.5.4 Impacts and Mitigation

Avoidance and Minimization

The first consideration is to avoid the crossing of streams or wetlands using existing alternative access. If available and practical, alternate access from off-ROW ingress/egress points will be used and the stream or wetland is designated either "No Equipment Access"

or "Limited Vehicular Access". This designation prohibits motorized equipment from entering the wetland area. If an area cannot be avoided then the types of activities allowed adjacent to the stream or in the wetland are restricted to minimize rutting or associated impacts including:

- confining vehicles (other than clearing and specialized equipment) to improved access roads and structure work pads;
- placing erosion controls such as hay bale/silt fence barriers along the edge of access roads and work areas;
- no deposition of off-site fill or slash within wetland areas, other than "drop and lop" clearing within same wooded wetlands.;
- no accumulation of construction debris;
- avoid degrading of stream banks and restore contours of stream beds and banks to pre-existing conditions;
- no equipment washing or refueling or storage of petroleum or chemical materials adjacent to wetlands or streams;
- use of low ground presser vehicles; and
- application of other NMPC practices outlined or prescribed in the EM&CS&P Plan.

Vegetation Clearing

Clearing activities in stream and wetland areas will be carried out in accordance with the EM&CS&P Plan as specified in the plan and profile sheets. Clearing activities in streams

will leave a buffer of shrub/forb vegetation at stream banks where practical. Clearing at streams typically consists of clearing only those trees that could infringe on the conductor security zone necessary for the protection of the Proposed Transmission Line within five years while retaining woody shrub species. Clearing in wetlands consists of selectively removing all tall growing tree species while retaining woody shrub species. The area cleared will be limited to the minimum required for safe construction access and for protection of the Proposed Transmission Line. Clearing crews will use tracked equipment or hand cutting methods as appropriate to the EM&CS&P Plan designations and moisture conditions at the time of clearing to avoid and minimize rutting of the surface. Erosion and sediment controls will be established during this initial phase of construction. Clearing techniques are described in Section 4.2.1.

Monopole Installation

The Proposed Transmission Line will be constructed with steel tubular structures called monopoles. Final design of the monopole locations will avoid wetland areas to the extent possible. Although spans will be between 600 and 1000 feet, some monopoles may need to be placed in wetlands or between wetlands on the ROW. At each monopole location a vehicular space and crane work pad 50 feet by 70 feet is necessary for the foundation placement and assembly of the monopole. To the maximum extent safely practical, work pads will be aligned to minimize disturbance of wetlands. Erosion controls will be placed along the limit of the workspace areas to prevent migration of sediments or turbid waters into adjacent wetland areas.

Access Road Construction

There is an existing access road along the ROW that will provide access to existing structures. The condition of the roadway varies along the alignment and will need to be

improved to allow safe passage of construction vehicles. Utilizing an existing disturbed area for access for the Proposed Transmission Line will help limit impact from access road construction. The existing access roads will be upgraded (resurfaced and graded) where possible, however, new access may be needed to access individual monopole locations and to access some off-site areas to avoid stream or wetland crossings. Access through streams and wetlands will be avoided where practical by routing the access road around wetlands or utilizing roads that cross the ROW on either side of the stream or wetland. However, at some locations, access will be required across streams or wetlands to reach monopole locations.

When it is reasonably practicable to avoid crossing a significant stream by alternate means, the alternate access will be selected. Existing or new fords or culverts will be maintained or installed to preserve existing the drainage patterns to the extent possible and accommodate concrete trucks, cranes, and heavy construction and maintenance vehicles. Stream crossings, when necessary, will be designed based on site-specific stream characteristics. Where a crossing is required the access road will be aligned perpendicular to the stream at a point which will cause minimum disturbance to the stream bottom, banks and stream bank vegetation. Culverts stabilized by clean gravel fill are typically used to cross a stream to avoid disturbance of the stream bottom and banks. The culverts are based on the flow characteristics and size of the stream. These devices will be designed to handle increased discharges as the upstream drainage area converts to greater impervious surfaces and to consider the attraction of beavers. Fords may also be appropriate if a stable approach and streambed are present. Equipment will be limited to use of the improved access road within 100 feet of the stream. Erosion controls will be established at the edge of the

roadway approach to the stream and equipment will be limited to use of the improved access road. All stream requirements will be described fully in the EM&CS&P Plan.

When wetland areas cannot be avoided, improvements to access roads across wetlands will be aligned to provide the shortest crossing of the wetland possible. Roadway construction will depend on the nature of the wetland resource area. Access roads in wetlands typically consist of corduroy or corduroy overlain with gravel. Field investigations in Summer 2002 on the ROW did not identify any unstable saturated conditions that would require floatation devices for the roadways. Erosion controls will be placed at the edge of the roadway to prevent migration of sediments into adjacent wetland areas. Equipment will be limited to use of the improved access road in wetland areas as much as possible. The current layout of roads, wetlands, and streams on the ROW is shown on Figure 4-3.

Other Mitigation Measures

A site specific EM&CS&P Plan will be prepared for the Proposed Transmission Line prior to construction. This plan will be submitted to the NYSPSC for review and approval prior to construction. The EM&CS&P Plan will include a set of aerial mosaics that identify all wetland areas that will be disturbed by the Proposed Transmission Line including clearing, access road construction, and new structure locations. The Proposed Transmission Line will also require a USACOE permit for work in wetlands and waterways. This permit will detail the square footage of wetland areas temporarily disturbed by construction and areas permanently altered through new access roads or structure locations. Mitigation and enhancement areas to compensate for any loss of wetland resources will be negotiated as part of this permit. A NYSDEC storm water State Pollution Discharge Elimination System permit will also be processed for the Proposed Transmission Line, but related protection

measures will be commonly addressed by the EM&CS&P Plan for all anticipated NYSPSC, USACOE, and NYSDEC conditions.

4.6 Soil and Geologic Resources

4.6.1 Soils

The soils along the Proposed Transmission Line and surrounding land were obtained from the Rensselaer County Soil Survey (NRCS, 1988). In total, the Proposed Transmission Line crosses 24 soil survey map units representing 15 soil series, gravel pits, and sandy Udorthents. This section describes the soils encountered by the Proposed Transmission Line route. Table 4-9 details the physical characteristics of these soil types including drainage class, slope, and depth to bedrock. An understanding of these characteristics is instrumental in assessing potential construction challenges, such as erosion control and difficult installation conditions. For example, the installation of transmission line structures may require blasting in areas with shallow bedrock, while steeper slopes make soils more susceptible to erosion. Figure 4-5 identifies soil types with steep slopes, shallow bedrock, and a high potential for erosion. Each of the Project area soil types is described below.

Bernardston-Nassau Complex (BnB, BnD)

The Bernardston-Nassau soil complex is composed of 45 percent Bernardston soil, 30 percent Nassau soil, and 25 percent other soils. Bernardston soils are deep, well drained soils developed in glacial tills comprised of shale, slate, and sandstone materials. Nassau soils are shallow, somewhat poorly drained, and derived from glacial tills comprised of shale and slate materials. The complex is found in uplands where the topography is dictated by underlying shale and slate bedrock.

Table 4-9: Physical Characteristics of Soil Types along Proposed Alignment

Soil Series (Map Unit)	Drainage Class	Depth to Bedrock (Inches)	Depth to Seasonally High Water Table (feet)	Parent Material	Range of Slope (%)*	Construction Considerations
Bernardston-Nassau Complex (BnB, BnD)	Well Drained - Somewhat Excessively Drained	> 60	1.5-2	Glacial Till	1-8, 10-30	Erosion: Moderate
Castile (CbA)	Moderately Well Drained	> 60	1.5-2	Glacial Outwash	0-5	
Hudson (HuB, HuC, HuD, HuE)	Moderately Well Drained	> 60	1.5 - 2	Lacustrine Silt; Clay Deposits	3-8, 8-15, 15-25, 25-45	Erosion: Moderate
Limerick (LmA)	Poorly Drained	> 60	0.5-1.5	Alluvial Deposits	0-3	High Water Table/Periodic Flooding
Madalin (MbA)	Poorly Drained - Very Poorly Drained	> 60	0-0.5	Silt and Clay Deposits	0-3	Seasonally High Water Table/Flooding
Nassau-Manlius Complex (NaB, NaC)	Somewhat Excessively Drained - Well Drained	10-40	> 6	Glacial Till	1-8, 5-16	Erosion: Moderate
Nassau-Rock Outcrop Complex (NrD)	Somewhat Excessively Drained	10-20	> 6	Glacial Till	16-50	Shallow Soil
Pits, Gravel (Pg)						
Rhinebeck (RhA, RhB)	Somewhat Poorly Drained	> 60	0.5-1.5	Lake Deposits of Silt /Clay	0-3, 3-8	Erosion: Severe if bare ground
Riverhead (RkB, RkC)	Well Drained	> 60	> 6	Glacial Outwash	3-8, 8-15	
Saprists and Aquents, Ponded (Sa)	Very Poorly Drained	> 60	0	Variable	0-1	Flooding:Severe
Scriba (SrB)	Somewhat Poorly Drained	> 60	0.5-1.5	Glacial Till	3-8	Erosion: Moderate
Shaker (SwA)	Somewhat Poorly Drained - Poorly Drained	> 60	0-1.5	Lake-Laid Sediment	0-4	Wetness: Moderate
Teel (TeA)	Moderately Well Drained - Somewhat Poorly Drained	> 60	0.5-2	Alluvial Deposits	0-3	Seasonally High Water Table/Flooding
Udorthents, Sandy (Ue)	Moderately Well Drained - Excessively Drained	> 60	N/A	Variable	0-5	Variable
Unadilla (UnB)	Well Drained	> 60	> 6	Lacustrine and Alluvial Deposits	3-8	Erosion: Moderate
Windsor (WnE)	Excessively Drained	> 60	> 6	Deltic / Glacial Outwash	25-35	Erosion: Severe

* Where there are multiple ranges, the ranges correspond to the Map Units in order from left to right.

Castile Series (CbA)

Castile soils are deep and moderately well drained, occurring on outwash plains and terraces. They are derived from glacial outwash deposits and have a surface layer of gravelly silt loam that extends 10 inches deep. The subsoil reaches a depth of 32 inches. The upper part of the subsoil is a very gravelly loam, and its middle and lower parts are very gravelly sandy loams. The substratum is very gravelly sand, extending deeper than 60 inches.

Hudson Series (HuB, HuC, HuD, HuE)

Hudson soils are deep and moderately well drained. Derived from lacustrine silt and clay, they are found on dissected lake plains. The surface layer is a silt loam extending 5 inches deep, while the subsoil of silty clay reaches 28 inches deep. The substratum is also silty clay and extends deeper than 60 inches.

Limerick Series (LmA)

Limerick series soils are deep, poorly drained soils. Typically found on flood plains, they are derived from alluvial deposits of silt and very fine sand. The surface layer of silt loam is 8 inches thick, while the substratum of very fine sandy loam extends beyond 60 inches in depth.

Madalin Series (MbA)

Madalin soils are moderately deep and are poorly drained to very poorly drained. Found in the Taconic Mountains, these soils are derived from glacial tills comprised of phyllite, slate, and some shale materials. The surface layer is silty clay loam that extends 4 inches deep, while the subsoil is silty clay that reaches 39 inches deep. The substratum is also silty clay and reaches deeper than 60 inches.

Nassau-Manlius Complex (NaB, NaC)

The Nassau-Manlius Complex is comprised of 45 percent Nassau soil, 30 percent Manlius soil, and 25 percent other soil. Nassau soils are shallow and somewhat excessively drained, while Manlius soils are moderately deep and well drained. Both Nassau soils and Manlius soils are derived from glacial tills comprised of shale and slate materials. The surface layer is typically slaty loam to very shaly silt loam. These soils are generally found on gently sloping ridges underlain by shale or slate bedrock.

Nassau-Rock Outcrop Complex (NrD)

The Nassau-rock outcrop complex is composed of 40 percent Nassau soil, 35 percent rock outcrop, and 25 percent other soils and is most often found on the sides of ridges on uplands. Nassau soils are shallow, somewhat excessively drained, and derived from glacial tills comprised of shale and slate materials. The surface layer of Nassau soils is a very shaly silt loam reaching a depth of 7 inches. The subsoil layer is a very shaly loam reaching a depth of 15 inches. Below that is folded shale. The rock outcrops are exposures of fold shale, slate, and sandstone.

Pits, Gravel (Pg)

These areas have been excavated for the extraction of sand and gravel. They are derived from glacial outwash and some glacial till.

Rhinebeck Series (RhA, RhB)

Soils in the Rhinebeck series are deep and somewhat poorly drained soils found on lake plains. They are derived from lake deposits of silt and clay. The surface layer of silt loam is 8 inches thick, while the subsoil layer of silty clay reaches a depth of 36 inches. The substratum is also silty clay and reaches depths of 62 inches or more.

Riverhead Series (RkB, RkC)

Riverhead soils are deep and well-drained soils found on glacial outwash plains, terraces and remnant beaches. They are derived from glacial outwash deposits comprised of slate, sandstone, and granite materials. The surface layer of fine sandy loam is 6 inches deep, and sandy loam makes up the subsoil layer, which extends 35 inches deep. The substratum is a gravely sandy loam that reaches depths of 60 or more inches.

Saprists and Aquents, Ponded (Sa)

Saprist soils are very poorly drained organic soils that are ponded with water for much of the year. They are made up of well-decomposed organic soil that varies in depths from 16 to greater than 60 inches. The mineral layer beneath the organic layer ranges from silty clay loam to gravelly loamy sand.

Scriba Series (SrB)

Scriba series soils are deep and somewhat poorly drained. Found on the lower slopes of glaciated uplands, they are derived of glacial tills comprised of shale, slate, and sandstone materials. The surface layer of Scriba soils is made up of silt loam. The subsoil layer of silt loam goes 50 inches deep, while the substratum, another silt loam, extends deeper than 60 inches.

Shaker Series (SwA)

Shaker soils, which are formed from lake sediments, are deep and somewhat poorly drained to poorly drained. They are typically found on lake plains and have a 9-inch thick surface layer of very fine sandy loam. The fine sandy loam of the subsoil reaches a depth of 23 inches. The upper substratum is silty clay and extends 48 inches deep, while the lower substratum of loamy fine sand extends past 60 inches.

Teel Series (TeA)

Soils of the Teel series are deep and moderately well drained. They are derived from recent alluvium and are found on flood plains. Silt loam makes up the surface layer, which is 12 inches thick. The silt loam subsoil reaches a depth of 40 inches and the substratum, also a silt loam, reaches depths of 60 inches or more.

Udorthents, Sandy (Ue)

Udorthent soils are deep and excessively to moderately well drained. They are found on till plains and flood plains and are derived from recently exposed excavations and fill deposits. These soils are mostly loamy sand or sand with gravel. Rarely to occasionally flooded, bedrock is not commonly found within 10 feet of the surface of these soils.

Unadilla Series (UnB)

Soils of the Unadilla series are deep and well drained. Found on stream terraces, lake plains, and deltas, they are derived from lacustrine or old alluvial deposits of silt and very fine sand. The surface layer is 7 inches thick and is made up of silt loam. The upper subsoil layer is silt loam, while the lower part is very fine sandy loam. In total, the subsoil layer reaches a depth of 33 inches. The substratum extends 62 inches deep or more and is also very fine sandy loam.

Windsor Series (WnE)

Windsor soils are deep and excessively well drained. They form on deltas, plains, and old stream terraces from deltaic and glacial outwash deposits with a high sand content. The loamy sand of the surface layer is 8 inches thick. The subsoil layer reaches a depth of 21 inches with an upper part of loamy sand and a lower part of sand. The substratum, also sand, extends at least 60 inches deep.

4.6.2 Geology

This section describes the geologic conditions in the area of the Proposed Transmission Line. Geological information, like soil information, is useful for determining an approach to the installation of the utility structures and anticipating potential challenges.

Topography

The elevation along the Proposed Transmission Line route ranges from near sea level to approximately 400 feet above sea level. In Segment 1, the terrain is flat and low. This segment is all less than 20 feet above sea level. Segment 2 contains the highest and steepest sections, particularly in the vicinity of Ridge Road in the Town of East Greenbush. The terrain is much flatter towards NYS Routes 9 & 20 and stays relatively level for the rest of this segment. Elevations range approximately from 20 feet to 400 feet above sea level. Segment 3 has varied terrain; it is quite steep in some places and flat in others. The elevation for this segment ranges from less than 170 feet to greater than 300 feet above sea level.

Surficial Geology

The Proposed Transmission Line crosses a total of five (5) surficial geology units, as identified and defined in the University of the State of New York, Department of Education, Surficial Geology Map of New York, Hudson Mohawk Sheet, 1987. The surficial geology units are lacustrine delta, lacustrine sand, lacustrine silt and clay, recent deposits, and till.

Lacustrine Delta

The Lacustrine Delta unit is made up of stratified and well sorted coarse to fine gravel and sand. It is deposited on lake shorelines and its thickness ranges from 3-15 meters.

Lacustrine Sand

The Lacustrine Sand unit is made up of sand deposits associated with large bodies of water. Typically it is found near a sand source or as a near shore deposit. Lacustrine sands are quartz derived, well sorted, stratified, and range in thickness from 2-20 meters.

Lacustrine Silt and Clay

The Lacustrine Silt and Clay unit is comprised of generally laminated silt and clay deposited in proglacial lakes. Generally calcareous, lacustrine silt and clay ranges up to 100 meters in thickness and has the potential to cause land instability.

Recent Deposits

The Recent Deposits unit is made up of oxidized, non-calcareous particles ranging in texture from fine sand to gravel. It is typically confined to flood plains within valleys and is subject to frequent flooding. In larger valleys recent deposits are often overlain by silt. The thickness of this unit ranges from 1 to 10 meters.

Till

Sediments of the Till unit vary in texture and may include a random sediment mixture of clay, clay-silt, sand, gravels, cobble, and boulders. They commonly originated as depositions beneath glacier ice. Tills are relatively impermeable and most often poorly sorted, with the potential to cause instability on steep slopes. The clast content of this unit is variable as is thickness, which ranges from 1 to 50 meters.

Bedrock Geology

According to the University of the State of New York State Education Department Geological Map of New York Hudson Mohawk Sheet (1970 reprinted in 1995), the bedrock underlying the Proposed Transmission Line is the Middle Ordovician Normanskill

Formation of the Trenton Group. This Normanskill formation is made of gray and black shale and greywacke. The other formation proximate to the Proposed Transmission Line is the Nassau Formation, which is near to the northeastern segment. The Nassau Formation is made up of shale, thin quartzite beds, and Late Cambrian slate.

The depth to bedrock along the Proposed Transmission Line is variable and depends on topography and overburden sediments. Within the Hudson River floodplain, most of the overburden sediments are thick, recent alluvium. Towards the eastern extreme of the Proposed Transmission Line, the sediment deposits tend to be thinner. In some places, bedrock outcrops are exposed at the surface.

4.6.3 Impacts and Mitigation

Construction and maintenance activities will disturb soils and bedrock within the ROW. Localized erosion, rutting, and compacting of soils will result from the movement of heavy equipment, clearing, and access road construction. The EM&CS&P Plan to be prepared will include prevention and mitigation devices/measures to minimize impacts to soils and geology. In most areas, original contours will be re-established. Soils more susceptible to erosion include soil types in the Rhinebeck and Windsor series, which comprise approximately 18 percent of the Proposed Transmission Line.

The characteristics of the Nassau soil group, described above an included in Table 4-9, suggest that bedrock is close to the surface. Blasting will need to be considered in the foundation design, structure siting, and drainage controls. Comparison of Figures 4-3 and 4-5 will assist engineering considerations for drainage controls and access across poorly drained soil classes and locations. Restoration measures proposed in the EM&CS&P Plan

will take into consideration the predominance of shallow soils which can hinder rapid regrowth and stabilization of construction areas.

Constructing a stable surface for construction vehicles will control erosion and soil disturbance. The access road within the ROW will be improved with a gravel base to support the construction equipment. Some of the rock excavated for caissons may be recycled into permanent roadbed or work pads. Steep slopes may present a danger for heavy equipment crossings or present the potential for severe erosion. Water bars, crowns, reverse grades, stone lined ditches and associated water control measures will be used. Crossing steep slopes will be limited to smaller equipment used by the clearing crew. Crossing can be avoided by the remaining construction phases by placing structures at the top or base of a slope and developing access from either side of the slope. In areas where crossings are required, equipment will be limited to use of the improved access road. The access road will be designed to sweep gradually across the ROW to minimize the road grade.

Blasting will be employed for foundation construction to the required depth, utilizing the minimum charge required to break up the rock. Appropriate blasting mats will be used to prevent scattering of rock or debris. Blasting will be carried out in accordance with all local, state, or federal regulations that apply to utility installation or pursuant to NMPC specifications for the protection of workers and adjacent transmission facilities and infrastructures.

Maintenance practices on the ROW will allow revegetation of the ROW with low bush and small trees to stabilize the surface. Unauthorized access by off road vehicles will be

deterred with obstructions at access points such as boulders, shot-rock berms or locked gates.

4.7 Cultural Resources

John Milner Associates (JMA) conducted a comprehensive cultural resources investigation for the Proposed Transmission Line. This consisted of a Phase 1 cultural resource survey of ROWs followed by the Proposed Transmission Line in accordance with the New York Archaeological Council's Standards for Cultural Resource Investigations. The survey covered the entire ROW followed by the proposed Transmission Line. Preliminary monopole locations were used to assist in the design of the survey but are not critical to completing the survey.

A copy of this report is attached as Exhibit __ (JIK-1). This report was submitted to the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) for their review and comment. Three potentially significant archaeological deposits were discovered during the investigation. NMPC has modified the Proposed Transmission Line design to provide sufficient distance from two of these sites to avoid disturbance of these potentially sensitive areas. The third potentially sensitive area is the agricultural field in the Town of East Greenbush along Segment 1. JMA has recommended that a Phase II investigation be conducted to determine the archaeological significance of this site.

Two properties listed in the OPRHP Building-Structure Inventory are less than 500 feet from the Proposed Transmission Line. JMA has requested an opinion from the OPRHP as to the eligibility of these two properties for the State Register of Historic Places.

4.8 Visual Resources

4.8.1 Visual Setting

Environmental Design and Research, P.C. (EDR) prepared a Visual Impact Assessment (VIA) of the potential visibility and visual impact of the Proposed Transmission Line. The VIA was prepared in accordance with 16 NYCRR Section 86.5(b)(i), (ii), and (8). A copy of the VIA is attached as Exhibit __ (JWG/MPC-1).

The VIA identifies the viewshed in which the Proposed Transmission Line can be seen and sensitive receptors that may have views of the Proposed Transmission Line. Visual simulations have been prepared from representative locations to assess the potential visual impact of the Proposed Transmission Line.

The VIA identifies the existing visual character of the Project Study Area, an area defined in Exhibit__ (JWG/NMPC-1) as within one mile on either side of the Proposed Transmission Line alignment. The area includes a mix of industrial, commercial, urban, suburban and rural land use. Elevations range from approximately six feet above sea level at the Hudson River to approximately 570 feet on hilltops in the northeastern portion of the Project Study Area. Vegetation patterns vary with land use patterns from developed lots in industrial areas with little vegetation to forested areas and open field and successional communities in agricultural and rural areas.

EDR identified visually sensitive resources, including five historic structures listed on the State and National Register of Historic Places. No other areas of statewide significance as defined by the NYSDEC were identified. Within the one-mile corridor, nine other areas were identified as visually sensitive due to their local significance or their intensity of land

use, although the existing transmission lines are not visually perceptible from most of these locations.

4.8.2 Viewshed Analysis

EDR performed a viewshed analysis to determine a "worst-case" assessment of existing and potential visibility of the Proposed Transmission Line monopoles. Three sets (three existing structures adjacent to three proposed monopoles) of selected structures on high points of the preferred alignment were selected for the viewshed analysis. This analysis provides a conservative estimate of visibility and does not take into account the screening effect of vegetation or built structures. The analysis results in a Viewshed Map (Figure 4 of Exhibit __ (JWG/MPC-1)) which defines the maximum area from which the top of the proposed and existing structures could potentially be seen within one mile of the structures. This analysis demonstrates a modest increase in visibility, primarily due to the increased height of the proposed structures.

4.8.3 Field Evaluation

The field evaluation revealed that the visibility of the existing structures is more limited than suggested by the viewshed analysis. The field evaluation indicated that existing vegetation and structures are effective in screening all or part of the existing structures from most locations within the vicinity of the Proposed Transmission Line. Few unobstructed views are seen from beyond 0.5 mile from the ROW, due to effective screening provided primarily from roadside vegetation and buildings that create a narrow view corridor in most areas. Most of the unobstructed views are from locations directly adjacent to the ROW. While the Proposed Transmission Line will generally be more visible than the existing transmission lines due to its height, it will also be screened by existing vegetation and structures in the majority of visually sensitive sites.

4.8.4 Line of Sight Cross Sections

EDR then developed line-of-sight cross sections which demonstrate the range of topographic, vegetation and/or structural screening conditions that exist in the area and include some of the resources that are considered visually sensitive (Figure 5 of Exhibit __ (JWG/MPC-1)). This analysis is also conservative (i.e. possibly overestimates visibility of the Proposed Transmission Line) since it assumes an average tree height of 40 feet (in many cases the existing vegetation is taller). The cross sections indicate that visibility of the structures will be limited in the more densely populated sections of the study area due to the screening effect of existing buildings and tree foliage. The cross sections also show that most potential views will be available from open areas that are not heavily developed (i.e. agricultural areas, waterways). Views of the corridor from most residential areas and the interior of the Papscanee Island Reserve will be screened due to existing vegetation.

4.8.5 Simulations

Photos obtained during field evaluations were reviewed and the ones most representative of open views were selected for the development of computer-assisted visual simulations. Due to their proximity to the line and general lack of screening, the simulations represent the worst-case visual impact. Selected viewpoints included sites located at various distances and directions from the Proposed Transmission Line and include views from areas identified as visually sensitive and areas of intensive land use. The seven viewpoints are:

- view from Ridge Road, east of Route 9J;
- view from Robert Lane, north of Route 151;
- view from the Rose and Kernin building, adjacent to Route 4;

- view from Third Avenue, west of Route 4;
- view from Route 4, west of the Reynolds Road Substation;
- view from I-90, north of Exit 9; and
- view from American Oil Road, south of the Port of Rensselaer and north of the Papscanee Island Reserve.

The figure depicting these viewpoint locations is included as Figure 6 of Exhibit __ (JWG/MPC-1). These viewpoints were selected because they provide either an unobstructed view of the Proposed Transmission Line, provide a representative view within the context of the landscape, or are in the vicinity of a sensitive resource or area of intensive land use. These locations demonstrate the full range of visual change that is likely to occur as a result of the Proposed Transmission Line. The simulations indicate that the Proposed Transmission Line would not affect the majority of the study area and any sensitive locations other than select commercial/business establishments and roadways, and two residential subdivisions.

4.8.6 Conclusions

EDR concludes that the Proposed Transmission Line will not significantly change the existing visual/aesthetic character of the Proposed Transmission Line area based on the following:

- the Proposed Transmission Line is compatible with the existing use of the ROW (i.e. existing transmission line);

- there is screening from existing structures, vegetation and topography in many locations;

- the distance and screening of the Proposed Transmission Line from sensitive receptors; and

- in several views and under certain lighting conditions, the color of the proposed monopole structures tends to blend with the sky (and to a certain extent with background vegetation), particularly in midground and background views.

However, the Proposed Transmission Line will visually impact one area. There is a residential development in the vicinity of Route 151 (beginning of Segment 3) that is immediately adjacent to the Proposed Transmission Line alignment. Measures that can be implemented to reduce this impact include design of effective screening on the ROW and potentially on private property (with permission of the landowner) and consideration of alternative monopole structure materials.

4.9 Air and Noise Quality

4.9.1 Air Quality

There may be a minor effect on air quality associated with temporary equipment operation within the construction area. Emissions resulting from manufacturing and transportation of material associated with the structures, conductor, transformers and other components are outside the purview of this review. During the construction work NMPC will minimize dust generation as appropriate, deploying measures that will be defined in the EM&CS&P Plan.

4.9.2 Noise Quality

Appendix D presents a tabulation of typical acoustic profiles. During construction of the Proposed Transmission Line, there will be operating equipment that will require worker personal protection equipment (PPE) pursuant to Occupational Safety and Health Administration (OSHA) regulation. Occasionally, noises may be heard in distant residential and industrial areas that are out of character, but which will fall in line with background levels.

Construction noises such as those from operating heavy equipment or blasting will be of a temporary nature. Once in operation, during inclement weather, trespassers on the ROW may hear the effects of corona on the conductor and facilities.

4.10 References

References cited in this exhibit are listed below. Copies of letter and other communications listed below are included in Exhibit __ (DJS-1), Project Communications.

Field Investigations

Conducted on July 22-26, 2002, July 29-30, 2002, August 21-22, 2002, August 27-28, and September 18-19, 2002

Letter and Personal Communications

City of Rensselaer
Personal Communication, 2002

Farm Service Agency, Rensselaer County Office
Personal Communication, 2002

New York State Department of Agriculture and Markets
Letter Communication, October 2001

New York State Department of Environmental Conservation
Division of Environmental Permits
Letter Communication, 2002

New York State Department of Environmental Conservation
Natural Heritage Program
Letter Communication, July 22, 2002

New York State Department of Transportation, Region 1 Office
Personal Communication, 2002

New York State Thruway Authority, Albany Division
Personal Communication, 2002

Rensselaer County Economic Development and Planning
Personal Communication, August 23, 2002

State of New York Department of State
Personal Communication, 2002

Town of North Greenbush
Personal Communication, 2002

Town of East Greenbush
Personal Communication, 2002

Town of East Greenbush
Personal Communication, 2002

Documents

Albany Port District Commission, Port 2000, Expanding the Reach of the Port of Albany/Rensselaer, Albany Port District Commission, Rensselaer, NY 2000.

Bailey, R. G. Description of the Ecoregions of the United States 2nd Ed. Washington DC: Forest Service of the United States Department of Agriculture. 1995. Web site: http://www.fs.fed.us/land/pubs/ecoregions/ch16.html#221B.

Brown, S. *et al.* New York State Freshwater Wetlands Delineation Manual. New York State Department of Environmental Conservation. 1995.

Comprehensive Zoning Law of the Town of North Greenbush, New York. General Code Publishers, Rochester, NY, May 2002.

Comprehensive Zoning Law of the Town of East Greenbush, New York. 2000.

Connecticut Department of Environmental Protection. Wildlife in Connecticut: Endangered and Threatened Species Series. Least Bittern.
Web site: http://www.dep.state.ct.us/burnatr/wildlife/factshts/lebitt.htm.

Cowardin, L.M., V. Carter, and E.T. LaRoe. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79. 1979.

Dickinson, M.B. Field Guide to the Birds of North America. 3rd Ed. Washington, DC: National Geographic. 1999.

DeGraaf, R.M. and Yamasaki, M. New England Wildlife: Habitat, Natural History, and Distribution. Hanover: University Press of New England. 2001.

Dowhan, J., Halavik, T., Milliken, A., MacLachlan, A., Caplis, M., Lima, K., and Zimba, A. Significant Habitats and Habitat Complexes of the New York Bight Watershed U.S. Fish and Wildlife Service, Southern New England - New York Bight Coastal Ecosystems Program. Web site: http://training.fws.gov/library/pubs5/web_link/text/upp_hud.htm.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 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. 2002.

Ehrlich, P.R., Dobkin. D.S., and Wheye, D. The Birder's Handbook: A Field Guide to the Natural History of North American Birds. New York: Simon and Schuster Inc. 1988.

Environmental Laboratory. "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. NTIS No. AD A176 912. 1987.

Federal Communications Commission, Universal Licensing System (ULS) search, website: http://wireless2.fcc.gov/UlsApp/UlsSearch/searchLicense.jsp.

Gleason, H.A. and Cronquist, A. Manual of Vascular Plants of Northeastern United States and Adjacent Canada 2nd Ed. New York: The New York Botanical Garden. 1991.

New York State Department of State Coastal Management Program, State Coastal Policies, NYS Department of State, Albany, NY, 2001.

Newcomb, L. Newcomb's Wildflower Guide. 1st Ed. New York: Little, Brown, and Company. 1977.

Quinn, J.R., Nature Notes 3/01. NJ Meadowlands Commission. Web site: http://www.hmdc.state.nj.us/news/nature_notes_3_01.html.

Rensselaer County Planning Office, Rensselaer County Master Plan, Rensselaer County Planning Office, Rensselaer, NY, 1978.

University of the State of New York, Department of Education, Surficial Geology Map of New York, Hudson Mohawk Sheet. 1987.

University of the State of New York State, Education Department. Geological Map of New York, Hudson Mohawk Sheet. 1970 reprinted in 1995.

United States Department of Agriculture, Soil Conservation Service. Soil Survey of Rensselaer County, New York. 1988.

Veit, R. R. and Petersen, W.R. The Birds of Massachusetts. Massachusetts Audubon Society. 1993.

Zoning Law of the Town of New Scotland, May 2000.

Mapping

Col-East, Inc., Ortho photographs of the Proposed Transmission Line Alignment, Flow November 11, 2002.

Federal Emergency Management Agency (FEMA) Q3 Digital Flood Data and Coastal Barrier Resource Area (CBRA) Q3 Data, Emergency Management Agency, Baltimore, Maryland, 2002.

New York State Agricultural Districts Mapping Program, Albany County Agricultural Districts, Cornell Institute for Resource Information Systems (Cornell IRIS), Cornell, NY, January 2002.

New York State Department of Environmental Conservation, New York State Regulatory Freshwater Wetlands For Albany County, New York State Department of Environmental Conservation (NYSDEC), Latham, NY, 1999.

New York State Department of Environmental Conservation, New York State Regulatory Freshwater Wetlands For Rensselaer County, New York State Department of Environmental Conservation (NYSDEC), Latham, NY, 1999.

New York State Department of Transportation, Albany County Roads File New York State Department of Transportation, Mapping and GIS, Albany, NY August 2000.

New York State Department of Transportation, NYSDOT Raster Quadrangle, New York State Department of Transportation, Mapping and GIS, Albany, NY, 1993.

New York State Department of Transportation, New York State Civil and Public Land Boundaries. New York State Department of Transportation, Mapping and GIS, Albany, NY August 2000.

New York State Geographic Information Systems (GIS) Clearinghouse, Year 200 Ortho photographs of Rensselaer County, NY, GIS Office, Albany, New York.
Web site: http://www.nysgis.state.ny.us/index.html

New York State Museum / NYS Geological Survey, Statewide Bedrock Geology, NYS Museum Technology Center, Albany, NY, July 1997.

New York State Museum / NYS Geological Survey, Surficial Geology, NYS Museum Technology Center, Albany, NY, February, 1999.

United States Geographic Service, USGS Digital Raster Graphic (DRG) Quadrangle, United States Geographic Service, Reston, VA, 1980.

U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) Database for Albany County, New York, Fort Worth, TX, May, 2001.

U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) Database for Rensselaer County, New York, Fort Worth, TX, May, 2001.

U.S. Department of Commerce, Bureau of the Census, Landmarks, Albany County. Bureau of Commerce, Washington, D.C., 1998.

U.S. Department of Commerce, Bureau of the Census, Landmarks, Rensselaer County. Bureau of Commerce, Washington, D.C., 1998.

U.S. Department of Commerce, Bureau of the Census, Hydrography, Albany County. Bureau of Commerce, Washington, D.C., 1998.

U.S. Department of Commerce, Bureau of the Census, Hydrography, Rensselaer County, Bureau of Commerce, Washington, D.C., 1998.

U.S. Department of the Interior, Fish & Wildlife Service, National Wetlands Inventory Map, U.S. Department of the Interior, National Wetlands Inventory, Washington, D.C. 1998.